SEMICONDUCTOR PRODUCTS

SHORT FORM CATALOG

INTEGRAL

2010-2011

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CONTENTS

INTRODUCTION

«INTEGRAL» JSC develops, manufactures and exports microelectronic components and electronic products. «INTEGRAL» JSC provides a full cycle of design and manufacture: from silicon substrates up to integrated circuits and semiconductor devices, from microelectronic components up to electronic.

The structure of «INTEGRAL» JSC affdiates:

«SEMICONDUCTOR DEVICES FACTORY» subsidiary of INTEGRAL JSC (city of Minsk)

«DC BELMICROSYSTEMS» subsidiary of INTEGRAL JSC (city of Minsk)

«TRANSISTOR» subsidiary of INTEGRAL JSC (city of Minsk)

«KAMERTON» subsidiary of INTEGRAL JSC (city of Pinsk)

«INTEGRAL» JSC has a representative office in China.

Total labour is more than 6 thousand persons.

Since 2009 Mr. Vitaly A. Solodukha has been the General Director of «INTEGRAL» JSC.

The main line of activity of «INTEGRAL» JSC is design and manufacture of microelectronic products - over 70 % of the total production volume - for the branches manufacturing goods of household and consumer electronics.

«INTEGRAL» JSC exports more than 70 % of the volume of manufactured goods to the markets of the Russian Federation, Sout - East Asia, India and Western Europe.

The goods are exported to 30 countries of the world.

In 2009 «INTEGRAL» JSC designed and implemented 153 types of new products: 71 integrated circuits, 55 discrete semiconductor devices, 27 products of electronics.

Manufacture of 0,35 μm design rule integrated circuits on Ø200 mm (8 inch) wafers has been set up.

The main lines of the development of «INTEGRAL» JSC are as follows: design and implementation of microelectronic components of power electronics, microsensorics and optoelectronics.

Development of production of finished electronics is to be carried out in the following lines: displays; automotive electronics and electronics and equipment for health application; cashless payment systems, payment terminals, commercial and bank equipment, smart cards, identification and record keeping systems.

«INTEGRAL» JSC is open for cooperation both in design and deliveries of products, and in terms of joint realization of long-term investment projects.

QUALITY ASSURANCE SYSTEM

Quality Assurance System of Joint Stock Company «INTEGRAL» has been created 15 years ago. In 1999 it was certified by «KEMA», the International Certification Center, and «BelGISS», The Scientific and Production Republican Unitary Enterprise "Belarusian State Institute for Standardization &Certification" for the conformance to ISO 9001.

Basic purpose of Quality Assurance System is integrating efforts of all the employees in order to carry out design, manufacture and sales of high-quality, competitive and easily producible integrated circuits, semiconductor devices, liquid crystal displays and other products matching to the utmost the requirements of the customers and fulfilling their demands.

At present Quality Assurance Systems of JSC «INTEGRAL» Affiliates (Research and Production Center «Belmicrosystems», «Semiconductor Devices Factory», «Transistor») are certified for the conformance to ISO 9001-2009 standard in the National System of the Republic of Belarus and to DIN EN ISO 9001:2008 standard of TGA, foreign Certification Organization in Germany, as regards to design and manufacture of integrated circuits, semiconductor devices, liquid crystal displays. Quality Assurance System for single-crystal silicon wafer manufacture of «Kamerton» complies with the requirements of ISO 9001:2001 Standard of Belarus.

SEMICONDUCTOR DEVICES FACTORY

• EEPROM with I^2C Bus

Part	Pin to Pin Compatibility	Density, Bit	Voltage Supply,V	Maximum Bus Speed, kHz	Operating Current Read/Write, mA	Standby Current max, μA	Package
IN24AA02AN* (A0,A1,A2 are used) IN24AA02AD* (A0,A1,A2 are used)	24AA02	**2K** (256x8)	1.8 - 5.5	100/400	1.0/3.0	1	DIP-8 SO-8
IN24AA02BN* IN24AA02BD*	24AA02	**2K** (256x8)	1.8 - 5.5	100/400	1.0/3.0	1	DIP-8 SO-8
IN24AA08BN* IN24AA08BD*	24AA08B	**8K** (1024x8)	1.8 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
IN24AA32AN	24AA32A	**32K** (4096x8)	1.8 - 5.5	100/400	0.4/3.0	1	DIP-8
IN24AA32AD							SO-8
IN24AA64N*	24AA64	**64K** (8192x8)	1.7-5.5	100/400	1.0/3.0	1	DIP-8
IN24AA64D*							SO-8
IN24LC02BN IN24LC02BD	24LC02B	**2K** (256x8)	2.5 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
IN24LC02N IN24LC02D	24LC02	**2K** (256x8)	2.5 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
IN24LC04BN IN24LC04BD	24LC04B	**4K** (512x8)	2.5 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
IN24LC08BN IN24LC08BD	24LC08B	**8K** (1024x8)	2.5 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
IN24LC16BN IN24LC16BD	24LC16B	**16K** (2048x8)	2.5 - 5.5	100/400	1.0/3.0	100	DIP-8 SO-8
INA2586N	SDA2586	**8K** (1024x8)	4.75 - 5.25	100	20	-	DIP-8
INF8582EN-2	PCF8582E	**2K** (256x8)	4.5 - 5.5	100	1.6/2.5	10	DIP-8
INF8594EN	PCF8594E-2	**4K** (512x8)	4.5 - 5.5	100	0.2/2.5	10	DIP-8

** Pilot Production*

• EEPROM with 3-wire Bus

Part	Pin to Pin Compatibility	Density, Bit	Voltage Supply, V	Maximum Bus Speed, MHz	Operating Current Read/Write, mA	Standby Current max, μA	Package
IN93AA46AN IN93AA46AD	93AA46A	**1K** (128x8)	1.8 - 5.5	1	0.5/3	5	DIP-8 SO-8
IN93AA46BN IN93AA46BD	93AA46B	**1K** (64x16)	1.8 - 5.5	1	0.5/3	1	DIP-8 SO-8
IN93AA46CN IN93AA46CD	93AA46C	**1K** (128x8 or 64x16)	1.8 - 5.5	1	0.5/3	5 or 1	DIP-8 SO-8
IN93AA56AN IN93AA56AD	93AA56A	**2K** (256x8)	1.8 - 5.5	1	0.5/3	5	DIP-8 SO-8
IN93AA56BN IN93AA56BD	93AA56B	**2K** (128x16)	1.8 - 5.5	1	0.5/3	1	DIP-8 SO-8
IN93AA56CN IN93AA56CD	93AA56C	**2K** (256x8 or 128x16)	1.8 - 5.5	1	0.5/3	5 or 1	DIP-8 SO-8
IN93AA66AN IN93AA66AD	93AA66A	**4K** (512x8)	1.8 - 5.5	1	0.5/3	5	DIP-8 SO-8
IN93AA66BN IN93AA66BD	93AA66B	**4K** (256x16)	1.8 - 5.5	1	0.5/3	1	DIP-8 SO-8
IN93AA66CN IN93AA66CD	93AA66C	**4K** (512x8 or 256x16)	1.8 - 5.5	1	0.5/3	5 or 1	DIP-8 SO-8
IN93AA86AN IN93AA86AD	93AA86A	**16K** (2048x8)	1.8 - 5.5	1	0.5/3	5	DIP-8 SO-8
IN93AA86BN IN93AA86BD	93AA86B	**16K** (1024x16)	1.8 - 5.5	1	0.5/3	1	DIP-8 SO-8
IN93AA86CN IN93AA86CD	93AA86C	**16K** (2048x8 or 1024x16)	1.8 - 5.5	1	0.5/3	5 or 1	DIP-8 SO-8

• EEPROM with SPI bus

Part	Pin to Pin Compatibility	Density, Bit	Clock Frequency, f_{CLK}, MHz, Vcc=4.5-5.5 V	Supply Current, Read/Write, $I_{CCRD/WR}$, mA, Vcc=2.5 V	Standby Current, I_{CCS}, μA, Vcc=2.5 V	Package
IN25AA020N IN25AA020D	25AA020	**2K** (256x8)	3	0.5/3.0	1	DIP-8 SO-8
IN25AA040N IN25AA040D	25AA040	**4K** (512x8)	3	0.5/3.0	1	DIP-8 SO-8
IN25AA080N IN25AA080D	25AA080	**8K** (1024x8)	3	0.5/3.0	1	DIP-8 SO-8
IN25AA160N IN25AA160D	25AA160	**16K** (2048x8)	3	0.5/3.0	1	DIP-8 SO-8

•Single-Chip Microcontrollers

Part	Pin to Pin Compa-tibiliti	Internal memory			Max F, MHz	Supply, V	16 bit timer	I/0 pins	Interrupt sources	Package
		Data	Program							
		RAM/ EEPRAM	ROM	FLASH						
		byte								
IN89C2051DW	89C2051	128 x 8		2Kx8	12	2.7 ÷ 6.0	2	15/15	5	SO-20
IN89C4051DW**	89C4051	128 x 8	-	4Kx8	24	2.7 ÷ 6.0	2	15/15	6	SO-20
IN90S2313DW	90S2313	128 x 8/128 x 8		1Kx16	10	2.7 ÷ 6.0	1(16bit) 1(8bit)	15/15	6	SO-20
IZ7008		40 x 8	1.5K x 8		0.032	1.5 ± 20% 3.0 ± 20%	LCD driver 128 segments			Chip
IZ7010		96 x 4	2K x 12		0.032	1.5 ± 20% 3.0 ± 20%	LCD driver 87 segments			Chip
IZ7012		128 x 8	3Kx16	1Kx16	0.032	2.4 ÷ 5.5	LCD driver 136 segments			Chip
IZ7013		72 x 8	2.5Kx16		0.032	2.4 ÷ 5.5	LCD driver 136 segments			Chip

*** Under Development*

• Display Driver IC

Part	Pin to Pin Compatibility	Supply Voltage, V	LCD Voltage, V	Duty	RAM	ROM	Column Lines	Com-mon Lines	Fre-quency, kHz	Pins (Pads)	Notes
					Bit						
LCD Controllers and Drivers											
INF8577CN (LCD direct/duplex driver)	PCF8577CP	2.5…6.0	2.5…6.0	1/1 1/2	2x32		32	2	100	40	I^2C-bus interface Package:DIP-40
IZ1621 (LCD direct/duplex driver)	HT1621	3…5.0	3-Ucc	1/1 1/2 1/3 1/4	32x4		32	4	256	(48)	
IZ6570AA	NJU6570AA SED1520DAA	2.4…5.5	2.4…13	1/16 1/ 32	80x32		61	16	2	(100)	
IZ6570OA	NJU6570OA SED1520DOA	2.4…5.5	2.4…13	1/16 1/32	80x32		61	16	18	(100)	
IZ6450	NJU6450A	2.4…5.5	3.5…10	1/16 1/32	80x32		61	16	18	(100)	
IZ6451	NJU6451A	2.4…5.5	3.5…10	1/16 1/32	80x32		72	8	18	(100)	
IZ7065	KS0065	2.7…5.5	3…13	1/8 1/16			40		max400	(59)	
IZ7066	KS0066	4.5…5.5	3…13	1/8 1/11 1/16	80x8		40	16	350	(80)	

• LED Driver Circuits

Part	Pin to Pin Compatibility	Function	Package
IL9910N IL9910D IL9910DH IZ9910	HV9910	Universal High Brightness LED Driver	DIP-8 SO-8 SO-16 Chip
IZ9921	HV9921	20mA/50mA Switch-Mode LED Lamp Driver IC	Chip
IZ9922	HV9922		
IZ9923	HV9923		
IL7150N* IL7150D*	AMC7150	Power LED Driver, 1,5 A	DIP-8 SO-8
IZ1937	LT1937	White LED Step-up Converter	Chip

* *Pilot Production*

• Interface Integrated Circuits (Reference Date)

Parameter		IL75232N IL75232DW	IL34C86N IL34C86D	IL34C87N IL34C87D	IN1488N N1488D	IN1489AN IN1489AD	ILX202N ILX202D	ILX207N ILX207DW	ILX208N ILX208D	ILX232N ILX232D	ILX485N ILX485D	ILX3221N	ILX3226N	ILX3232N ILX3232D	ILX3483N	ILX3485N	ILX3486N
ESD Voltage (kV)		0.5	2	2	0.2	0.2	2	2	2	2	4	4	4	4	4	4	4
Power Supply Voltage (V)		±9…±15 for TX 5 for RX	4.5…5.5	4.5…5.5	4.75…5.25	4.75…5.25	4.5…5.5	4.75…5.25	4.5…5.5	4.5…5.5	4.75…5.25	3…5.5	3…5.5	3…5.5	3…3.6	3…3.6	3…3.6
No, of TX/RX		3/5	0/4	4//0	4/0	0/4	2/2	5/3	4/4	2/2	1/1	1/1	1/1	2/2	1/1	1/1	1/1
No, of TX/RX on Bus											32						
Supply Current (mA)		30	22	0.05	20	26	10	20	20	10	0.9	0.001	0.001	1	0.001	0.001	0.001
Stan-dard	RS-232	•			•	•	•	•	•	•		•	•	•			
	RS-485/RS-422										•				•	•	•
	RS-422/RS-423		•	•													
AutoShutdown Plus, AutoShutdown												•	•				
Date Rate (bps)							64K	120K	120K	120K	2.5M	250K	250K	120K	250K	12M	2.5M
External Caps (µF)			4x0.1	4x0.1			4x0.1	4x0.1	4x0.1	4x1.0		4x0.1	4x0.1	4x0.1	-	-	-
Operating Temperature Range (°C)		0 ÷ +75	-40 ÷ +85		-10 ÷ +70		-40 ÷ +85										

• Real Time Clock

Part	Pin to Pin Compatibility	Function	Package
Digital timers			
IN1307N IN1307D	DS1307N/ZN	64 x 8 Serial Real Time Clock	DIP-8 SO-8
IN1356D	M41T56	512 bit (64 bit x 8) Serial Access Timekeeper SRAM	SO-8
IN1363D	PCF8563	Real Time Clock / Calendar	SO-8
INA8583N	PCF8583P	Clock Calendar with 256x8 Bit Static RAM with I^2C Bus	DIP-8
IZ1325*	RX8025	Real Time Clock / Calendar with I^2C Bus	Chip

** Pilot Production*

• Real Time Clock (Reference Date)

Parameter		Symbol	IN1307N/D	IN1356D	IN1363D	INA8583N
Supply Voltage, Ucc		V	4.5….5.5	4.5….5.5	1.8….5.5	2.5….6.0
Battery Supply Voltage, VBAT		V	2.0….3.5	2.5….3.5		
Standby Current, Iccs (max)		µA	200	100 (typ)	0.55	50
Active Supply Current, IccA, (max)		µA	1500	300	800	200
Battery Current, IBAT1 (max)		nA	500	550		
Clock Frequency, fscl (max)		kHz	100	100	400	100
Programmable Signal		Hz	1; 4096; 8192; 32768	512	1; 32; 1024; 32768	32; 1024; 32768
Operating Temperature, TA		°C	- 40 ÷ + 85			- 20 ÷ + 70
Functions	clock	seconds	●	●	●	●
		minutes	●	●	●	●
		hours	●	●	●	●
		alarm			●	●
	calendar	weekday	●	●	●	●
		date of the month	●	●	●	●
		month	●	●	●	●
		years	●	●	●	●
		century		●		
	programmable alarm, timer and interrupt function				●	●
	software clock calibration			●		●
	automatic power-fail detect and switch circuitry		●	●		
	interface		I²C	I²C	I²C	I²C

• Vision and Sound IF Demodulation IC

Part	Pin to Pin Compatibility	Function	Features	Package
ILA8842NS ILA8844NS	TDA8842 TDA8844	I2C BUS Controlled PAL/NTSC/Secam TV processor	□ Vcc=7.2...8.8 V □ Icc=110 mA □ Vision IF circuit with PLL demodulator □ Nigament-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz) □ Audio switch □ Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied □ Vertical count-down circuit □ Low power dissipation 850 mW	SDIP-56
ILA8362ANS ILA8362BNS ILA8362NS	TDA8362A TDA8362B TDA8362	Multistandard TV Processor	□ Vcc=7.2…8.8 V □ Icc ≤ 120 mA □ Multistandard vision IF circuit (positive and negative modulation) □ Multistandard FM sound demodulator (4.5…6.5 MHz) □ PAL/NTSC colour decoder with automatic search system □ RGB control circuit with lines RGB inputs and fast blanking □ Horizontal synchronization with two control loops and alignment free horizontal oscillator □ Vertical count-down circuit and vertical preamplifier □ Low power dissipation 600 mW	SDIP-52
ILA8890H** ILA8891H**	TDA8890H TDA8891H	TV Processor	□ Ucc=5.0 ± 0.3 V □ Icc ≤ 100 mA □ Video signal and sound IF processing □ Line and frame synchronization (for ILA8891H) □ Decoding of signals of color TV systems PAL, NTSC, SECAM (for ILA8891H) □ RGB signal processing □ Delay of signal by one line duration (for ILA8891H) □ Y signal conditioner in output signal PrPb bus for "picture in picture" function (for ILA8891H) □ Separate IF sound input □ Input sound signal switchboard system with seven broadband stereo inputs	QFP-80

*** Under Development*

• Video Amplifiers

Part	Pin to Pin Compatibility	Function	Features	Package
ILA6107Q	TDA6107Q	Triple Video Output Amplifier	□ Single supply voltage of 200 V □ Internal reference voltage of 2.5 V □ High slew rate of 900V/μs □ Bandwidth of 5.0MHz typical for output signal of 60 V (peak-to-peak value)	DBS 9MPF

• EEPROM with I²C Bus

Part	Pin to Pin Compatibility	Function	Features	Package
IN24LC08BN IN24LC08BD	24LC08B	1024x8-Bit CMOS	□ f_{CLK}=100/400 kHz □ Operating Current max, mA 1.0/3.0 □ Standby Current max, mA 0.1 □ Vcc=2.5…5.5 V	DIP-8 SO-8
IN24LC16BN IN24LC16BD	24LC16B	2048x8 -Bit CMOS	□ f_{CLK}=100/400 kHz □ Operating Current max, mA 1.0/3.0 □ Standby Current max, mA 0.1	DIP-8 SO-8
IN24AA08BN* IN24AA08BD*	24AA08B	1024x8-Bit CMOS	□ f_{CLK}=100/400 kHz □ Operating Current max, mA 1.0/3.0 □ Standby Current max, mA 0.1 □ Vcc=1.8…5.5 V	DIP-8 SO-8
IN24AA32AN IN24AA32AD	24AA32A	4096x8 -Bit CMOS	□ f_{CLK}=100/400 kHz □ Operating Current max, mA 0.4/3.0 □ Standby Current max, μA 1.0	DIP-8 SO-8
INF8582EN-2	PCF8582E	256x8-Bit Static CMOS EEPROM, I²C Bus Interface	□ Vcc=4.5…5.5 V □ Icc ≤ 1.6 mA □ Serial I/O bus □ Internal timer for writing □ Minimum of 10^5 write/erase cycles	DIP-8
INF8594EN	PCF8594E	512x8 CMOS EEPROM, I²C Bus Interface	□ Vcc=4.5…5.5 V □ Icc max active 2.5 mA standby 10 μA □ Internal timer for writing □ Minimum of 10^5 write/erase cycles	DIP-8

** Pilot Production*

• Vertical Deflection Circuits

Part	Pin to Pin Compatibility	Function	Features	Package
ILA3654 ILA3654Q	TDA3654Q	Vertical Deflection and Guard Circuit (110°)	□ Vcc=20…30 V □ Direct drive to the deflection coils □ 90° and 110° deflection system □ Internal voltage stabilizer	SIL-9P DBS-9P
ILA8351	TDA8351	Vertical Deflection and Guard Amplifier	□ 90° and 110° deflection system with line unrolling frequency from 50 to 120 Hz □ Operated by direct current output cascade of vertical deflection □ Vertical fiyback switch □ Output current 1.5 A	SIL-9P
ILA8356	TDA8356	Vertical Deflection and Guard Amplifier	□ 90° and 110° deflection system with line unrolling frequency from 50 to 120 Hz □ Operated by direct current output cascade of vertical deflection □ Vertical flyback switch □ Output current 2.0 A	SIL-9P
ILA8357 ILA8359	TDA8357 TDA8359	Full bridge vertical defection output circuit	□ 90° and 110° colour deflection system for 25 to 200 Hz field frequency □ 4:3 and 16:9 picture tubes □ Operated by direct current output cascade of vertical deflection □ Vertical fiyback switch □ Built in guard circuit □ Thermal protection circuit □ Output current 2.0 A (ILA8357) □ Output current 3.2 A (ILA8359)	SOT523-1

• IC for Remote Control Systems

Part	Pin to Pin Compatibility	Function	Features	Package
ILOP1836 ILOP1838	TSOP1836 TSOP1838	Photo Module for PCM Remote Control Systems	□ Vcc=4.5…5.5 V □ Carrier frequency 36/38 kHz □ Photo detector and preamplifier in one package □ Internal filter for PCM frequency □ TTL and CMOS compatibility	SIL-3P
ILOP1836SS ILOP1838SS	TSOP1836SS TSOP1838SS	Photo Module for PCM Remote Control Systems	□ Vcc=3.0…6.0 V □ Carrier frequency 36/38 kHz □ Photo detector and preamplifier in one package □ Internal filter for PCM frequency □ TTL and CMOS compatibility	SIL-3P
INA3010N INA3010DW	SAA3010	Infrared Remote Control Transmitter (RC-5)	□ Vcc=2.0…7.0 V □ Icc ≤ 10 μA □ IC can generate 2048 different commands	DIP-28 SO-28

• Power Supply IC

Part	Pin to Pin Compatibility	Function	Features	Package
ILA8133A	TDA8133A	5.1 V + 8 V Regulator with Disable and Reset	□ Output currents up to 0.75 A □ Fixed precision output 1 voltage 5.1 V±2% □ Fixed precision output 2 voltage 8 V±2% □ Output 1 with reset facility □ Output 2 with disable by TTL input □ Short circuit protection at both outputs □ Thermal protection □ Low drop output voltage	TO-220 AB/7
ILA8138A	TDA8138A	Dual 5.1 V + 12 V Regulator with Disable and Reset	□ Output currents up to 1 A □ Fixed precision output 1 voltage 5.1 V±2% □ Fixed precision output 2 voltage 12 V±2% □ Output 1 with reset facility □ Output 2 with disable by TTL input □ Short circuit protection at both outputs □ Thermal protection □ Low drop output voltage	TO-220 AB/7
IL44608N40 IL44608N75 IL44608N100	MC44608P40 MC44608P75 MC44608P100	SMPS Controller	□ Integrated Start-Up Source □ Lossless Off-Line Start-Up □ Direct Off-Line Operation □ Fast Start-Up □ Flexibility □ Duty Cycle Control □ Undervoltage Lockout with Hysteresis □ On Chip Oscillator Switching Frequency 40, 75, 100 kHz □ Secondary Control with Few External Components	DIP-8

• SAW Filters for TV

Part	Pin to Pin Compatibility	Function	Features	Package
РБ1ФПА2955	К2955М	SAW IF Filter for Intercarrier Applications	f=38.9 MHz	SIP-5
РБ1ФПА3958 РБ1ФПА9356 РБ1ФПА9650 РБ1ФПА3953	К3958М К9356М К9650М К3953М	IF Filter for Video Application	f=38.9 MHz f=38.9 MHz f=33.90/38.90 MHz f=33.90/38.90 MHz	SIP-5

• IC for Audio Systems

Part	Pin to Pin Compatibility	Function	Features	Package
IL34119N IL34119D	MC34119	0.25 W Low Power Mono Audio Amplifier	□ Vcc=2…16 V □ Low Quiescent Supply Current for Battery Powered Applications □ Chip Disable Input to Power Down the IC □ Drives a Wide Range of Speaker Loads (8-100 Ω) □ Output Power Exceed 250 mW with 32 Ω Speaker □ Gain Adjustable from 0 dB to 46 dB for Voice Band □ Requires Few External Components	DIP-8 SO-8
IL386N IL386D	LM386	1 W Low Power Mono Audio Amplifier	□ Vcc=4…12 V □ Battery Operation □ Low Quiescent Current Drain: 4 mA □ Voltage Gains from 20 to 200 dB □ Ground Referenced Input □ Self-Centering Output Quiescent Voltage □ Low Distortion	DIP-8 SO-8
ILA1519B1 ILA1519B1Q	TDA1519B	2 x 6 W Stereo Power Amplifier	□ Few external components □ Fixed gain □ Good ripple rejection □ Mute/stand-by switch □ Thermally protected □ Protected against electrostatic discharge	SIL-9P DBS-9P
ILA2003	TDA2003	10 W Audio Amplifier	□ Vcc=8…18 V □ Low number of external components □ High peak output current (up to 3.5 A) □ DC and AC short protection circuit	P-TO-220-5-11
ILA7056	TDA7056	3 W BTL Mono Audio Output Amplifier	□ Vcc=3…18 V □ DC volume control □ Few external components □ Mute mode □ Thermal protection □ Short-circuit proof □ Low power consumption	SIL-9MPF
ILA7056B	TDA7056B	5 W Mono BTL Audio Amplifier with DC Volume Control	□ Vcc=4.5…18 V □ DC volume control □ Few external components □ Mute mode □ Thermal protection □ Short-circuit proof □ No switch-on and of clicks □ Low HF radiation □ Low power consumption	SIL-9MPF
ILA7496Q	TDA7496Q	2 x 5 W Stereo Power Amplifier with linear volume adjustment	□ Vcc=11…35 V □ DC volume control □ Few external components	SIL-15P

• IC for Audio Systems (continued)

Part	Pin to Pin Compatibility	Function	Features	Package
ILA1308T**	TDA1308T	2 x 0.075 W Class AB Stereo Audio Amplifier	□ Vcc=3.0…7.0 V □ Wide temperature range □ Excellent power supply ripple rejection □ Low power consumption □ Short-circuit resistant □ High performance – high signal-to-noise ratio – high slew rate – low distortion □ Large output voltage swing	SO-8

** *Under Development*

• IC for Audio Systems (Reference Data)

IC's Class	Part	Pin to Pin Compatibility	Supply Voltage, V	Maximum Power, W	Gain, dB	Load resistance, Ω	Package
Low Power	IL34119N, D Mono	MC34119	2...16	0.25	80	8; 16; 32	DIP-8, SO-8
	IL386N, D Mono	LM386	4.0...12.0	1.0	26…42	8.0 (4.0; 16)	DIP-8, SO-8
	ILA7050N Mono/Stereo BTL	TDA7050	1.6...6.0	1 x 0.140 2 x 0.075	32 (mono) 26 (stereo)	32 (16; 64)	DIP-8
	ILA7052N Mono	TDA7052	3.0...18.0	1.2	38…40	8.0	DIP-8
	ILA7053N Stereo BTL	TDA7053	3.0...18.0	2 x1.0	38…40	8.0 (16; 25)	DIP-16
	ILA1308T** Class AB, Stereo	TDA1308T	3.0...7.0	2 x 0.075	70	8;16; 32; 5K	SO-8
Middle Power	ILA7056 Mono	TDA7056	3.0...18.0	3	39…42	16.0	SIL-9MPF
	ILA7056B Mono with DC Control	TDA7056B	4.5...18.0	5.0	39.5…41.5	16.0	SIL-9MPF
Large Power	ILA1519B1,B1Q Mono/Stereo	TDA1519B	6.0...18.0	12 (mono) 2 x 6 (stereo)	45…47 (mono) 39…41 (stereo)	4.0 8.0	SIL-9P DBS-9P
	ILA2003 Mono	TDA2003	8...18	10	39.3...40.3	2.0; 4.0	P-TO-220-5-11
	ILA7496Q Stereo with Linear Volume Adjustment	TDA7496Q	10…32	2x5	28.5…31.5	8.0	SIL-15P

** *Under Development*

• Switches and DTMF Receivers

Part	Pin to Pin Compatibility	Function	Features	Package
К561КП6	КТ8592	4x4 Crosspoint Switch with Control Memory	□ Vcc=5.0…15.0 V □ Icc max=20 mA (Vcc=15.0 V) □ Low of resistance (Typ: 75 Ω at Vcc=12 V) □ Internal control latches □ 2Vcc analog signal capability	DIP-16
IL9170N IL9170DW	HM9170	DTMF Receiver	□ Vcc=2.5…5.5 V □ Icc max=9.0 mA □ Power consumption 15 mW □ Quartz generator 3.58 MHz □ Decoding of 16 DTMF tones-pairs □ 4-bit parallel output □ PWDN	DIP-18 SO-18
IL567N IL567D	LM567	Tone Decoder	□ 20 to 1 frequency range with an external resistor □ Logic compatible output with 100 mA current sinking capability □ Bandwidth adjustable from 0 to 14% □ High rejection of out of band signals and noise □ Immunity to false signals □ Highly stable center frequency □ Center frequency adjustable from 0.01 Hz to 500 kHz	DIP-8 SO-8
IL9200N IL9200D	HM9200	DTMF generators	□ Vcc=2.5…5.5 V □ Low standby current □ Low total distortion 3.58 MHz crystal or ceramic resonator	DIP-8 SO-8

• Pulse and Tone/Pulse Dialers

Part	Pin to Pin Compatibility	Function	Features	Package
IL5851N	KS5851	Pulse Dialer with Redial	□ Vcc=2.0…6.0 V □ Icc max=150 μA □ Generator frequency 2.4 kHz □ Output frequency 10/20 Hz □ 32-digit redial memory (31 digits in tone mode) □ Selectable Make/Break ratio □ Inter digital pause 800 ms	DIP-18
IL9151-3N	UM9151-3	Pulse Dialer	□ Vcc=2.0…5.5 V □ Direct telephone line operation □ 4x3 matrix keyboard interface □ 22-digit redial memory □ Selectable Make/Break ratio □ Inter digital Pause 800 ms □ High speed test capacity	DIP-16
IL91531N	UM91531	Parallel Input Tone/Pulse Dialer	□ Vcc=2.5…5.5 V □ Quartz generator 3.58 MHz □ Output signal: pulse 10 Hz or DTMF □ 4-bit parallel data input from microcomputer □ Selectable Make/Break ratio □ Inter digital pause 800 ms	DIP-16

• Pulse and Tone/Pulse Dialers (continued)

Part	Pin to Pin Compatibility	Function	Features	Package
IL91214AN IL91214AD IL91214BN IL91214BDW	UMS91214A UMS91214B	Tone/Pulse Dialer with Handfree Control and Flash Function	□ Vcc=2.0…5.5 V □ Quartz generator 3.58 MHz □ 32-digit redial memory □ Tone/Pulse switchable □ Output signal: pulse 10 Hz(20Hz) or DTMF □ Flash Function □ 4x4 keyboard □ 09 - mode output pin (IL91214BN/BDW) □ 10 – key in tone output (IL91214BN/BDW)	DIP-16 SO-16 DIP-18 SO-18

• Switching Lines IC

Part	Pin to Pin Compatibility	Function	Features	Package
IL145567N IL145567DW	MC145567	PCM Codec with Filter	□ Fully Differential Analog Circuit Design for Lowest Noise □ Performance Specified for Extended Temperature Range of –40 to +85^{0}C □ Transmit Band- Pass and Receive Low-Pass Filters On-Chip □ Active R-C Pre-Filtering and Post- Filtering □ On-Chip Precision Voltage Reference (2.5 V) □ Typical Power Dissipation of 40 mW, power Down of 1.0 mW at ±5 V □ Push-Pull Power Drivers with External Gain Adjust □ Analog Loopback	DIP-20 SO-20
IL145557DW	MC145557	PCM Codec with Filter	□ Fully Differential Analog Circuit Design for Lowest Noise □ Performance Specified for Extended Temperature Range of –40 to +85^{0}C □ Transmit Band- Pass and Receive Low-Pass Filters On-Chip □ Active R-C Pre-Filtering and Post- Filtering □ On-Chip Precision Voltage Reference (2.5 V) □ Typical Power Dissipation of 40 mW, power Down of 1.0 mW at ±5 V	SO-16
ILF3866N	TFF3866	Subscriber Line Interface Circuit (SLIC)	□ Vcc=-5 V; +5 V □ $I_{RINBRLY}$=30 mA □ Battery feed characteristics programmable via external resistor □ Feed characteristics independent of supply voltage variations □ Integrated ring relay driver □ Internal ring relay disconnection for ring trip □ Loop current, ground key and ring trip detection functions □ Programmable detector threshold of loop current □ Hybrid function in connection with CODEC / FILTER □ Programmable line terminating impedance, complex or real □ On hook transmission □ High longitudinal balance specification □ Tip - ring open circuit state for subscriber loop power denial	DIP-22

• Single Chip Telephone IC

Part	Pin to Pin Compatibility	Function	Features	Package
IL2533N IL2533DW	AS2533	Multi-Standart CMOS Single Chip Telephone IC with Dual Soft Clipping	□ Line/speech circuit, LD/MF repertory dialler and tone ringer on one 28 pin CMOS chip □ Operating range from 13 to 100 mA (down to 5mA with reduced performance) □ Soft clipping to avoid harsh distortion □ Volume control of receive signal □ Line loss compensation selectable by pin option □ Low noise (max. - 72 dBmp) □ Real or complex impedance □ NET 4 compatible. □ LD/MF switchable dialling □ Pacifier tone during programming □ 31 digit last number redial □ Sliding cursor protocol with comparison □ Pause key for access pause or wait function □ 3 flash keys, 100 ms, 280 ms and 375/600 ms □ On chip MF filter (CEPT CS 203 compatible) □ Ring frequency discrimination □ 3-tone melody generator □ Oscillator Frequency (Resonator: Murata CSA 3.58MG312AM)-3.58 MHz □ 4x4…4x8 Keyboard	DIP-28 SO-28

• Speaker Integrated Circuits

Part	Pin to Pin Compatibility	Function	Features	Package
IL34118N IL34118DW	MC34118	Voice Switched Speakerphone Circuit	□ Ucc=3.0…6.5 V □ Icc=5.0 mA □ Improved Attenuator Gain Range: 52 dB Between Transmit and Receive □ Low Voltage Operation for Line-Powered Applications (3.0-6.5 V) □ 4-Point Signal Sensing for Improved Sensitivity □ Background Noise Monitors for Both Transmit and Receive Paths □ Microphone Amplifier Gain Set by External Resistors – Mute Function Included □ Chip Disable for Active/Standby Operation □ On Board Filter Pinned-Out for User Defined Function □ Dial Tone Detector to Inhibit Receive Idle Mode During Dial Tone Presence □ Standard 28-Pin Plastic Dip Package and SOIC Package Available □ Compatible with IL34119 Speaker Amplifier	DIP-28 SO-28
IL34119N IL34119D (IL8602N, IL8602D)	MC34119 (KA8602)	Telephone Audio Amplifier	□ Vcc=2.0…16.0 V □ Icc=2.7 mA □ Drives a wide range of speaker loads (8…100 Ω) □ Output power exceeds 250 mW with 32 Ω Speaker □ Low total harmonic distortion □ Gain adjustable 0…46 dB for voice band □ Requires few external components	DIP-8 SO-8

• Speaker Integrated Circuits (continued)

Part	Pin to Pin Compatibility	Function	Features	Package
IL3726/18N IL3726/18DW	PBL3726/18	Speaker Integrated Circuit	□ V_{LN}=3.3…4.1 V (I_L=15 mA) □ V_{LN}=11.0… 15.0 V (I_L=100mA) □ 7 Capacitors & Resistors □ Low Voltage Operating □ DTMF signal input with confidence tone □ Mute input for DTMF dialing □ Line loss compensation (line current dependent) for microphone and earpiece amplifiers □ Gain control curve adaptable to exchange supply □ DC line voltage adjustment facility	DIP-18 SO-20 SO-18
ILA1062AN ILA1062AD ILA1062N ILA1062D	TEA1062A TEA1062	Low Voltage Transmission Circuit with Dialer Interface	□ Low DC line voltage; operates down to 1.6 V □ Line operation current range 10…140 mA □ Icc ≤1.35 mA □ Voltage gain range: microphone amplifier 11…52 dB telephone amplifier 20…31 dB □ Voltage regulator with adjustable static resistance □ Provides supply for external circuits □ Symmetrical high-impedance inputs □ (64 kΩ) for dynamic, magnetic or piezoelectric microphones □ Asymmetrical high-impedance inputs (32 kΩ) for electret microphones □ DTMF signal input with confidence tone □ Mute input for pulse or DTMF dialing □ Receiving amplifier for dynamic, magnetic or piezoelectric earpieces □ Large gain setting range on microphone and earpiece amplifiers	DIP-16 SO-16 DIP-16 SO-16

• Tone Telephone Ringers

Part	Pin to Pin Compatibility	Function	Features	Package
IL2410N IL2411N IL2410D IL2411D	KA2410 KA2411 KA2410 KA2411	Two-Tone Telephone Ringer	□ Vcc=13…29 V □ Icc=1.4…4.2 mA □ Activation voltage 17…21 V □ Sustaining voltage 9.7…12 V □ Adjusted 2-frequency tone □ Built-in hysteresis prevents false triggering and rotary dial “Chirps” □ External Triggering or Ringer Disable	DIP-8 SO-8
IL2418N IL2418D	KA2418	Two-Tone Telephone Ringer with Diode Bridge	□ Vcc=26 V □ Icc max=1.8 mA □ Activation voltage 12.2…13 V □ Sustaining voltage 8.0…8.8 V □ Internal Zener diodes to protect against over voltages □ High noise immunity due to built-in voltage-current hysteresis □ Ringer impedance adjustable with external components □ Output F_1=2100…2550 Hz F_2=1500…1850 Hz	DIP-8 SO-8

• IC for Smart Cards

Part	Pin to Pin Compatibility	Function	Features	Pads
IZE4406C	SLE4406C	IC for Prepaid Cards	□ Vcc=4.5...5.5 V □ 104x1 bit organization □ 3 memory areas with special characteristics (ROM, PROM, EEPROM) □ Maximum of 20480 count units □ Special security features □ Minimum of 100000 write/erase cycles □ Data retention for minimum of 10 years □ Contact configuration and serial interface in accordance to ISO standard 7816-3	5
IZE4428	SLE4428	Intelligent 1024 byte EEPROM with write protect function & security logic	□ EEPROM 1024 byte □ Security code (working as transport code during delivery) □ Byte protection □ Write/ Erase time (min)2.5 ms □ Supply Voltage, 5V □ Ambient temperature, 0 … + 70°C □ Retention time, 5years □ Health insurance card □ Access control □ Electronic tickets	5
IZE4442	SLE4442	Intelligent 256 byte EEPROM with write protect function & security logic	□ EEPROM 256 byte □ Security code (working as transport code during delivery) □ Byte protection □ Write/ Erase time (min) 2.5 ms □ Supply Voltage, 5V □ Ambient temperature, 0 … + 70°C □ Retention time, 5 years □ Health insurance card □ Access control □ Electronic tickets	5
IZ2814	MC2814	IC for Prepaid Cards	□ Internally Organized Memory 256 x 8 □ Two-wire Serial Interface □ Bidirectional Data Transfer Protocol □ Byte Write Modes □ 8-byte Page Write Modes □ Write Protection Memory □ Self-timed Write/Erase Cycle (20 ms max) □ Endurance: 100000 Cycles □ Data Retention: 10 years □ On-chip Charge Pump for Programming □ Answer to Reset □ Operation Range from -40°C to +70°C	5
IZ2814A		IC for Prepaid Cards	□ Internally Organized Memory 64 x 8 □ Two-wire Serial Interface □ Bidirectional Data Transfer Protocol □ Byte Write Modes □ 2-byte Page Write Modes □ Write Protection Memory □ Self-timed Write/Erase Cycle (20 ms max) □ Endurance: 100000 Cycles □ Data Retention: 10 years □ On-chip Charge Pump for Programming □ Answer to Reset □ Operation Range from -40°C to +70°C	5

• IC for Smart Cards (continued)

Part	Pin to Pin Compatibility	Function	Features	Pads
IZ2815A-03	SLE4436E	IC for Prepaid Cards	□ Vcc=4.5...5.5 V □ Icc=5 mA □ 221-bit EEPROM and 16 bit mask-programmable ROM □ 104 bit user memory fully compatible with IZ4406: - 64 bit identification area - 40 bit counter area including 1 bit for personalization □ 133 bit additional memory for advanced features - 4 bit counter backup (anti-tearing flags) - 1 bit initiation flag for authentication key 2 - 16 bit data area 1 for free user access - 48 bit authentication key 1 - either 64 bit data area 1 for user defined data or 48 bit authentication key 2 □ EEPROM programming time 5 ms □ Endurance minimum of 100000 write/erase cycles per bit □ Data retention for minimum of 10 years □ Contact configuration and serial interface in accordance to ISO standard 7816-3	5

• IC for Systems of Identification

Part	Pin to Pin Compatibility	Function	Features	Pads
IZ2802A	H4102, H4100	Read Only Contactless Identification Device	□ fcoil = 100…150 kHz □ Cres = 490 pF □ ROM 64 bit	4
IZ2817*	SL2ICS20	Contactless Identification Device	□ fcoil = 13.56 MHz □ Cres = 23.5 pF □ EEROM 1024 bit □ Data retention of 10 years □ ISO 15693	2
IZ2822	MF0ICU11	Read/Write Contactless Identification Device	□ fcoil = 13.56 MHz □ Cres =50 pF □ EEROM 512 bit, organized in 16 pages with 4 bytes each □ Data retention of 10 years □ Write endurance 100000 cycles	4
IZ2823-5	MF1ICS50	Read/Write Contactless Identification Device	□ fcoil = 13.56 MHz □ Cres = 100 pF □ EEROM 1 Kbyte, organized in 16 sectors with 4 blocks of 16 bytes each □ Data retention of 10 years □ Write endurance 100000 cycles	4
IZ1990	DS1990A	IC for automatic identification with 1-Wire protocol	□ Unique 64-bit registration Number □ Built-In Multidrop Controller for 1-Wire Net □ Digital identification by momentary Contact □ Economically Communicates to Bus Master with a Single Digital Signal at 16.3 kbps □ Operating temperature range: -40°C to +85°C	
IZ1991	DS1991	Multikey IC with 1-Wire protocol	□ Unique 64-bit registration Number □ 1 152-bit secure read/write memory □ Secure memory cannot be deciphered without matching 64-bit password □ Memory is partitioned into 3 blocks of 384 bits each □ 64-bit password and ID field for each memory block □ 512-bit scratchpad ensures data transfer integrity □ Economically Communicates to Bus Master with a Single Digital Signal at 16.3 kbps □ Operating temperature range: -40°C to +70°C	2

** Pilot Production*

IC for Control and Power Electronics

Part	Pin to Pin Compatibility	Function	Package
IZ4206	TLE4206G	1 A DC Motor Driver for Serve Driver Applications	Chip
IL33035N IL33035DW	MC33035	Brushless DC Motor Controller	DIP-24 SO-24
IL33153PN	MC33153P	Single IGBT Gate Driver	DIP-8
IL9010N IL9010D	TDA1185A with build-in comparator	Triac Phase Angle Controller	DIP-14 SO-14
IL2010BN IL2010BD	U2010B	Triac Phase Angle Controller	DIP-16 SO-16
ILA1185AN ILA1185AAN ILA1185AD	TDA1185A	Triac Phase Angle Controller (ILA1185AAN - T_A=-45...+85°C)	DIP-14 DIP-14 SO-14
IL33091AN IL33091AD	MC33091A	High-Side MOS Driver	DIP-8 SO-8
IL33262N IL33262D	MC33262	Power Factor Controller (T_A= -40...+105°C)	DIP-8 SO-8
IL34262N IL34262D	MC34262	Power Factor Controller	DIP-8 SO-8
ILA3354N	TFA3354	IC for Electronic Ballast's	DIP-8
IL7101N IL7101AN IL7101D	GL7101	Earth Leakage Current Detector (U_T= 4..9 mV for AN) (U_T= 9..18 mV for N/D)	DIP-8 DIP-8 SO-8
IL4145AN	RV4145A	Low Power Ground Fault Interrupter	DIP-8
ILN2003AN	ULN2003A	High-Voltage High-Current Darlington Transistor Arrays	DIP-16
ILN2004AN ILN2004AD	ULN2004A	High-Voltage High-Current Darlington Transistor Arrays	DIP-16 SO-16
ILN62083N ILN62083D	TD62083AFN	8CH Darlington Sink Driver	DIP-18 SO-18
ILN62084N ILN62084D	TD62084AFN		DIP-18 SO-18
ILN62783N ILN62783D	TD62783AFN		DIP-18 SO-18
ILN62784N ILN62784D	TD62784AFN		DIP-18 SO-18
IZ6B595	TPIC6B595	Power logic 8-bit shift register for control of relays solenoids and other medium current or high voltage loads	Chip

Part	Topr (°C)	I_{OUT} (max) (mA)	V_{CE} (max) (V)	I_{IN} (max) (mA)	V_{IN} (max) (V)	V_F /V_R (max) (V/V)	Designation	Package
7CH High-Voltage Drivers								
ILN2003AN	- 20 ÷ +85	500	50	1.35	30	2/50	TTL, 5V CMOS	DIP-16
ILN2004AN ILN2004AD	- 20 ÷ +85	500	50	1.35	30	2/50	6 ~ 15V PMOS, CMOS	DIP-16 SO-16
8CH High-Voltage Drivers								
ILN62083N ILN62083D	- 40 ÷ +85	500	50	1.35	30	2/50	TTL, 5V CMOS	DIP-18 SO-18
ILN62084N ILN62084D	- 40 ÷ +85	500	50	0.50	30	2/50	6 ~ 15V PMOS, CMOS	DIP-18 SO-18
ILN62783N ILN62783D	- 40 ÷ +85	-500	50	0.26	30	2/50	TTL, 5V CMOS	DIP-18 SO-18
ILN62784N ILN62784D	- 40 ÷ +85	-500	50	0.13	30	2/50	6 ~ 15V PMOS, CMOS	DIP-18 SO-18
8-bit shift register								
IZ6B595	- 40 ÷ +125	-500	50	1 μA	7	1/50		DIP-8

• Automotive

Part	Pin to Pin Compatibility	Function	Package
IL33193N IL33193D	MC33193	Automotive Direction Indicator R_S=20 mΩ, F_n=2.2, Duty Cycle (Normal Operation) 45÷55%, Duty Cycle (One 21 W Lamp Defect) 35÷45%, Defect Lamp Detector Threshold 42.5÷56 mV, R_{SS}=220 Ω	DIP-8 SO-8
IL33193N-01 IL33193D-01		Automotive Direction Indicator R_S=30mΩ, F_n=2.5, Duty Cycle (Normal Operation) 45÷55%, Duty Cycle (One 21 W Lamp Defect) 35÷45%, Defect Lamp Detector Threshold 75÷95 mV, R_{SS}=220 Ω	DIP-8 SO-8
IL33193N-02 IL33193D-02		Automotive Direction Indicator R_S=30 mΩ, F_n=2.5, Duty Cycle (Normal Operation) 45÷60%, Duty Cycle (One 21 W Lamp Defect) 40÷60%, Defect Lamp Detector Threshold 75÷95 mV, R_{SS}=470 Ω	DIP-8 SO-8
IL33193N-03 IL33193D-03		Automotive Direction Indicator R_S=30 mΩ, F_n=2.5, Duty Cycle (Normal Operation) 45÷55%, Duty Cycle (One 21 W Lamp Defect) 35÷45%, Defect Lamp Detector Threshold 75÷95 mV, R_{SS}=220 Ω, Short Circuit Detector Threshold	DIP-8 SO-8
IL33197AN IL33197AD	MC33197A	Automotive Wash Wiper Timer Output Clamp Voltage (I_{out}=20 mA) 19.5÷22 V, Internally incorporated Zener diode 20 V	DIP-8 SO-8
IL33197AN-01 IL33197AD-01		Automotive Wash Wiper Timer Output Clamp Voltage (I_{out}=20mA) 27÷32V, Internally incorporated Zener diode 30V	DIP-8 SO-8
IL6083N IL6083N-01	U6083B	Power Control With Interference Suppression (for N-01: Duty cycle 10… 100%, V_{S1}=24.5…28.0 V, V_{S2}=18.5…22.0 V, V_{Batt1}=16.7…21.0 V (switched on), V_{Batt1}=18.3…22.5 V (switched off), V_{TS}=10.1…10.7 V, I_S=5…17 mA)	DIP-8
IN9014N		For light control relay IC	DIP-8
IL8190N IL8190DW	CS8190ENF16 CS8190EDWF20	Precision Air-Core Tach/Speedo Driver with Return to Zero	DIP-16 SO-20
IL33290AD	MC33290	ISO K Line Serial Link Interface	SO-8
ILA82C251D	PCA82C251T	CAN transceiver for 24 V systems	SO-8
IL33091AN IL33091AD	MC33091A	High-Side MOS Driver	DIP-8 SO-8
IL1815N IL1815D	LM1815M	Adaptive Variable Reluctance Sensor Amplifier	DIP-14 SO-14
IL1055DW		Two-channel ignition controller	SO-16
ILE4250G**	TLE4250G□	Low-Drop Voltage Tracker (2÷36 V); 50 mA: Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
ILE4260 ILE4260-2	TLE4260	Low-Drop Voltage Regulator 5 V; 500 mA; Reverse Polarity Protection	P-TO-220-5-12
ILE4264G IZE4264-2	TLE4264G TLE4264-2G	Low-Drop Voltage Regulator 5 V; 100 mA; Reverse Polarity Protection	P-SOT223-4-1 Chip
ILE4266G IZE4266-2	TLE4266G TLE4266-2G	Low-Drop Voltage Regulator 5 V; 100 mA; Reverse Polarity Protection	P-SOT223-4-2 Chip
ILE4267G ILE4267S	TLE4267G TLE4267S	Low-Drop Voltage Regulator 5 V; 400 mA; Reverse Polarity Protection	P-TO-220-7-180 P-TO-220-7-230
ILE4268GDW	TLE4268G	Low-Drop Voltage Regulator 5 V; 150 mA; Reverse Polarity Protection	P-DSO-20-6
ILE4270G ILE4270S ILE4270Q IL4270	TLE4270G TLE4270S	Low-Drop Voltage Regulator 5 V; 550 mA; Reverse Polarity Protection IL4270 - without “RESET”	P-TO-263-5-1 P-TO-220-5-12 P-TO-220-5-11 TO-220AB/3
ILE4271G ILE4271S	TLE4271G TLE4271S	Low-Drop Voltage Regulator 5 V; 550 mA; Reverse Polarity Protection	P-TO-220-7-180 P-TO-220-7-230
ILE4274**	TLE4274□	Low-Drop Voltage Regulator 5 V/8.5 V/10 V; 400 mA: Reverse Polarity Protection	TO-220AB/3

*** Under Development*

• Automotive (continued)

Part	Pin to Pin Compatibility	Function	Package
ILE4275G**	TLE4275G□	Low-Drop Voltage regulator 5 V; 400 mA: Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
ILE4276G**	TLE4276□	Low-Drop Voltage Regulator 5 V/8.5 V/10 V; 400 mA: Reverse Polarity Protection	P-TO-263-5-1 TO-220AB/5
IZE4278	TLE4278	Low-Drop Voltage Regulator 5 V; 150 mA: Reverse Polarity Protection	Chip
IZ4206	TLE4206G	1 A DC Motor Driver for Serve Driver Applications	Chip
14IVR-11	9RC6066	Monolithic Voltage Regulator for Alternator V_R=14,1 V; K_T=-7,0 mV/^oC	TO-3 Jumbo
14IVR-12	9RC6066	Monolithic Voltage Regulator for Alternator V_R=14,1 V; K_T=-10,0 mV/^oC	TO-3 Jumbo
14IVR-21	9RC6066	Monolithic Voltage Regulator for Alternator V_R=14,5 V; K_T=-7,0 mV/^oC	TO-3 Jumbo
14IVR-22	9RC6066	Monolithic Voltage Regulator for Alternator V_R=14,5 V; K_T=-10,0 mV/^oC	TO-3 Jumbo
KB1088EP1-4 KB1088EP1-01-4 KB1088EP1-03-4 KB1088EP1-11-4 KB1088EP1-12-4 KB1088EP1-12A-4 KB1088EP1-12Б-4 KB1088EP1-13-4 KB1088EP1-16-4 KB1088EP1-15-4		Driver of Power Bipolar Transistor for Hybrid Voltage Regulator for Alternator	DIP-8
KB1088EP1-02-4 KB1088EP1-04-4 KB1088EP1-14-4 KB1088EP1-17-4		Driver of Power MOSFET for Hybrid Voltage Regulator for Alternator	DIP-8
KB1088NR3-4	□	Resistor Array for Hybrid Voltage Regulator for Alternator	

*** Under Development*

• Sensors

Part	Pin to Pin Compatibility	Function	Package
IL235Z□	LM235Z□	Temperature sensor	TO-92
IL135Z□	LM135Z□	Temperature sensor	TO-92
IL1815N IL1815D	LM1815M	Adaptive Variable Reluctance Sensor Amplifier	DIP-14 SO-14
IZ7011		Analog IC for inertial sensor	Chip

• Timers

Part	Pin to Pin Compatibility	Function	Package
Digital timers			
IN555N IN555D	NE555	Timer	DIP-8 SO-8
ILC555N ILC555D	GLC555	Timer	DIP-8 SO-8
IN556N IN556D	NE556	Dual Timer	DIP-14 SO-14
ILC556N	GLC556	Dual Timer	DIP-14
IN558N	NE558	Quad Timer	DIP-16
ILC558N	GLC558	Quad Timer	DIP-16
IN82C54N	82C54	Programmable Timer	DIP-24

• Timers (Reference Date)

CMOS TIMERS (ILC555N/D, ILC556N, ILC558N)							BIPOLAR TIMERS (IN55N/D, IN556N/D, IN558N)						
Parameter	Test Condition	Vcc	Value Min	Value Type	Value Max	Unit	Test Condition	Vcc	Value Min	Value Type	Value Max	Unit
Supply Voltage, Vcc	$-20°C \le T_A \le +70°C$		2		18	V	$-10°C \le T_A \le +70°C$		4.5		16	V
Supply Current, I_{CC}	ILC555	2 18	— —	60 120	200 300	µA	IN555	5 15	— —	3000 10000	6000 15000	µA
	ILC556	2 18	— —	120 240	400 600		IN556	5 15	— —	6000 16000	12000 30000	
	ILC558	2 18	— —	240 480	800 1200		IN558	15	—	16000	36000	
Timing Error Initial Accuracy, t_A	R=1– 100 kΩ, C = 0.1 µF			2.0	5.0	%	R=1– 100kΩ, C = 0.1µF			2.25		%
Drift With Temperature, ΔtA/ΔT		5 10 15		50	200 300 600	ppm /°C				150		ppm /°C
Drift With Supply Voltage, ΔtA/ΔVs		5		1.0	3.0	% / V				0.3		% / V
Threshold Voltage, V_{TH}		5	0.65xVcc	0.67xVcc	0.7xVcc	V		5 15		3.33 10		V
Trigger Voltage, V_{TRIG}		5	0.31xVcc	0.33xVcc	0.36xVcc	V		5 15	1.1 4.5	1.67 5.0	2.2 5.6	V
Trigger Current, I_{TRIG}		18 5 2	50 10 1.0			pA	V_{TRIG} = 0V			0.5	2.0	µA
Threshold Current, I_{TH}		18 5 2	50 10 1.0			pA				0.1	0.25	µA
Reset Current, I_{RST}	V_{RESET} = G_{round}	18 5 2	100 20 2.0			pA	V_{RESET} = 0V			0.1	0.4	mA
Reset Voltage, V_{RST}		18 2	0.4 0.4	0.7 0.7	1.0 1.0	V			0.4	0.7	1.0	V
Control Voltage Lead, V_{CV}			0.65xVcc	0.67xVcc	0.69xVcc	V		15 5	9.0 2.6	10 3.33	11 4.0	V
Output Voltage Low, V_{OL}	I_O = 20 mA I_O = 3.2 mA	15 5		0.4 0.2	1.0 0.4	V	I_O = 10mA I_O = 50mA I_O = 8mA I_O = 5mA	15 15 5 5		0.1 0.4 0.3 0.25	0.25 0.75 0.4 0.35	V
Output Voltage High, V_{OH}	I_O = 0.8 mA I_O = 0.8 mA	15 5	14.3 4.0	14.6 4.3		V	I_O = 100mA I_O = 200mA I_O = 100mA	15 15 5	12.75 2.75	13.3 12.5 3.3		V
Rise (Fall) Time of Output, t_{TLH}, t_{THL}	R_L = 10 MΩ, C_L = 10 pF	5	35	40	75	ns				100		ns
Guaranteed Max Osc Freq, fmax	Astable Operation		500			kHz			500			kHz
Operating Temperature, Topr			- 20 to + 70			°C			- 10 to + 70			°C
Note:	T_A = 25°C, Vcc = + 2 – + 15V unless other specified						T_A = 25°C, Vcc = + 5 – + 15V unless other specified					

• Comparators

Part	Pin to Pin Compatibility	Function	Package
IL311AN IL311AD IL311ANM	LM311, LM211	Highly Flexible Voltage Comparators (T_A= -45...+85°C)	DIP-8 SO-8 DIP-14
IL339N IL339D	LM339	Quad Comparator	DIP-14 SO-14
IL293N IL293D	LM293	Dual Comparator (T_A= -40...+85°C)	DIP-8 SO-8
IL393N IL393D	LM393	Dual Comparator	DIP-8 SO-8

• Comparators (Reference Data)

Part	Topr (°C)	I_{IB} (nA) Max	Vio (mV) Max	Iio (nA) Max	Av (V/mV) Min	Response Time (ns) Typ	Supply Voltage (V)	Package
Single Comparators								
IL311ANM	-45 ÷ +85	250	3.0	50	150	300	+15, -15	DIP-14
IL311AN								DIP-8
IL311AD								SO-8
Dual Comparators								
IL293N	-40 ÷ +85	250	5.0	50	50	300	±2.5 ÷ ±15 or 5.0 ÷ 30	DIP-8
IL293D								SO-8
IL393N	0 ÷ +70							DIP-8
IL393D								SO-8
Quad Comparators								
IL339N	0 ÷ +70	250	5.0	50	200	300	±2.5 ÷ ±15 or 5.0 ÷ 30	DIP-14
IL339D								SO-14

• Operational Amplifiers

Part	Pin to Pin Compatibility	Function	Package
IL258N IL258D	LM258	Dual Operational Amplifier (T_A= -40 ÷ +85°C)	DIP-8 SO-8
IL224N IL224D	LM224	Quad Operational Amplifier (T_A= -40 ÷ +85°C)	DIP-14 SO-14
IL324N IL324D	LM324	Quad Operational Amplifier	DIP-14 SO-14
IL358N IL358D	LM358	Dual Operational Amplifier	DIP-8 SO-8
IL1776CN, CAN IL1776CD, CAD	MC1776C	Micropower Programmable Operational Amplifier (CAN, CAD T_A=-40÷+85°C)	DIP-8 SO-8
IL4558N IL4558D	GL4558	Dual Operational Amplifier	DIP-8 SO-8
IZ4560	NJM4560	Dual Operational Amplifier (T_A= -25 ÷ +75°C)	Chip
IZ4580	NJM4580	Dual Operational Amplifier (T_A= -40 ÷ +85°C)	Chip
IL9002N	OP-07A	Low bias operational amplifier	DIP-8
IL9002AN	OP-07	Low bias operational amplifier	DIP-8

• Operational Amplifiers (Reference Data)

Part	Topr (°C)	I_{IB} (nA) Max	Vio (mV) Max	TCvio (µV/°C) Type	Iio (nA) Max	Avol (V/mV) Min	Supply Voltage (V) Min	Supply Voltage (V) Max	Package
Micropower Programmable Operational Amplifier									
IL1776CN	0 ÷ +70	10	6.0		6.0	25	±3.0	±15	DIP-8
IL1776CD									SO-8
IL1776CAN	-40 ÷ +85								DIP-8
IL1776CAD									SO-8
Dual Operational Amplifier									
IL258N	-40 ÷ +85	250	7.0	7.0	50	25	±2.5 +5.0	±15 +30	DIP-8
IL258D									SO-8
IL358N	0 ÷ +70								DIP-8
IL358D									SO-8
IL4558N	0 ÷ +70	500	5.0		200	20		±16	DIP-8
IL4558D									SO-8
IZ4560	-25 ÷ +75	500	6.0		200	86 dB	±4	±15	Chip
IZ4580	-40 ÷ +85	500	3.0		200	90 dB	±2	±15	Chip
Quad Operational Amplifier									
IL224N	-40 ÷ +85	250	7.0	7.0	50	25	±2.5 +5.0	±15 +30	DIP-14
IL224D									SO-14
IL324N	0 ÷ +70								DIP-14
IL324D									SO-14
Precision Operational Amplifier									
IL9002N	-60 ÷ +125	2.5	0.055	0.6	2.5	250	+3.0	±18	DIP-8
IL9002AN		4	0.105	1.3	3.5	150			

• µP Supervisory Circuits

Part	Pin to Pin Compatibility	Function	Package
IN1232N IN1232D	DS1232	Micro Monitor	DIP-8 SO-8
IN1705N IN1705D IN1705RN IN1705RD	DS1705	Micro Monitor (RN,RD – Push-Pull Reset Output)	DIP-8 SO-8 DIP-8 SO-8
IN1706N IN1706D IN1706SRN IN1706SRD	DS1706S	Micro Monitor (SRN, SRD - Push-Pull Reset Output)	DIP-8 SO-8 DIP-8 SO-8
IN1708N IN1708D	DS1708	Micro Monitor	DIP-8 SO-8
IL809LW IL809MW IL809TW IL809SW IL809RW	STM809/810LW STM809/810MW STM809/810TW STM809/810SW STM809/810RW	Reset Circuit	SOT-23-3

• µP Supervisory Circuits (Reference Data)

PARAMETER	IN1232N IN1232D	IN1705N IN1705D	IN1705RN IN1705RD	IN1706N IN1706D	IN1706SRN IN1706SRD	IN1708N IN1708D	IL809LW	IL809MW	IL809TW	IL809SW	IL809RW
Supple Voltage, V	4.5…5.5	1.2…5.5	1.2…5.5	1.2…5.5	1.2…5.5	1.2…5.5	1.2…5.5				
Nominal Reset Threshold, V	4.37	4.65	4.65	2.93	2.93	4.40	4.63	4.38	3.08	2.93	2.63
Minimum Reset Pulse Width, ms	250	100	100	130	130	130	140				
Push-Pull RESET Output	L, H	L	H	L	H	L, H	L, H				
Watchdog	●	●	●	●	●						
Nominal Watchdog Timeout Period (s), if available	0.15	1.6	1.6	1.6	1.6		-				
Separate Watchdog Output		●	●	●	●						
Power-Fail Comparator/Reset Input		●	●	●	●	●					
Manual-Reset Input	●	●	●	●	●	●					
Supply Current in Operating Mode, µA, max (typ)	2000 (500)	350 (100)	350 (100)	50	50	50	15 (7)				
Operating Temperature, °C	- 10 ÷ +70	- 40 ÷ +85					- 40 ÷ +85				
Package	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	DIP-8 SO-8	SOT-23-3				

• Voltage Regulators

Part	Pin to Pin Compatibility	Output Voltage, V	Output Current, A	Output Voltage Tolerance, %	Tested Operating Junction Temp. Range, °C	Package
Low Dropout Voltage Regulators						
ILE4250**	TLE4250G	2 ÷ 36	0.05	0.5	Tj= -40…+150	P-TO-263-5-1 TO-220AB/5
ILE4260 ILE4260-2	TLE4260S	5	0.5	5 2	Tj= -40…+125	P-TO-220-5-12
ILE4264G	TLE4264G	5	0.10	2	Tj= -40…+125	P-SOT223-4-1
IZE4264-2	TLE4264-2G	5	0.10	3	Tj= -40…+125	Chip
ILE4266G	TLE4266G	5	0.10	2	Tj= -40…+125	P-SOT223-4-2
IZE4266-2	TLE4266-2G	5	0.10	3	Tj= -40…+125	Chip
ILE4267G ILE4267S	TLE4267G TLE4267S	5	0.4	2	Tj= -40…+125	P-TO-220-7-180 P-TO-220-7-230
ILE4268GDW	TLE4268G	5	0.15	2	Tj= -40…+125	SO-20
ILE4270G ILE4270S ILE4270Q	TLE4270G TLE4270S	5	0.55	2	Tj= -40…+125	P-TO-263-5-1 P-TO-220-5-12 P-TO-220-5-11
ILE4270 (without "RESET")		5	0.55	2	Tj= -40…+125	TO-220AB/3
ILE4271G ILE4271S	TLE4271G TLE4271S	5	0.55	2	Tj= -40…+125	P-TO-220-7-180 P-TO-220-7-230
ILE4274**	TLE4274	5; 8.5; 10	0.4	4	Tj= -40…+150	TO-220AB/3
ILE4275G**	TLE4275G	5	0.4	2	Tj= -40…+150	P-TO-263-5-1 TO-220AB/5
ILE4276G**	TLE4276	5; 8.5; 10	0.4	4	Tj= -40…+150	
IZE4278	TLE4278	5	0.15	2	Tj= -40…+150	Chip
IZ1734-33	SSAIC1734-33	3.3	0.3	2	Tj= -40…+125	Chip
IZ1734-50	SSAIC1734-50	5	0.3	2		
IZ1735-33	SSAIC1735-33	3.3	0.5	2		
IZ1735-50	SSAIC1735-50	5	0.5	2		

*** Under Development*

• Voltage Regulators (continued)

Part	Pin to Pin Compatibility	Output Voltage, V	Output Current, A	Output Voltage Tolerance, %	Tested Operating Junction Temp. Range, °C	Package
IL5212G	CS5201 LD1117S	1.2	0.8	5	Tj= 0…+125	P-SOT-223-4-1
IL5218G		1.8	0.8	2		
IL5225G		2.5	0.8	2		
IL5228G		2.85	0.8	2		
IL5230G		3.0	0.8	2		
IL5233G		3.3	0.8	2		
IL5250G		5.0	0.8	2		
Dual Positive Voltage Regulators						
ILA8133A	TDA8133A	5.1;8	0.75	2	Tj= 0…+130	TO-220AB/7
ILA8138A	TDA8138A	5.1; 12	1.0	2	Tj= 0…+130	TO-220AB/7

Adjustable Voltage Regulators

Part	Pin to Pin Compatibility	Function	Package
IL317	LM317T	Adjustable Output Positive Voltage Regulator 1.5 A; (1.2…37 V) Tj=-40…+125°C	TO-220AB/3
IZ317L	LM317L	Adjustable Output Positive Voltage Regulator 0.1 A; (1.2…37 V) Tj=-40…+125°C	Chip
IL2931CD	LM2931C	Adjustable Dropout Voltage Regulator 0.1 A; (3…24 V) Tj= -40…+125°C	SO-8
IL5200G	CS5201 LD1117S	Adjustable Dropout Voltage Regulator 0.8 A; (1.25 … 13.5 V) Tj= 0…+125°C	P-SOT-223-4-1

Switching Regulators

Part	Pin to Pin Compatibility	Function	Package
IL2576 – 3.3 IL2576 – 5 IL2576 – 12 IL2576 – 15 IL2576 – ADJ	LM2576 – 3.3 LM2576 – 5 LM2576 – 12 LM2576 – 15 LM2576 – ADJ	3.0 A, 15 V, Step-Down Switching Regulator	TO-220 AB/5
IL2596 – 3.3 IL2596 – 5 IL2596 – 12 IL2596 – ADJ	LM2596 – 3.3 LM2596 – 5 LM2596 – 12 LM2596 – ADJ	Power Converter 150 kHz 3 A Step-Down Voltage Regulator	TO-220 AB/5
IL1501 – 33 IL1501 – 50 IL1501 – 12 IL1501	AP1501 – 3.3V AP1501 – 5V AP1501 – 12V AP1501 – ADJ	150 kHz, 3 A PWM Buck DC/DC Converter	TO-220 AB/5
IZ9261 – 15 IZ9261 – 25 IZ9261 – 33 IZ9261 – 50	RT9261 – 15 RT9261 – 25 RT9261 – 33 RT9261 – 50	VFM Step-up DC/DC Converter	Chip
IL34063AN	MC34063A	Step-Up /Down/inverting Switching Regulator	Dip-8
IL34063AD			SO-8
IZ1583**	MP1583	Step-Down Switching Regulator	Chip
IZ1591**	MP1591	Step-Down Switching Regulator	Chip

*** Under Development*

Switching Regulators (Reference Data)

Part	T (°C)	I_{OUT} (A)	V_{IN} (V)		V_{OUT} (V)	F_{SW} (type) (kHz)	I_{STBY} (type) (µA)	Package
			Min	Max				
Step-Down (Buck)								
IL2576	- 40 ÷ +125	3	6.0	40	3.3, 5, 12, 15, Adj (1.23 to 37)	52	80	TO-220AB/5
IL2596	- 40 ÷ +125	3	4.5	40	3.3, 5, 12, Adj (1.23 to 37)	150	80	TO-220AB/5
IL1501	- 40 ÷ +125	3	4.5	40	3.3, 5, 12, Adj (1.23 to 37)	150	150	TO-220AB/5
IZ1583**	- 40 ÷ +85	3	4.75	23	Adj (1.22 to 21)	385		Chip
IZ1591**	- 40 ÷ +85	2	6.5	32	Adj (1.2 to 21)	330		Chip
Step-Up								
IZ9261	- 25 ÷ +85	0.250	1	4.5	1.5, 2.5, 3.3, 5	120	0.5	Chip
Step-Up /Down/Inverting								
IL34063AN IL34063AD	- 0 ÷ +70	1.5	3.0	40	Adj	10	2.5 mA	Dip-8 SO-8

*** Under Development*

• PWM Controllers

Part	Pin to Pin Compatibility	Function	Package
IL494N	TL494IN	Pulse-Width-Modulation Control Circuit	DIP-16
IL6083N IL6083N-01	U6083B	Power Control With Interference Suppression (for IL6083N N-01: Duty cycle 10… 100%, V_{S1}=24.5…28.0 V, V_{S2}=18.5…22.0 V, V_{Batt1}=16.7…21.0 V (switched on), V_{Batt1}=18.3…22.5 V (switched off), V_{TS}=10.1…10.7 V, I_S=5…17 mA)	DIP-8
IL44608N40	MC44608P40	SMPS Controller	DIP-8
IL44608N75	MC44608P75		DIP-8
IL44608N100	MC44608P100		DIP-8

• *Voltage Regulators* *(Reference Date)*

Parameter		ILE4250G**	ILE4260	ILE4260-2	ILE4264G	IZE4264-2	ILE4266G	IZE4266-2	ILE4267G/S	ILE4268GDW	ILE4270G/S/Q	IL4270	ILE4271G/S	ILE4274**	ILE4275G**	ILE4276G**	IZE4278
Output current, mA		≤50	≤500		≤100	≤100	≤100	≤100	≤400	≤150	≤550		≤550	≤400	≤400	≤400	≤150
Input voltage (max), V		45	42 60 (≤400ms)		45	45	45	45	42 60 (≤400ms)	45	42 65 (≤400ms)		42 65 (≤400ms)	45	45	45	45
Output voltage, V		2÷36	5		5	5	5	5	5	5	5		5	5; 8.5; 10	5	5; 8.5; 10	5
Drop voltage, V		≤0.3	≤0.5		≤0.5	≤0.5	≤0.5	≤0.5	≤0.6	≤0.5	≤0.7		≤0.7	≤0.5	≤0.5	≤0.5	≤0.5
Output voltage tolerance, %	I_Q max	0.5	5	2	2	3	2	3	2	2	2		2	4	2	4	2
	I_Q = 50 mA					2		2									
Current consumption, mA	I_Q = max		≤65		≤15		≤15		≤60	≤20	≤75		≤75	≤30	≤22	≤25	≤12
	I_Q = 0.1 mA					≤0.07		≤0.07									
	I_Q = 1 mA	0.15				0.4		-						0.22	0.20	0.22	
	I_Q ≤ 30 mA	≤3															
	I_Q = 50 mA					≤4		≤4									
Shot-circuit proof		•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
Overvoltage protection			•						•		•	•	•				
Reverse polarity protection		•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
Overtemperature protection		•	•		•	•	•	•	•	•	•	•	•	•	•	•	•
Adjustable Reset	Time		•						•	•	•		•		•		•
	Threshold		•						•	•	•		•		•		•
On/off logic									•								
Watchdog										•			•				•
Inhibit Input							•	•	•				•			•	
Junction Temperature, °C		- 40 ÷ +150	- 40 ÷ +125											- 40 ÷ +150			- 40 ÷ +125
Package		P-TO-263-5-1 TO-220AB/5	TO-220AB/5		P-SOT223-4-1	Chip	P-SOT223-4-2	Chip	P-TO-220-7-180 P-TO-220-7-230	SO-20	P-TO-263-5-1 P-TO-220-5-12 P-TO-220-5-11	TO-220AB/3	P-TO-220-7-180 P-TO-220-7-230	TO-220AB/3	P-TO-263-5-1 TO-220AB/5	P-TO-263-5-1 TO-220AB/5	Chip

• *Voltage Regulators* *(Reference Date)*

Parameter		IL5212G	IL5218G	IL5225G	IL5228G	IL5230G	IL5233G	IL5250G	IL5200G	IZ1734-33	IZ1734-50	IZ1735-33	IZ1735-50	IL2931CD	IL317	IZ317L
Output current, mA		≤800	≤800	≤800	≤800	≤800	≤800	≤800	≤800	≤300	≤300	≤500	≤500	100	1500	100
Input voltage (max), V		15	8	10	10	12	15	15	15	12	12	12	12	40	40	
Output voltage, V		1.2	1.8	2.5	2.85	3	3.3	5	1.25-13.5	3.3	5	3.3	5	3-24	1.2-37	
Drop voltage, V		≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	≤1.2	0.47	0.4	0.65	0.51	≤0.6	≤2.5	
Output voltage tolerance, %	I_Q max	5	2	2	2	2	2	2	2	2	2	2	2	5	0.07%/V	
Current consumption, mA	I_Q = max	10	10	10	10	10	10	10	10	0.08	0.08	0.09	0.09	6	0.1 (Io=0.5A)	
Shot-circuit proof		●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Overvoltage protection														●		
Reverse polarity protection														●		
Overtemperature protection		●	●	●	●	●	●	●	●					●	●	
On/off logic														●		
Junction Temperature, °C		0 ÷ +125								- 40 ÷ +125						
Package		P-SOT223-4-1								Chip				SO-8	TO-220AB/3	Chip

• IW4000AN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IW4001AN,AD	CD4001AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IW4002AN,AD	CD4002AN,AD	Dual 4-Input NOR Gate	DIP-14, SO-14
IW4011AN,AD	CD4011AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IW4012AN,AD	CD4012AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IW4013AN,AD	CD4013AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IW4015AN,AD	CD4015AN,AD	Dual 4-Bit Shift Register	DIP-16, SO-16
IW4017AN,AD	CD4017AN,AD	Decade Counter/Driver	DIP-16, SO-16
IW4019AN,AD	CD4019AN,AD	Quad AND-OR Gate	DIP-16, SO-16
IW4020AN,AD	CD4020AN,AD	14-Bit Binary Divide Counter	DIP-16, SO-16
IW4023AN,AD	CD4023AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IW4025AN,AD	CD4025AN,AD	Triple 3-Input NOR Gate	DIP-14, SO-14
IW4028AN,AD	CD4028AN,AD	BCD-to-Decimal Decoder	DIP-16, SO-16
IW4029AN,AD	CD4029AN,AD	Binary or BCD-Decade Counter	DIP-16, SO-16
IW4030AN,AD	CD4030AN,AD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4034AN,ADW	CD4034AN,AD	8-Bit Shift Register	DIP-24, SO-24
IW4043AN,AD	CD4043AN,AD	Quad NOR R-S Latch (3-State)	DIP-16, SO-16
IW4049AN,AD	CD4049AN,AD	Hex Buffer/Converter	DIP-14, SO-14
IW4050AN,AD	CD4050AN,AD	Hex Buffer/Converter	DIP-16, SO-16
IW4051AN,AD	CD4051AN,AD	Single 8-Channel Multiplexer/Demultiplexer	DIP-16, SO-16
IW4052AN,AD	CD4052AN,AD	Differential 4-Channel Multiplexer/Demultiplexer	DIP-16, SO-16
IW4066AN,AD	CD4066AN,AD	Quad Bilateral Switch	DIP-14, SO-14
IW4069AN,AD	CD4069AN,AD	Hex Inverter	DIP-14, SO-14
IW4093AN,AD	CD4093AN,AD	Quad 2-Input NAND Schmitt Trigger	DIP-14, SO-14
IW4502AN,AD	CD4502AN,AD	Hex Inverter/Buffer	DIP-16, SO-16
IW4516AN,AD	CD4516AN,AD	Presettable Binary Up/Down Counter	DIP-16, SO-16
IW4520AN,AD	CD4520AN,AD	Dual Binary Up Counter	DIP-16, SO-16

• IW4000BN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IW4001BN,BD	CD4001BN,BD	Quad 2-Input NOR Gate	DIP-14, SO-14
IW4002BN,BD	CD4002BN,BD	Dual 4-Input NOR Gate	DIP-14, SO-14
IW4006BN,BD	CD4006BN,BD	18-Bit Static Shift Register	DIP-14, SO-14
IW4008BN,BD	CD4008BN,BD	4-Bit Full Adder	DIP-16, SO-16
IW4011BN,BD	CD4011BN,BD	Quad 2-Input NAND Gate	DIP-14, SO-14
IW4012BN,BD	CD4012BN,BD	Dual 4-Input NAND Gate	DIP-14, SO-14
IW4013BN,BD	CD4013BN,BD	Dual D-Type Flip-Flop	DIP-14, SO-14
IW4015BN,BD	CD4015BN,BD	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IW4016BN,BD	CD4016BN,BD	Quad Bilaterial Switch	DIP-14, SO-14
IW4017BN,BD	CD4017BN,BD	Decade Counter/Driver	DIP-16, SO-16
IW4018BN,BD	CD4018BN,BD	Presettable Divide-by-N Counter	DIP-16, SO-16
IW4019BN,BD	CD4019BN,BD	Quad AND-OR Gate	DIP-16, SO-16
IW4020BN,BD	CD4020BN,BD	14-Bit Binary Divide Counter	DIP-16, SO-16
IW4021BN,BD	CD4021BN,BD	8-Bit Shift Register	DIP-16, SO-16
IW4022BN,BD	CD4022BN,BD	Divide-by-8 Counter/Divider	DIP-16, SO-16

• IW4000BN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IW4023BN,BD	CD4023BN,BD	Triple 3-Input NAND Gate	DIP-14, SO-14
IW4025BN,BD	CD4025BN,BD	Triple 3-Input NOR Gate	DIP-14, SO-14
IW4027BN,BD	CD4027BN,BD	Dual J-K Flip-Flop	DIP-16, SO-16
IW4028BN,BD	CD4028BN,BD	BCD-to-Decimal Decoder	DIP-16, SO-16
IW4029BN,BD	CD4029BN,BD	Binary or BCD-Decade Counter	DIP-16, SO-16
IW4030BN,BD	CD4030BN,BD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4034BN,BDW	CD4034BN,BD	8-Bit Shift Register	DIP-24, SO-24
IW4035BN,BD	CD4035BN,BD	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IW4040BN,BD	CD4040BN,BD	12-Bit Binary Counter	DIP-16, SO-16
IW4042BN,BD	CD4042BN,BD	Quad Clocked D-Latch	DIP-16, SO-16
IW4043BN,BD	CD4043BN,BD	Quad NOR R-S Latch (3-State)	DIP-16, SO-16
IW4049BN,BD	CD4049BN,BD	Hex Buffer/Converter	DIP-16, SO-16
IW4050BN,BD	CD4050BN,BD	Hex Buffer/Converter	DIP-16, SO-16
IW4051BN,BD	CD4051BN,BD	8-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4052BN,BD	CD4052BN,BD	Dual 4-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4053BN,BD	CD4053BN,BD	Triple 2-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IW4059AN,ADW	CD4059AN,AD	Programmable Counter	DIP-24, SO-24
IW4060BN,BD	CD4060BN,BD	14-Bit Binary Divide/ Counter	DIP-16, SO-16
IW4066BN,BD	CD4066BN,BD	Quad Bilateral Switch	DIP-14, SO-14
IW4068BN,BD	CD4068BN,BD	8-Input NAND Gate	DIP-14, SO-14
IW4069UBN,UBD	CD4069UBN,UBD	Hex Inverter	DIP-14, SO-14
IW4070BN,BD	CD4070BN,BD	Quad Exclusive-OR Gate	DIP-14, SO-14
IW4071BN,BD	CD4071BN,BD	Quad 2-Input OR Gate	DIP-14, SO-14
IW4072BN,BD	CD4072BN,BD	Dual 4-Input OR Gate	DIP-14, SO-14
IW4073BN,BD	CD4073BN,BD	Triple 3-Input AND Gate	DIP-14, SO-14
IW4075BN,BD	CD4075BN,BD	Triple 3-Input OR Gate	DIP-14, SO-14
IW4077BN,BD	CD4077BN,BD	Quad Exclusive-NOR Gate	DIP-14, SO-14
IW4081BN,BD	CD4081BN,BD	Quad 2-Input AND Gate	DIP-14, SO-14
IW4093BN,BD	CD4093BN,BD	Quad 2-Input NAND Schmitt Trigger	DIP-14, SO-14
IW4098BN,BD	CD4098BN,BD	Dual Monostable Multivibrator	DIP-16, SO-16
IW40107BN,BD	CD40107BN,BD	Dual 2-Input NAND Buffer/Driver	DIP-14, SO-14
IW4502BN,BD	CD4502BN,BD	Hex Inverter/Buffer	DIP-16, SO-16
IW4503BN,BD	CD4503BN,BD	Hex Buffer	DIP-16, SO-16
IW4511BN,BD	CD4511BN,BD	BCD-to-7-Segment Latch Decoder/Driver	DIP-16, SO-16
IW4516BN,BD	CD4516BN,BD	Presettable Binary Up/Down Counter	DIP-16, SO-16
IW4518BN,BD	CD4518BN,BD	Dual BCD Up Counter	DIP-16, SO-16
IW4519BN,BD	CD4519BN,BD	Quad AND/OR Select Gate	DIP-16, SO-16
IW4520BN,BD	CD4520BN,BD	Dual Binary Up Counter	DIP-16, SO-16
IW4528BN,BD	CD4528BN,BD	Dual Monostable Multivibrator	DIP-16, SO-16
IW4531BN,BD	NEF4531BN,BD	12-Bit Checker Tree	DIP-16, SO-16
IW4541BN,BD	CD4541BN,BD	Programmable Timer	DIP-14, SO-14
IW4543BN,BD	CD4543BN,BD	BCD-to-7-Segment Latch/Decoder/Driver for Liquid-Crystal Display	DIP-16, SO-16
IW4585BN,BD	CD4585BN,BD	4-Bit Comparator	DIP-16, SO-16

• IN74ACXXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74AC00N,D	MC74AC00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74AC02N,D	MC74AC02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74AC04N,D	MC74AC04N,D	Hex Inverter	DIP-14, SO-14
IN74AC05N,D	CD74AC05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74AC08N,D	MC74AC08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74AC10N,D	MC74AC10N,D	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74AC11N,D	MC74AC11N,D	Triple 3-Input AND Gate	DIP-14, SO-14
IN74AC14N,D	MC74AC14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74AC20N,D	CD74AC20N,D	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74AC21N,D	own	Dual 4-Input AND Gate	DIP-14, SO-14
IN74AC27N,D	own	Triple 3-Input NOR Gate	DIP-14, SO-14
IN74AC32N,D	MC74AC32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74AC34N,D	own	Hex Non-Inverter	DIP-14, SO-14
IN74AC74N,D	MC74AC74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74AC86N,D	MC74AC86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74AC109N,D	MC74AC109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74AC112N,D	CD74AC112N,D	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74AC125N,D	T74AC125N,D	Quad 3-State Buffer	DIP-14, SO-14
IN74AC132N,D	MC74AC132N,D	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74AC138N,D	MC74AC138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74AC139N,D	MC74AC139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74AC151N,D	MC74AC151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC153N,D	MC74AC153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC157N,D	MC74AC157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74AC158N,D	MC74AC158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74AC161N,D	MC74AC161N,D	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74AC163N,D	MC74AC163N,D	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74AC164N,D	CD74AC164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74AC174N,D	MC74AC174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74AC175N,D	MC74AC175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74AC192N,D	MC74AC192N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74AC193N,D	CD74AC193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74AC240N,DW	MC74AC240N,D	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74AC241N,DW	MC74AC241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74AC244N,DW	MC74AC244N,D	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74AC245N,DW	MC74AC245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74AC251N,D	MC74AC251N,D	8-I Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74AC253N,D	MC74AC253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74AC257N,D	MC74AC257N,D	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74AC258N,D	MC74AC258N,D	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74AC273N,DW	MC74AC273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74AC299N,DW	MC74AC299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74AC323N,DW	CD74AC323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74AC373N,DW	MC74AC373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74AC374N,DW	MC74AC374N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74AC533N,DW	MC74AC533N,D	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74AC534N,DW	MC74AC534N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74AC563N,DW	MC74AC563N,D	Octal D-Type Transparent Latch	DIP-20, SO-20
IN74AC564N,DW	MC74AC564N,D	Octal Edge-Triggered Flip-Flop	DIP-20, SO-20
IN74AC573N,DW	MC74AC573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74AC574N,DW	MC74AC574N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74AC620N,DW	MC74AC620N,D	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74AC623N,DW	MC74AC623N,D	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74AC640N,DW	MC74AC640N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20

• IN74ACXXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74AC643N,DW	MC74AC643N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74AC651N,DW	CD74AC651N,D	Octal Bus Transceiver/Register, INV (3-State)	DIP-24, SO-24
IN74AC652N,DW	own	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74AC810N,D	MC74AC810N,D	Quad Exclusive-NOR Gate	DIP-14, SO-14
IN74AC4006N,D	own	18-Bit Static Shift Register	DIP-14, SO-14
IN74AC4015N,D	own	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74AC4035N,D	own	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IN74AC4520N,D	own	Dual 4-Bit Synchronous Binary Counter	DIP-16, SO-16

• IN74ACTXXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74ACT00N,D	MC74ACT00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74ACT02N,D	MC74ACT02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74ACT04N,D	CD74ACT04N,D	Hex Inverter	DIP-14, SO-14
IN74ACT05N,D	CD74ACT05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74ACT08N,D	MC74ACT08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74ACT10N,D	MC74ACT10N,D	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74ACT11N,D	MC74ACT11N,D	Triple 3-Input AND Gate	DIP-14, SO-14
IN74ACT14N,D	MC74ACT14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ACT20N,D	CD74ACT20N,D	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74ACT21N,D	own	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74ACT27N,D	own	Triple 3-Input NOR Gate	DIP-14, SO-14
IN74ACT32N,D	MC74ACT32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74ACT34N,D	own	Hex Non-Inverter	DIP-14, SO-14
IN74ACT74N,D	MC74ACT74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74ACT86N,D	MC74ACT86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74ACT109N,D	MC74ACT109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ACT112N,D	MC74ACT112N,D	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ACT125N,D	own	Quad 3-State Buffer	DIP-14, SO-14
IN74ACT132N,D	MC74ACT132N,D	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ACT138N,D	MC74ACT138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74ACT139N,D	MC74ACT139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ACT151N,D	MC74ACT151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT153N,D	MC74ACT153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT157N,D	MC74ACT157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ACT158N,D	MC74ACT158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74ACT161N,D	MC74ACT161N,D	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74ACT163N,D	MC74ACT163N,D	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74ACT164N,D	CD74ACT164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74ACT174N,D	MC74ACT174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74ACT175N,D	CD74ACT175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74ACT192N,D	own	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ACT193N,D	CD74ACT193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ACT240N,DW	MC74ACT240N,D	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74ACT241N,DW	MC74ACT241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ACT244N,DW	MC74ACT244N,D	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74ACT245N,DW	MC74ACT245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74ACT251N,D	MC74ACT251N,D	8-I Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74ACT253N,D	MC74ACT253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ACT257N,D	MC74ACT257N,D	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ACT258N,D	MC74ACT258N,D	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ACT273N,DW	MC74ACT273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74ACT299N,DW	MC74ACT299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20

• IN74ACTXXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ACT323N,DW	MC74ACT323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ACT373N,DW	MC74ACT373N,DW	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74ACT374N,DW	MC74ACT374N,DW	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ACT533N,DW	MC74ACT533N,DW	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74ACT534N,DW	MC74ACT534N,DW	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74ACT563N,DW	MC74ACT563N,DW	Octal D-Type Transparent Latch	DIP-20, SO-20
IN74ACT564N,DW	MC74ACT564N,DW	Octal Edge-Triggered Flip-Flop	DIP-20, SO-20
IN74ACT573N,DW	MC74ACT573N,DW	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74ACT574N,DW	MC74ACT574N,DW	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74ACT620N,DW	MC74ACT620N,DW	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74ACT623N,DW	MC74ACT623N,DW	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74ACT640N,DW	MC74ACT640N,DW	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ACT643N,DW	MC74ACT643N,DW	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ACT651N,DW	CD74ACT651D	Octal Bus Transceiver/Register, INV (3-State)	DIP-24, SO-24
IN74ACT652N,DW	own	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74ACT810N,D	IN74ACT810D	Quad Exclusive-NOR Gate	DIP-14, SO-14
IN74ACT4006N,D	own	18-Bit Static Shift Register	DIP-14, SO-14
IN74ACT4015N,D	own	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74ACT4035N,D	own	4-Bit Parallel-In/Parallel-Out Shift Register	DIP-16, SO-16
IN74ACT4520N,D	own	Dual 4-Bit Synchronous Binary Counter	DIP-16, SO-16

• IN74VHCXXXD(DW)

Part	Pin to Pin Compatibility	Function	Package
IN74VHC00D	TC74VHC00D	Quad 2-Input NAND Gate	SO-14
IN74VHC02D	TC74VHC02D	Quad 2-Input NOR Gate	SO-14
IN74VHC08D	TC74VHC08D	Hex Inverter, OC	SO-14
IN74VHC32D	TC74VHC32D	Quad 2-Input AND Gate	SO-14
IN74VHC74D	TC74VHC74D	Quad 2-Input OR Gate	SO-14
IN74VHC125D	TC74VHC125D	Quad 3-State Buffer	SO-14
IN74VHC126D	TC74VHC126D	Quad 3-State Buffer	SO-14
IN74VHC240DW	TC74VHC240D	Octal Buffer/Line Driver, INV (3-State)	SO-20
IN74VHC241DW	TC74VHC241D	Octal Buffer/Line Driver, NINV (3-State)	SO-20
IN74VHC244DW	TC74VHC244D	Octal Buffer/Line Driver NINV (3-State)	SO-20
IN74VHC373DW	TC74VHC373D	Octal D-Type Latch (3-State)	SO-20
IN74VHC374DW	TC74VHC374D	Octal D-Type Flip-Flop (3-State)	SO-20

• IN74VHCTXXXD(DW)

Part	Pin to Pin Compatibility	Function	Package
IN74VHCT00D	TC74VHCT00D	Quad 2-Input NAND Gate	SO-14
IN74VHCT02D	TC74VHCT02D	Quad 2-Input NOR Gate	SO-14
IN74VHCT08D	TC74VHCT08D	Hex Inverter, OC	SO-14
IN74VHCT32D	TC74VHCT32D	Quad 2-Input AND Gate	SO-14
IN74VHCT74D	TC74VHCT74D	Quad 2-Input OR Gate	SO-14
IN74VHCT125D	TC74VHCT125D	Quad 3-State Buffer	SO-14
IN74VHCT126D	TC74VHCT126D	Quad 3-State Buffer	SO-14
IN74VHCT240DW	TC74VHCT240D	Octal Buffer/Line Driver, INV (3-State)	SO-20
IN74VHCT241DW	TC74VHCT241D	Octal Buffer/Line Driver, NINV (3-State)	SO-20
IN74VHCT244DW	TC74VHCT244D	Octal Buffer/Line Driver NINV (3-State)	SO-20
IN74VHCT373DW	TC74VHCT373D	Octal D-Type Latch (3-State)	SO-20
IN74VHCT374DW	TC74VHCT374D	Octal D-Type Flip-Flop (3-State)	SO-20

• IN74HCXXXXAN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74HC00AN,AD	MC74HC00AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74HC02AN,AD	MC74HC02AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74HC03AN,AD	MC74HC03AN,AD	Quad 2-Input NAND Gate, OC	DIP-14, SO-14
IN74HC04AN,AD	MC74HC04AN,AD	Hex Inverter	DIP-14, SO-14
IN74HC05AN,AD	SN74HC05AN,AD	Hex Inverter, OC	DIP-14, SO-14
IN74HC08AN,AD	MC74HC08AN,AD	Quad 2-Input AND Gate	DIP-14, SO-14
IN74HC10AN,AD	MC74HC10AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IN74HC11AN,AD	MC74HC11AN,AD	Triple 3-Input AND Gate	DIP-14, SO-14
IN74HC14AN,AD	MC74HC14AN,AD	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HC20AN,AD	MC74HC20AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74HC21AN,AD	MC74HC21AN,AD	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74HC22AN,AD	MC74HC22AN,AD	Dual 4-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74HC27AN,AD	MC74HC27AN,AD	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74HC30AN,AD	MC74HC30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74HC32AN,AD	MC74HC32AN,AD	Quad 2-Input OR Gate	DIP-14, SO-14
IN74HC74AN,AD	MC74HC74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74HC75AN,AD	MC74HC75AN,AD	Quad Bistable Latch	DIP-16, SO-16
IN74HC85AN,AD	MC74HC85AN,AD	4-Bit Magnitude Comparator	DIP-16, SO-16
IN74HC86AN,AD	MC74HC86AN,AD	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74HC109AN,AD	MC74HC109AN,AD	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74HC112AN,AD	MC74HC112AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74HC123AN,AD	MC74HC123AN,AD	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74HC125AN,AD	MC74HC125AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HC132AN,AD	MC74HC132AN,AD	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HC138AN,AD	MC74HC138AN,AD	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC139AN,AD	MC74HC139AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC151AN,AD	MC74HC151AN,AD	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC153AN,AD	MC74HC153AN,AD	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC154AN,ADW	MC74HC154AN,ADW	4-16 Decoder/Demultiplexer (3-State)	DIP-24, SO-24
IN74HC155AN,AD	MM74HC155AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HC157AN,AD	MC74HC157AN,AD	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HC158AN,AD	MC74HC158AN,AD	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74HC161AN,AD	MC74HC161AN,AD	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74HC163AN,AD	MC74HC163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74HC164AN,AD	MC74HC164AN,AD	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74HC165AN,AD	MC74HC165AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HC166AN,AD	CD74HC166AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HC174AN,AD	MC74HC174AN,AD	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74HC175AN,AD	MC74HC175AN,AD	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74HC192AN,AD	CD74HC192AN,AD	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74HC193AN,AD	CD74HC193AN,AD	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74HC221AN,AD	CD74HC221AN,AD	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74HC240AN,ADW	MC74HC240AN,ADW	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74HC241AN,ADW	MC74HC241AN,ADW	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74HC244AN,ADW	MC74HC244AN,AD	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74HC245AN,ADW	MC74HC245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74HC251AN,AD	MC74HC251AN,AD	8-I Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74HC253AN,AD	MC74HC253AN,AD	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74HC257AN,AD	MC74HC257AN,AD	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74HC258AN,AD	CD74HC258AN,AD	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74HC273AN,ADW	MC74HC273AN,AD	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74HC279AN,AD	MC74HC279AN,AD	Quad Set/Reset Latch	DIP-16, SO-16
IN74HC283AN,AD	CD74HC283AN,AD	4-Bit Full Adder	DIP-16, SO-16
IN74HC299AN,ADW	MC74HC299AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HC323AN,ADW	MC74HC323AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HC365AN,AD	MC74HC365AN,AD	Hex Buffer/Line Driver (3-State)	DIP-16, SO-16

• IN74HCXXXXAN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74HC367AN,AD	MC74HC367AN,AD	Hex Buffer/Line Driver (3-State)	DIP-16, SO-16
IN74HC373AN,ADW	MC74HC373AN,AD	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74HC374AN,ADW	MC74HC374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74HC393AN,AD	MC74HC393AN,AD	Dual 4-Bit Binary Counter	DIP-14, SO-14
IN74HC533AN,ADW	MC74HC533AN,AD	Octal D-Type Latch, INV (3-State)	DIP-20, SO-20
IN74HC534AN,ADW	MC74HC534AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HC573AN,ADW	MC74HC573AN,AD	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74HC574AN,ADW	MC74HC574AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HC595AN,AD	MC74HC595AN,AD	8-Bit Shift Register with Output Latch	DIP-16, SO-16
IN74HC597AN,AD	MC74HC597AN,AD	8-Bit Shift Register with Input Latch	DIP-16, SO-16
IN74HC620AN,ADW	SN74HC620AN,AD	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74HC623AN,ADW	SN74HC623AN,AD	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74HC640AN,ADW	MC74HC640AN,AD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74HC651AN,ADW	CD74HC651AN,AD	Octal Bus Transceiver/Register (3-State)	DIP-24, SO-24
IN74HC652AN,ADW	CD74HC652AN,AD	Octal Bus Transceiver/Register, NINV (3-State)	DIP-24, SO-24
IN74HC874AN,ADW	own	Dual 4-Bit D-Type Flip Flop	DIP-24, SO-24
IN74HC4015AN,AD	MC74HC4015AN,AD	Dual 4-Bit Static Shift Register	DIP-16, SO-16
IN74HC4046AN,AD	MC74HC4046AN,AD	Phase-Locked Loop	DIP-16, SO-16
IN74HC4051AN,AD	MC74HC4051AN,AD	8-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4052AN,AD	MC74HC4052AN,AD	Dual 4-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4053AN,AD	MC74HC4053AN,AD	Triple 2-Channel Analog Multiplexer/Demultiplexer	DIP-16, SO-16
IN74HC4094AN,AD	CD74HC4094AN,AD	8-Bit Shift and Bus Register	DIP-16, SO-16

• IN74HCTXXXAN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74HCT00AN,AD	MC74HCT00AN,AD	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74HCT02AN,AD	MC74HCT02AN,AD	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74HCT04AN,AD	MC74HCT04AN,AD	Hex Inverter	DIP-14, SO-14
IN74HCT08AN,AD	MC74HCT08AN,AD	Quad 2-Input AND Gate	DIP-14, SO-14
IN74HCT10AN,AD	MC74HCT10AN,AD	Triple 3-Input NAND Gate	DIP-14, SO-14
IN74HCT14AN,AD	MC74HCT14AN,AD	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HCT20AN,AD	MC74HCT20AN,AD	Dual 4-Input NAND Gate	DIP-14, SO-14
IN74HCT27AN,AD	MC74HCT27AN,AD	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74HCT30AN,AD	MC74HCT30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74HCT32AN,AD	MC74HCT32AN,AD	Quad 2-Input OR Gate	DIP-14, SO-14
IN74HCT74AN,AD	MC74HCT74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74HCT85AN,AD	MC74HCT85AN,AD	4-But Magnitude Comparator	DIP-16, SO-16
IN74HCT86AN,AD	MC74HCT86AN,AD	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74HCT125AN,AD	MC74HCT125AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HCT126AN,AD	MC74HCT126AN,AD	Quad 3-State Buffer	DIP-14, SO-14
IN74HCT132AN,AD	MC74HCT132AN,AD	Quad 2-Input NAND Schmitt-Trigger Inverter	DIP-14, SO-14
IN74HCT138AN,AD	MC74HCT138AN,AD	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT139AN,AD	MC74HCT139AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT151AN,AD	MC74HCT151AN,AD	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT153AN,AD	MC74HCT153AN,AD	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT155AN,AD	MM74HCT155AN,AD	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74HCT157AN,AD	MC74HCT157AN,AD	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74HCT163AN,AD	MC74HCT163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74HCT164AN,AD	MC74HCT164AN,AD	8-Bit Serial-in Parallel-Out Shift Register	DIP-14, SO-14
IN74HCT165AN,AD	MC74HCT165AN,AD	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74HCT174AN,AD	MC74HCT174AN,AD	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74HCT240AN,ADW	MC74HCT240AN,AD	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20

• IN74HCTXXXXAN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74HCT241AN,ADW	MC74HCT241AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74HCT244AN,ADW	MC74HCT244AN,AD	Octal Buffer/Line Driver NINV (3-State)	DIP-20, SO-20
IN74HCT245AN,ADW	MC74HCT245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74HCT251AN,AD	MC74HCT251AN,AD	8-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74HCT273AN,ADW	MC74HCT273AN,AD	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74HCT283AN,AD	CD74HCT283AN,AD	4-Bit Adder	DIP-16, SO-16
IN74HCT299AN,ADW	MC74HCT299AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HCT323AN,ADW	MC74HCT323AN,AD	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74HCT373AN,ADW	MC74HCT373AN,AD	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74HCT374AN,ADW	MC74HCT374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74HCT573AN,ADW	MC74HCT573AN,AD	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74HCT574AN,ADW	MC74HCT574AN,AD	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74HCT620AN,ADW	SN74HCT620AN,AD	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74HCT623AN,ADW	own	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74HCT640AN,ADW	own	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74HCT874AN,ADW	MC74HCT874AN,AD	Dual 4-Bit D-Type Flip-Flop	DIP-24, SO-24

• IN74LVXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74LV00N,D	74LV00N,D	Quad 2-Input NAND Gate	DIP-14, SO-14
IN74LV02N,D	74LV02N,D	Quad 2-Input NOR Gate	DIP-14, SO-14
IN74LV04N,D	74LV04N,D	Hex Inverter	DIP-14, SO-14
IN74LVU04N,D	74LVU04N,D	Hex Inverter	DIP-14, SO-14
IN74LV08N,D	74LV08N,D	Quad 2-Input AND Gate	DIP-14, SO-14
IN74LV14N,D	74LV14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74LV32N,D	74LV32N,D	Quad 2-Input OR Gate	DIP-14, SO-14
IN74LV74N,D	74LV74N,D	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74LV86N,D	74LV86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74LV138N,D	74LV138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74LV139N,D	74LV139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74LV164N,D	74LV164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74LV174N,D	74LV174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74LV240N,DW	74LV240N,D	Octal Buffer/line Driver, INV (3-State)	DIP-20, SO-20
IN74LV241N,DW	74LV241N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LV244N,DW	74LV244N,D	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LV245N,DW	74LV245N,D	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74LV273N,DW	74LV273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74LV373N,DW	74LV373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74LV374N,DW	74LV374N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74LV573N,DW	74LV573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74LV574N,DW	74LV574N,D	Octal D-Type Flip-Flop, NINV (3-State)	DIP-20, SO-20
IN74LV620N,DW	74LV620N,D	Octal Bidirectional Bus Transceiver, INV	DIP-20, SO-20
IN74LV623N,DW	74LV623N,D	Octal Bidirectional Bus Transceiver, NINV	DIP-20, SO-20
IN74LV640N,DW	74LV640N,D	Octal Bus Transceiver (3-State)	DIP-20, SO-20

• IN74XXXN, D Series

Part	Pin to Pin Compatibility	Function	Package
IN7401N	SN7401N	Quad 2-Input NAND Gate, OC	DIP-14
IN7406N,D	SN7406N,D	Hex Inverter/Buffer with High-Voltage Output, OC	DIP-14, SO-14
IN7420N	SN7420N	Dual 4-Input NAND Gate	DIP-14
IN7450N	SN7450N	Dual 2-Wide 2-Input AND-OR-Invert Gate	DIP-14
IN7472N	SN7472N	J-K Flip-Flop	DIP-14
IN74141N	SN74141N	BCD-to-Decimal Decoder/Driver	DIP-16
IN74145N	SN74145N	BCD-to-Decimal Decoder, OC	DIP-16
IN74154N	SN74154N	4-16 Decoder/Demultiplexer	DIP-24
IN74175N	SN74175N	Quad D-Type Flip-Flop	DIP-16

• IN74LSXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74LS04N,D	CD74LS04N,D	Hex Inverter	DIP-14, SO-14
IN74LS05N,D	CD74LS05N,D	Hex Inverter, OC	DIP-14, SO-14
IN74LS06N,D	CD74LS06N,D	Hex Inverter/Buffer with High-Voltage Output, OC	DIP-14, SO-14
IN74LS07N,D	CD74LS07N,D	Hex Buffer with High-Voltage Output, OC, 30 V	DIP-14, SO-14
IN74LS14N,D	CD74LS14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74LS86N,D	CD74LS86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74LS138N,D	CD74LS138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74LS157N,D	CD74LS157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74LS161AN,AD	CD74LS161AN,AD	4-Bit Binary Counter	DIP-16, SO-16
IN74LS164N,D	CD74LS164N,D	8-Bit Parallel-Out Shift Register	DIP-14, SO-14
IN74LS244N,DW	CD74LS244N,DW	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74LS245N,DW	CD74LS245N,DW	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20

• IN74ALSXXXXN, D(DW) Series

Part	Pin to Pin Compatibility	Function	Package
IN74ALS00AN,AD	SN74ALS00AN,AD	Quad 2-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS01N,D	SN74ALS01N,D	Quad 2-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS02N,D	SN74ALS02N,D	Quad 2-Input Positive-NOR Gate	DIP-14, SO-14
IN74ALS03AN,AD	SN74ALS03AN,AD	Quad 2-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS04AN,AD	SN74ALS04AN,AD	Hex Inverter	DIP-14, SO-14
IN74ALS05AN,AD	SN74ALS05AN,AD	Hex Inverter, OC	DIP-14, SO-14
IN74ALS08N,D	SN74ALS08N,D	Quad 2-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS09N,D	SN74ALS09N,D	Quad 2-Input Positive-AND Gate, OC	DIP-14, SO-14
IN74ALS10AN,AD	SN74ALS10AN,AD	Triple 3-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS11AN,AD	SN74ALS11AN,AD	Triple 3-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS12AN,AD	SN74ALS12AN,AD	Triple 3-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS14N,D	SN74ALS14N,D	Hex Schmitt-Trigger Inverter	DIP-14, SO-14
IN74ALS15AN,AD	SN74ALS15AN,AD	Triple 3-Input Positive-AND Gate, OC	DIP-14, SO-14
IN74ALS20AN,AD	SN74ALS20AN,AD	Dual 4-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS21N,AD	SN74ALS21N,AD	Dual 4-Input Positive-AND Gate	DIP-14, SO-14
IN74ALS22BN,BD	SN74ALS22BN,BD	Dual 4-Input Positive-NAND Gate, OC	DIP-14, SO-14
IN74ALS27N,D	SN74ALS27N,D	Triple 3-Input Positive-NOR Gate	DIP-14, SO-14
IN74ALS30AN,AD	SN74ALS30AN,AD	8-Input Positive-NAND Gate	DIP-14, SO-14
IN74ALS32N,D	SN74ALS32N,D	Quad 2-Input Positive-OR Gate	DIP-14, SO-14
IN74ALS33AN,AD	SN74ALS33AN,AD	Quad 2-Input Positive-NOR Buffer, OC	DIP-14, SO-14

• IN74ALSXXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ALS51N,D	SN74ALS51N,D	AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS54N,D	SN74ALS54N,D	4-Wide AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS55N,D	SN74ALS55N,D	2-Wide 4-Input AND-OR-Invert Gate	DIP-14, SO-14
IN74ALS74AN,AD	SN74ALS74AN,AD	Dual D-Type Flip-Flop	DIP-14, SO-14
IN74ALS75N,D	SN74ALS75N,D	Quad Bistable Latch	DIP-16, SO-16
IN74ALS85N,D	SN74ALS85N,D	4-Bit Magnitude Comparator	DIP-16, SO-16
IN74ALS86N,D	SN74ALS86N,D	Quad 2-Input Exclusive-OR Gate	DIP-14, SO-14
IN74ALS90N,D	SN74ALS90N,D	4-Bit Decade Counter	DIP-14, SO-14
IN74ALS93N,D	SN74ALS93N,D	4-Bit Binary Counter	DIP-14, SO-14
IN74ALS107N,D	SN74ALS107N,D	Dual J-K Flip-Flop with Clear	DIP-14, SO-14
IN74ALS109N,D	SN74ALS109N,D	Dual J-K Positive-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ALS112AN,AD	SN74ALS112AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-16, SO-16
IN74ALS113AN,AD	SN74ALS113AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-14, SO-14
IN74ALS114AN,AD	SN74ALS114AN,AD	Dual J-K Negative-Edge-Triggered Flip-Flop	DIP-14, SO-14
IN74ALS123N,D	SN74ALS123N,D	Dual Monostable Multivibrator with Reset	DIP-16, SO-16
IN74ALS125N,D	SN74ALS125N,D	Quad 3-State Buffer	DIP-14, SO-14
IN74ALS136N,D	SN74ALS136N,D	Quad 2-Input Exclusive-OR Gate, OC	DIP-14, SO-14
IN74ALS138N,D	SN74ALS138N,D	3-8 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS139N,D	SN74ALS139N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS151N,D	SN74ALS151N,D	8-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS153N,D	SN74ALS153N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS154N,DW	SN74ALS154N,D	4-16 Decoder/Demultiplexer (3-State)	DIP-24, SO-24
IN74ALS155N,D	SN74ALS155N,D	Dual 2-4 Decoder/Demultiplexer	DIP-16, SO-16
IN74ALS157N,D	SN74ALS157N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS158N,D	SN74ALS158N,D	Quad 2-1 Data Selector/Multiplexer, INV	DIP-16, SO-16
IN74ALS160AN,AD	SN74ALS160AN,AD	Synchronous Decade Counter, Asynchronous Reset	DIP-16, SO-16
IN74ALS161AN,AD	SN74ALS161AN,AD	4-Bit Synchronous Binary Counter, Asynchronous Reset	DIP-16, SO-16
IN74ALS162AN,AD	SN74ALS162AN,AD	Synchronous Decade Counter, Synchronous Reset	DIP-16, SO-16
IN74ALS163AN,AD	SN74ALS163AN,AD	4-Bit Synchronous Binary Counter, Synchronous Reset	DIP-16, SO-16
IN74ALS164N,D	SN74ALS164N,D	8-Bit Serial-In Parallel-Out Shift Register	DIP-14, SO-14
IN74ALS165N,D	SN74ALS165N,D	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74ALS166N,D	SN74ALS166N,D	8-Bit Parallel-in Serial-Out Shift Register	DIP-16, SO-16
IN74ALS170N,D	SN74ALS170N,D	4-by-4 Register File, OC	DIP-16, SO-16
IN74ALS173AN,AD	SN74ALS173AN,AD	4-Bit D-Type Register (3-State)	DIP-16, SO-16
IN74ALS174N,D	SN74ALS174N,D	Hex D-Type Flip-Flop	DIP-16, SO-16
IN74ALS175N,D	SN74ALS175N,D	Quad D-Type Flip-Flop	DIP-16, SO-16
IN74ALS181N,DW	SN74ALS181N,D	4-Bit Arithmetic Logic Unit	DIP-24, SO-24
IN74ALS182N,D	SN74ALS182N,D	Look-Ahead Carry Generator	DIP-16, SO-16
IN74ALS190N,D	SN74ALS190N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ALS191N,D	SN74ALS191N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ALS192N,D	SN74ALS192N,D	Synchronous Decade Up/Down Counter	DIP-16, SO-16
IN74ALS193N,D	SN74ALS193N,D	4-Bit Synchronous Binary Up/Down Counter	DIP-16, SO-16
IN74ALS240AN,ADW	SN74ALS240AN,AD	Octal Buffer/Line Driver, INV (3-State)	DIP-20, SO-20
IN74ALS241AN,ADW	SN74ALS241AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ALS242AN,AD	SN74ALS242AN,AD	Quad Bus Transceiver, INV (3-State)	DIP-14, SO-14
IN74ALS243AN,AD	SN74ALS243AN,AD	Quad Bus Transceiver, NINV (3-State)	DIP-14, SO-14
IN74ALS244AN,ADW	SN74ALS244AN,AD	Octal Buffer/Line Driver, NINV (3-State)	DIP-20, SO-20
IN74ALS245AN,ADW	SN74ALS245AN,AD	Octal Bus Transceiver, NINV (3-State)	DIP-20, SO-20
IN74ALS251N,D	SN74ALS251N,D	8-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ALS253N,D	SN74ALS253N,D	Dual 4-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ALS257AN,AD	SN74ALS257AN,AD	Quad 2-1 Data Selector/Multiplexer, NINV (3-State)	DIP-16, SO-16
IN74ALS258AN,AD	SN74ALS258AN,AD	Quad 2-1 Data Selector/Multiplexer, INV (3-State)	DIP-16, SO-16
IN74ALS259N,D	SN74ALS259N,D	8-Bit Addressable Latch	DIP-16, SO-16
IN74ALS273N,DW	SN74ALS273N,D	Octal D-Type Flip-Flop	DIP-20, SO-20
IN74ALS279N,D	SN74ALS279N,D	Quad Set/Reset Latch	DIP-16, SO-16
IN74ALS280N,D	SN74ALS280N,D	9-Bit Odd/Even Parity Generator/Checker	DIP-14, SO-14

• IN74ALSXXXXN, D(DW) Series (continued)

Part	Pin to Pin Compatibility	Function	Package
IN74ALS295BN,BD	SN74ALS295BN,BD	4-Bit Universal Shift Register	DIP-14, SO-14
IN74ALS298N,D	SN74ALS298N,D	Quad 2-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS299N,DW	SN74ALS299N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ALS323N,DW	SN74ALS323N,D	8-Bit Universal Shift/Storage Register (3-State)	DIP-20, SO-20
IN74ALS352N,D	SN74ALS352N,D	Dual 4-1 Data Selector/Multiplexer	DIP-16, SO-16
IN74ALS353N,D	SN74ALS353N,D	Dual 4-1 Data Selector/Multiplexer (3-State)	DIP-16, SO-16
IN74ALS368N,D	SN74ALS368N,D	Hex Bus Driver (3-State)	DIP-16, SO-16
IN74ALS373N,DW	SN74ALS373N,D	Octal D-Type Latch (3-State)	DIP-20, SO-20
IN74ALS374AN,ADW	SN74ALS374AN,AD	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ALS377AN,ADW	SN74ALS377AN,AD	Octal D-Type Flip-Flop with Enable	DIP-20, SO-20
IN74ALS393N,D	SN74ALS393N,D	Dual 4-Bit Binary Counter	DIP-14, SO-14
IN74ALS465AN,ADW	SN74ALS465AN,AD	Octal Buffer, NINV (3-State)	DIP-20, SO-20
IN74ALS466AN,ADW	SN74ALS466AN,AD	Octal Buffer, INV (3-State)	DIP-20, SO-20
IN74ALS573N,DW	SN74ALS573N,D	Octal Transparent Latch (3-State)	DIP-20, SO-20
IN74ALS574N,DW	SN74ALS574N,D	Octal D-Type Flip-Flop (3-State)	DIP-20, SO-20
IN74ALS640BN,BDW	SN74ALS640BN,BD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ALS643AN,ADW	SN74ALS643AN,AD	Octal Bus Transceiver (3-State)	DIP-20, SO-20
IN74ALS670N,D	SN74ALS670N,D	4-by-4 Register File (3-State)	DIP-16, SO-16
IN74ALS873N,DW	SN74ALS873N,D	Dual 4-Bit D-Type Latch (3-State)	DIP-24, SO-24
IN74ALS874N,DW	SN74ALS874N,D	Dual 4-Bit D-Type Flip-Flop	DIP-24, SO-24
IN74ALS1000AN,AD	SN74ALS1000AN,AD	Quad 2-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1002AN,AD	SN74ALS1002AN,AD	Quad 2-Input Positive-NOR Buffer	DIP-14, SO-14
IN74ALS1003AN,AD	SN74ALS1003AN,AD	Quad 2-Input Positive-NAND Buffer, OC	DIP-14, SO-14
IN74ALS1004N,D	SN74ALS1004N,D	Hex Inverting Driver	DIP-14, SO-14
IN74ALS1005N,D	SN74ALS1005N,D	Hex Inverting Buffer, OC	DIP-14, SO-14
IN74ALS1008AN,AD	SN74ALS1008AN,AD	Quad 2-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1010AN,AD	SN74ALS1010AN,AD	Triple 3-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1011AN,AD	SN74ALS1011AN,AD	Triple 3-Input Positive-AND Buffer	DIP-14, SO-14
IN74ALS1020AN,AD	SN74ALS1020AN,AD	Dual 4-Input Positive-NAND Buffer	DIP-14, SO-14
IN74ALS1032AN,AD	SN74ALS1032AN,AD	Quad 2-Input Positive-OR Buffer/Driver	DIP-14, SO-14
IN74ALS1034N,D	SN74ALS1034N,D	Hex Driver	DIP-14, SO-14
IN74ALS1035N,D	SN74ALS1035N,D	Hex Noninverting Buffer, OC	DIP-14, SO-14

• FUNCTIONAL SELECTION

GATES

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Positive-NAND Gates												
8-Input	30					x	x				x	14
Dual 4-Input	20	x	x			x	x		x		x	14
	40											14
	1020										x	14
Triple 3-Input	10	x	x			x	x				x	14
	1010										x	14
Quad 2-Input	00	x	x	x	x	x	x	x			x	14
	132	x	x			x	x					14
	1000										x	14
Positive-NAND Gates, OC												
Dual 4-Input	22					x	x				x	14
Triple 3-Input	12										x	14
Quad 2-Input	01								x		x	14
	03					x					x	14
	1003										x	14
Positive-AND Gates, OC												
Triple 3-Input	15										x	14
Quad 2-Input	09										x	14
Positive-AND Gates												
Dual 4-Input	21	x	x			x	x				x	14
Triple 3-Input	11	x	x			x					x	14
	1011										x	14
Quad 2-Input	08	x	x	x	x	x	x	x			x	14
	1008										x	14
Positive-OR Gates												
Quad 2-Input	32	x	x	x	x	x	x	x			x	14
	1032										x	14
Positive-NOR Gates												
Triple 3-Input	27	x	x			x	x				x	14
Quad 2-Input	02	x	x	x	x	x	x	x			x	14
	33										x	14
	1002										x	14
Exclusive-OR Gates												
Quad 2-Input	86	x	x	x	x	x	x	x		x	x	14
	810	x	x									14
Quad 2-Input, OC	136										x	14
AND-OR Gates												
2-Wide 4-Input	55										x	14
4-Wide 2-3-3-2 Input	54										x	14
Dual 2-Wide 2-Input	51										x	14
Expandable Gates												
Dual 2-Wide AND-OR-Invert	50								x			14
4-Wide AND-OR-Invert	53											14
Dual 4-Input Expander	60											14

• FUNCTIONAL SELECTION (continued)

HEX INVERTERS/NONINVERTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Hex Inverters	04	x	x			x	x	x		x	x	14
	U04							x				14
	05	x	x			x				x	x	14
	06								x	x		14
	14	x	x			x	x	x		x	x	14
	16											14
	1004										x	14
	1005										x	14
Hex Noninverters	34	x	x									14

DRIVERS AND BUS TRANSCEIVERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Hex Drivers												
Hex Drivers	07									x		14
	1034										x	14
	1035										x	14
Noninverting Hex Buffers/Drivers	365					x						16
	367					x						16
	368										x	16
Drivers with 3-State Outputs												
Quad Buffer Drivers	125	x	x	x	x	x	x				x	14
	126			x	x		x					14
Octal Buffer/Drivers, NINV	241	x	x	x	x	x	x	x			x	20
	244	x	x	x	x	x	x	x		x	x	20
	465										x	20
Octal Buffer Drivers, INV	240	x	x	x	x	x	x	x			x	20
	466										x	20
Bus Transceivers with 3-State Outputs												
Quad Transceiver, NINV	243										x	14
Quad Transceiver, INV	242										x	14
Octal Transceiver	245	x	x			x	x	x		x	x	20
	620	x	x			x	x	x				20
	640	x	x			x	x	x			x	20
	643	x	x								x	20
Octal Bus Transceivers with Registers	651	x	x			x						24
	652	x	x			x						24
True Output Transceiver	623	x	x			x	x	x				20
50/75-Ohm Line Drivers												
Quad 2-Input Positive-NOR	128											14

• FUNCTIONAL SELECTION (continued)

FLIP-FLOPS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Dual and Single Flip-Flops												
Single J-K	72								x			14
Dual J-K Edge-Triggered	107										x	14
	109	x	x			x					x	16
	112	x	x			x					x	16
	113										x	14
	114										x	14
Dual D-Type	74	x	x	x	x	x	x	x			x	14
Quad and Hex Flip-Flops												
Quad D-Type	175	x	x			x			x		x	16
Hex D-Type	174	x	x			x	x	x			x	16
Quad J-K	279					x	x				x	16
D-Type Flip-Flops												
Octal (3-State)	374	x	x	x	x	x	x	x			x	20
	574	x	x			x	x	x			x	20
Octal with Clear	273	x	x			x	x	x			x	20
Dual 4-Bit with Clear	874					x	x				x	24
Octal with Enable	377										x	20
Octal Inverting (3-State)	534	x	x			x						20
	564	x	x									

LATCHES AND MULTIVIBRATORS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Latches												
4-Bit Bistable	75					x					x	16
Quad Set/Reset	279					x	x				x	16
Transparent (3-State)	373	x	x	x	x	x	x	x			x	20
	573	x	x			x	x	x			x	20
Dual 4-Bit Transparent (3-State)	873										x	24
Inverting Transparent	533	x	x			x						20
	563	x	x									20
8-Bit Addressable	259										x	16
Multivibrators												
Dual Monostable with Clear	123					x					x	16
	221					x						20

• FUNCTIONAL SELECTION (continued)

REGISTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Shift Registers												
8-Bit Universal	198											24
	299	x	x			x	x				x	20
	323	x	x			x	x				x	20
4-Bit Parallel-in/ Parallel-out	295										x	14
	4035	x	x									16
8-Bit Serial-in Parallel-Out	164	x	x			x	x	x		x	x	14
8-Bit Parallel-in Serial-Out	165					x	x				x	16
	166					x					x	16
Dual 4-Bit Static	4015	x	x			x						16
8-Bit Shift and Store	4094					x						16
	4006	x	x									14
Shift Registers with Latches												
Serial-in Parallel-Out with Output Latches	595					x						16
Parallel-in Serial-Out with Input Latches	597					x						16
Register Files												
4-by-4, OC (3-State)	170										x	16
	670										x	16
Other Registers												
4-Bit D-Type Register (3-State)	173										x	16

COUNTERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Synchronous Counters												
4-Bit Decade, Asynchronous Reset	160										x	16
	162										x	16
Decade Up/Down	190										x	16
	192	x	x			x					x	16
4-Bit Binary, Asynchronous Reset	161	x	x			x				x	x	16
	163	x	x			x	x				x	16
4-Bit Binary Up/Down	191										x	16
	193	x	x			x					x	16
Asynchronous Counters												
4-Bit Decade	90										x	14
4-Bit Binary	93										x	14
Dual 4-Bit Binary	393					x					x	14
	4520	x	x									16

• FUNCTIONAL SELECTION (continued)

DECODERS, DATA SELECTORS/MULTIPLEXERS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Data Selectors/Multiplexers												
Quad 2-1	157	x	x			x	x			x	x	16
	158	x	x			x					x	16
	298										x	16
	257	x	x			x					x	16
	258	x	x			x					x	16
Dual 4-1	153	x	x			x	x				x	16
	253	x	x			x					x	16
	352										x	16
	353										x	16
8-1	151	x	x			x	x				x	16
	152											14
	251	x	x			x	x				x	16
16-1	150											24
Analog Multiplexers/Demultiplexers												
8-Channel	4051					x						16
Dual 4-Channel	4052					x						16
Triple 2-Channel	4053					x						16
Decoders												
Dual 2-4	139	x	x			x	x	x			x	16
	155					x	x				x	16
3-8	138	x	x			x	x	x		x	x	16
4-16	154					x			x		x	24
BCD-to-Decimal	141								x			16
	145								x			16
Digital Loops												
Phase-Lock Loop	4046					x						16

COMPARATORS AND ERROR DETECTION CIRCUITS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
Comparators												
4-Bit Magnitude Comparator	85					x	x				x	16
Parity Generators/Checkers												
8-Bit Odd/Even Parity	180											14
9-Bit Odd/Even Parity	280										x	14

ARITHMETIC CIRCUITS

Function	Part	Technology										Pins
		74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	74	74LS	74ALS	
4-Bit Arithmetic Logic Unit	181										x	24
Look-Ahead Carry Generator	182										x	16
4-Bit Full Adder	283					x	x					16

• FAMILY CHARACTERISTICS

DC Characteristics (Max)

Parameters	TTL			CMOS									Units
	74	74LS	74ALS	4000A	4000B	74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	
Supply Voltage Range, V_{CC}(V_{DD})	5±5%	5±5%	5±10%	3…15	3…18	2…6	5±10%	2…5.5	5±5%	2…6	5±10%	1.0…5.5	V
Operating Temperature, T_A	-10…+70	0…+70	-10…+70	-45…+85	-55…+125	-45…+85	-45…+85	-40…+85	-40…+85	-55…+125	-55…+125	-40…+125	°C
High -Level Input Voltage, V_{IH} (min)	2	2	2	0.8xV_{DD}	0.7xV_{DD}	0.7xV_{CC}	2	0.7xV_{CC}	2	0.7xV_{CC}	2	0.7xV_{CC}	V
Low -Level Input Voltage, V_{IL} (max)	0.8	0.8	0.8	0.2xV_{DD}	0.3xV_{DD}	0.3xV_{CC}	0.8	0.3xV_{CC}	0.8	0.3xV_{CC}	0.8	0.3xV_{CC}	V
High-Level Output Voltage, V_{OH} (min)	2.4	V_{CC}-2	V_{CC}-2	V_{DD}-1	V_{DD}-0.05	V_{CC}-0.1	V_{CC}-0.1	3.8	3.8	V_{CC}-0.1	V_{CC}-0.1	V_{CC}-0.2	V
Low-Level Output Voltage, V_{OL} (max)	0.4	0.5	0.5	0.05	0.05	0.1	0.1	0.44	0.44	0.1	0.1	0.2	V
High-Level Input Current, I_{IH}	40	20	20	+1	+0.3	+1	+1	+1	+1	+1	+1	+1	μA
Low-Level Input Current, I_{IL}	-1600	-400	-100	-1	-0.3	-1	-1	-1	-1	-1	-1	-1	μA
High-Level Output Current, I_{OH}	-0.4	-0.4	-0.4	-0.25 at V_0=4.5 V V_{DD}=5.0 V	-4.2 at V_0=2.5 V V_{DD}=5.0 V	-24 at V_0=V_{CC}-0.8	-24 at V_0=V_{CC}-0.8	-8	-8	-4 at V_0=V_{CC}-0.8	-4 at V_0=V_{CC}-0.8	-16	mA
Low-Level Output Current, I_{OL}	16	8	8	0.5 at V_0=0.5 V V_{DD}=5.0 V	0.88 at V_0=0.4 V V_{DD}=5.0 V	24 at V_0=0.4 V	24 at V_0=0.4 V	8	8	4 at V_0=0.4 V	4 at V_0=0.4 V	16	mA
DC Noise Margin, DCM	0.4/0.4	0.3/0.7	0.3/0.7	1.0 at V_{DD}=5 V 1.0 at V_{DD}=10 V	1.5 at V_{DD}=5 V 3.0 at V_{DD}=10 V 4.0 at V_{DD}=15 V	1.25/1.25	0.7/2.4	1.25/1.25	0.7/2.4	1.25/1.25	0.7/2.4	0.8/0.8	V

• FAMILY CHARACTERISTICS

DC Characteristics (Type)

Parameters		TTL			CMOS									Units
		74	74LS	74ALS	4000A	4000B	74AC	74ACT	74VHC	74VHCT	74HC	74HCT	74LV	
Supply Current for Gate, I_G		3.4	0.4	0.2	0.0004	0.0001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	mA
Power Supply for Gate, P_G		10	2	1	0.0025	0.0001	0.0025	0.0025	0.0025	0.0025	0.001	0.001	0.001	mW
Propagation Delay Time, T_P		10	7	5	40 at V_{DD}=5 V 20 at V_{DD}=10 V	40 at V_{DD}=5 V 20 at V_{DD}=10 V 15 at V_{DD}=15 V	5	5	5.3	5.5	8	8	10	ns
Clock Frequency, F_{max}		35 C_L=15 pF	40 C_L=15 pF	45 C_L=50 pF	5 at V_{DD}=5 V 10 at V_{DD}=10 V C_L=15 pF	5 at V_{DD}=5 V 10 at V_{DD}=10 V 14 at V_{DD}=15 V C_L=50 pF	140 C_L=50 pF	140 C_L=50 pF	115 C_L=50 pF 170 C_L=15 pF	140 C_L=50 pF 160 C_L=15 pF	30 C_L=50 pF	30 C_L=50 pF	40 C_L=50 pF	MHz
COMPATIBLE	Inputs V_{IL}/V_{IH}	TTL	TTL	TTL	CMOS	CMOS	CMOS	TTL, CMOS	TTL at V_O=3.3V, CMOS	TTL, CMOS	CMOS	TTL, CMOS	CMOS	-
	Outputs V_{OL}/V_{OH}	TTL	TTL	TTL	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL, CMOS	TTL	TTL, CMOS	TTL, CMOS	TTL, CMOS	-

• FAMILY CHARACTERISTICS

AC Characteristics

Parameters	Performance		TTL			CMOS									Units
Propagation Delay, t_{PHL}/t_{PHL}	Gate, NOR or NAND	Type	**7400**	**74LS00**	**74ALS00**	**4001A**	**4001B**	**74AC00**	**74ACT00**	**74VHC00**	**74VHCT00**	**74HC00**	**74HCT00**	**74LV00**	ns
			10 C_L=15 pF	7 C_L=15 pF	5 C_L=50 pF	80 at V_{DD}=5 V 40 at V_{DD}=10 V C_L=15 pF	60 at V_{DD}=5 V 25 at V_{DD}=10 V 20 at V_{DD}=15 V C_L=50 pF	5 C_L=50 pF	5 C_L=50 pF	5.4 C_L=50 pF 3.9 C_L=15 pF	5.9 C_L=50 pF 5.4 C_L=15 pF	8 C_L=50 pF	8 C_L=50 pF	10 C_L=50 pF	
		Max	22 C_L=15 pF	15 C_L=15 pF	11 C_L=50 pF	120 at V_{DD}=5 V 60 at V_{DD}=10 V C_L=15 pF	110 at V_{DD}=5 V 60 at V_{DD}=10 V 48 at V_{DD}=15 V C_L=50 pF	8.5 C_L=50 pF	9.5 C_L=50 pF	8.5 C_L=50 pF 6.5 C_L=15 pF	8.5 C_L=50 pF 7.5 C_L=15 pF	22 C_L=50 pF	28 C_L=50 pF	14 C_L=50 pF	ns
Propagation Delay, t_{PHL}/t_{PHL} (Clock to Q)	Counter	Type	**74163**	**74LS163**	**74ALS163**	**4163A**	**4163B**	**74AC163**	**74ACT163**	**74VHC163**	**74VHCT163**	**74HC163**	**74HCT163**	**74LV163**	sn
			16 C_L=15 pF	18 C_L=15 pF	10 C_L=50 pF	450 at V_{DD}=5 V 150 at V_{DD}=10 V C_L=15 pF	180 at V_{DD}=5 V 80 at V_{DD}=10 V 65 at V_{DD}=15 V C_L=50 pF	5 C_L=50 pF	6 C_L=50 pF	6 C_L=50 pF 4.9 C_L=15 pF	8.5 C_L=50 pF 7.7 C_L=15 pF	20 C_L=50 pF	20 C_L=50 pF	18 C_L=50 pF	
		Max	38 C_L=15 pF	27 C_L=15 pF	26 C_L=50 pF	650 at V_{DD}=5 V 250 at V_{DD}=10 V C_L=15 pF	360 at V_{DD}=5 V 160 at V_{DD}=10 V 130 at V_{DD}=15 V C_L=50 pF	9.5 C_L=50 pF	12 C_L=50 pF	10.5 C_L=50 pF 8.5 C_L=15 pF	14.5 C_L=50 pF 13.5 C_L=15 pF	28 C_L=50 pF	28 C_L=50 pF	23 C_L=50 pF	ns
Propagation Delay, t_{PHL}/t_{PHL} (Clock to Q)	Flip-Flop, D-Type	Type	**7474**	**74LS74**	**74ALS74**	**4013A**	**4013B**	**74AC74**	**74ACT74**	**74VHC74**	**74VHCT74**	**74HC74**	**74HCT74**	**74LV74**	ns
			25 C_L=15 pF	25 C_L=1 5pF	13 C_L=50 pF	150 at V_{DD}=5 V 75 at V_{DD}=10 V C_L=15 pF	150 at V_{DD}=5 V 65 at V_{DD}=10 V 45 at V_{DD}=15 V C_L=50 pF	6 C_L=50 pF	6 C_L=50 pF	6.1 C_L=50 pF 4.6 C_L=15 pF	6.3 C_L=50 pF 5.8 C_L=15 pF	20 C_L=50 pF	24 C_L=50 pF	25 C_L=50 pF	
		Max	40 C_L=15 pF	40 C_L=15 pF	18 C_L=50 pF	400 at V_{DD}=5 V 150 at V_{DD}=10 V C_L=15 pF	300 at V_{DD}=5 V 130 at V_{DD}=10 V 90 at V_{DD}=15 V C_L=50 pF	10 C_L=50 pF	11.5 C_L=50 pF	10.5 C_L=50 pF 8.5 C_L=15 pF	10.0 C_L=50 pF 9.0 C_L=15 pF	30 C_L=50 pF	36 C_L=50 pF	35 C_L=50pF	ns

• CMOS IC for LCD Wrist-Watches and Clocks

Part (Pin to Pin Compatibility)	Display			Functions				Multi-plexing Ratio	Supply Current without Load max, µA	V_{DD}, V	Notes
	Digits	Flags	Marks	Hour Minute Second Month Date	Alarm	Chrono-graph	12H/ 24H				
Digital watch											
IZ6099F/ L/C/E (KS5199)	3.5		1	+			12	1/2	1.5	1.5	
IZ6099K	3.5		1	+			12/24		1.5	1.5	
IZ6199	3.5		1	+			12	1/2	1.5	3.0	IZ6099+EL
IZ6095C	4		5	+	+		12/24	1/2	2.0	1.5	
IZ6090F/ G/ L	6	7	4	+	+	1/100	12/24	1/2	2.0	1.5	
IZ6090S	6	7	4	+	+	1/100	12/24	1/2	2.0	1.5	ON/OFF LCD
IZ6090H	6	7	4	+	+	1/100	12/24	1/2	2.0	3.0	
IZ6094	10		6	+	+	+	12/24	1/4	2.5	3.0	
IZ6092	12		6	+	+	+	12/24	1/3	2.5	1.5	
IZ6093 / L	12		6	+	+	+	12/24	1/3	2.5	3.0	
IZ6193	12		6	+	+	+	12/24	1/3	2.5	3.0	IZ6093+EL
IZ6597/B	12		6	+	+	+	12/24	1/3	2.5	3.0	Built-in high-voltage driver EL of illumination
IZ6018	12	-	8	+	+	+	12/24	1/3	2.0	3.0	°C: -20÷+60 °F: -4÷+140
IZ6006	3.5			m,s				1/2	3.0	1.5	Count down/up timer
IZ7007	7		5	+			12	1/2	3.0	1.5	Step counter with watch
IZ7010	7		5	+			24	1/2	3.0	1.5	For electron pedometer-ergmeter with functions watch and alarm
IC6101	12		5	+		+	24	1/2	3.0	1.5	Touch-tone signal Automatic accuracy adjusting Dual Time Daylight saving time Three independent timers

• CMOS IC for LCD Wrist-Watches and Clocks (continued)

Part (Pin to Pin Compatibility)	Display			Functions				Multi-plexing Ratio	Supply Current without Load max, μA	V_{DD}, V	Notes
	Digits	Flags	Marks	Hour Minute Second Month Date	Alarm	Chrono-graph	12H/ 24H				
Analog - Digital watch											
IZ6490	8		8	+	+	1/100	12/24	1/3	1.5	3.0	Calendar adjusts automatically for odd and even months
IZ6491	8		8	+	+	1/100	12/24	1/3	1.5	1.5	
Analog watch and clock											
IZ6013 (KS5113)				h,m,s			12	1/6	2.5	1.5	LCD watch with long second hand
Analog clock											
IZ33173	Output pulse duration 31.25 ms								2.0	1.5	Clock IC
IZ33263									2.0	1.5	Clock with alarm function
IZ33567									1.5	1.5	Clock with alarm, snooze, crescendo
LED watch											
IZ8560	4		5	h, m	+		12/24		5.0	-14…-6.5	
Watch with Vacuum – Luminescent Display											
IZ9012	4		10	+	-		24			5.0	

• Electronic Thermometer IC

Part	Pin to Pin Compatibility	Function	Features	Pads
IZ8016		100° Digital thermometer °C/°F	□ Measurement temperature range: from -50°C to +50°C (from -58°F to +122°F) □ Resolution: 0.2°C (°F) □ Accuracy: ±1°C (°F) □ Supply voltage 1.5V □ Measurement cycle 1, 3, 5 & 10 seconds (on default– 10 seconds) □ Measuring RC-oscilator with external resistor & capacitor □ 32 kHz clock RC-oscilator with build-in capacity □ Serial interface □ Build-in circuit of non-linear digital correction □ 3.5 digit LCD with double multiplex	36
IZ8005	HT7501	Medical thermometer	□ Supply voltage 1.5V □ Measurement temperature range: from +32.00°C to+43.00°C □ Accuracy: ±0.1°C □ Resolution: 0.01°C □ Selftesting □ Alarm signal □ Storage of measurements results (highest temperature) □ Automatic switch-off after 8 min 40 sec □ One button on/off switching	37
IZ8071		Digital thermometer	□ Measurement temperature range: from 32 to 42°C (from 89.6 to 107.6°F) □ Measurement accuracy ±0.05°C – for range from 35 to 38°C, ±0.1°C – for ranges from 32 to 35°C & from 38°C to 42°C □ Resolution: 0.0025°C □ RC-oscillator with own frequency 32.32kHz (external resistance) with adjustment function □ Build-in LCD driver circuit 3COM x 11SEG, 1/3 duty, 1/2 bias	42
IN18B20** IN18B20D	DS18B20	Integrated circuit of digital sensor-measurer of temperature for industrial temperature range	□ Measurement temperature range: from -55°C to +125°C □ Temperature value is converted to 12-bit digital code □ Accuracy of temperature indication can be programmed by customer form 9 to 12 bit □ Alarm signal for case of temperature excess of threshold values determined (programmed) by customer □ Unique 64-bit serial number for each IC, not available for changes by customer □ Data read/write operation from memory of IC, 1-wire interface of data transfer	SO-8 TO-92

** Under Development

• Power N-Channel MOSFETs

Part	Function	Package
IFP50N06	N-Channel MOSFET 60 V; 0.022 Ω– 50 A	TO-220/3
IFP70N06	N-Channel MOSFET 60 V; 0.015 Ω– 70 A	TO-220/3
IFP85N06	N-Channel MOSFET 60 V; 0.012 Ω– 85 A	TO-220/3
IFP75N75	N-Channel MOSFET 75 V; 0.017 Ω– 75 A	TO-220/3
IFP75N08	N-Channel MOSFET 80 V; 0.015 Ω– 75 A	TO-220/3
IFP630	N-Channel MOSFET 200 V; 0.400 Ω– 9 A	TO-220/3
IFF630		TO-220FP
IFP640	N-Channel MOSFET 200 V; 0.180 Ω– 18 A	TO-220/3
IFF640		TO-220FP
IFP634	N-Channel MOSFET 250 V; 0.450 Ω– 8 A	TO-220/3
IFF634		TO-220FP
IFP730	N-Channel MOSFET 400 V; 0.950 Ω– 6 A	TO-220/3
IFF730		TO-220FP
IFP740	N-Channel MOSFET 400 V; 0.550 Ω– 10 A	TO-220/3
IFF740		TO-220FP
IFP830	N-Channel MOSFET 500 V;1.400 Ω– 5 A	TO-220/3
IFF830		TO-220FP
IFP840	N-Channel MOSFET 500 V; 0.850 Ω– 8 A	TO-220/3
IFF840		TO-220FP
IFP13N50	N-Channel MOSFET 500 V; 0.490 Ω– 13 A	TO-220/3
IFW20N50	N-Channel MOSFET 500 V; 0.260 Ω– 20 A	TO-247
IFL50N50	N-Channel MOSFET 500 V; 0.120 Ω– 50 A	TO-265
IFP1N60	N-Channel MOSFET 600 V; 12.000 Ω– 1 A	TO-220/3
IFU1N60		TO-251
IFD1N60		TO-252
IFU2N60	N-Channel MOSFET 600 V; 5.0 Ω–2 A	TO-251
IFD2N60		TO-252
IFP2N60	N-Channel MOSFET 600 V; 5.0 Ω– 2 A	TO-220/3
IFF2N60		TO-220FP
IFP4N60	N-Channel MOSFET 600 V; 2.5 Ω– 4.0 A	TO-220/3
IFF4N60		TO-220FP
IFP7N60	N-Channel MOSFET 600 V; 1.2 Ω– 7 A	TO-220/3
IFF7N60		TO-220FP
IFP10N60	N-Channel MOSFET 600 V; 0.8 Ω– 10 A	TO-220/3
IFF10N60		TO-220FP
IFP12N60	N-Channel MOSFET 600 V; 0.7 Ω– 12 A	TO-220/3
IFF12N60		TO-220FP
IFW20N60	N-Channel MOSFET 600 V; 0.32 Ω– 20 A	TO-247
IFW24N60	N-Channel MOSFET 600 V; 0.26 Ω– 24 A	TO-247
IFW28N60	N-Channel MOSFET 600 V; 0.24 Ω– 28 A	TO-247
IFL40N60	N-Channel MOSFET 600 V; 0.16 Ω– 40 A	TO-263
IFU1N65	N-Channel MOSFET 650 V; 13.0 Ω– 1 A	TO-251
IFD1N65		TO-252
IFU2N65	N-Channel MOSFET 650 V; 5.5 Ω– 2 A	TO-251
IFD2N65		TO-252
IFP2N65		TO-220/3
IFF2N65		TO-220FP
IFP4N65	N-Channel MOSFET 650 V; 2.7 Ω– 4 A	TO-220/3
IFF4N65		TO-220FP
IFP7N65	N-Channel MOSFET 650 V; 1.3 Ω– 7 A	TO-220/3
IFF7N65		TO-220FP
IFP10N65	N-Channel MOSFET 650 V; 0.85 Ω– 10 A	TO-220/3
IFF10N65		TO-220FP
IFF12N65	N-Channel MOSFET 650 V; 0.8 Ω– 12 A	TO-220/3
IFF12N65		TO-220FP

• Power N-Channel MOSFETs (continued)

Part	Function	Package
IFP1N80	N-Channel MOSFET 800 V; 18.0 Ω– 1 A	TO-220/3
IFU1N80		TO-251
IFF3N80	N-Channel MOSFET 800 V; 5.0 Ω– 3 A	TO-220FP
IFW10N80	N-Channel MOSFET 800 V; 1.1 Ω– 10 A	TO-247
IFW9N90	N-Channel MOSFET 900 V; 1.4 Ω– 9 A	TO-247
IFW11N90	N-Channel MOSFET 900 V; 1.1 Ω– 11 A	TO-247
IWP5NK80	N-Channel MOSFET 800 V; 2.4 Ω– 4.3 A	TO-220/3
IZ024N	N-Channel MOSFET 55 V; 0.075 Ω- 17 A	Chip

• Fast (Ultrafast) Rectifying Diode (FRD, UFRD)

Part	Pin to Pin Compatibility	Peak. Rectified Direct current $I_{R.MAX.}$ (A)	Non repetive Peak Surge Current $I_{P.\ max}$ (A)	Max Reverse Voltage $U_{REV.MAX}$ (V)	Max.Reverse Recovery Time t_{REC} ns	Max. instantaneous forward voltage U_R V	Max. instantaneous reverse current (T=25°C) $I_{REV.}$,mA	Package
IWR0520F	MUR0520F	5	35	200	250	1.1	50	TO-220
IWR0520U	MUR0520U	5	35	200	25	1.2	50	TO-220

• Photo-diode

Part	Pin to Pin Compatibility	Function	Package
IWPH01-02A	S2506-02	Photo-diode	Special 2-pin package

• Power Zener Diodes

Part	Pin to Pin Compatibility	Function	Package
IZ3527	MR2537L	Power limiting diode for rectifying bridges of alternator plant I_{RECT}=35A; U_{BR}=18-23V	DO-21 TO-220
IZ3549	MR2535L	Power limiting diode for rectifying bridges of alternator plant I_{RECT}=35A; U_{BR}=36-46V	DO-21 TO-220
IZ3563	MR2563L	Power limiting diode for rectifying bridges of alternator plant I_{RECT}=35A; U_{BR}=50-60V	DO-21 TO-220

• Fast (Ultrafast) Rectifying Diode Arrays (FRDA, UFRDA)

Part	Pin to Pin Compatibility	Peak. Rectified Direct current $I_{R.MAX.}$ (A)	Non repetive Peak Surge Current $I_{P.\ max}$ (A)	Max Reverse Voltage. $U_{REV.MAX}$ (V)	Max.Reverse Recovery Time t_{REC} ns	Max. instanta-neous forward voltage U_R V	Max. instantaneous reverse current (T=25°C) $I_{REV.}$,mA	Package
IWR0520FM	MUR0520FM	5	35	200	250	1.1	50	TO-220
IWR0520UM	MUR0520UM	5	35	200	25	1.2	50	TO-220
IWR0540UM	MUR0540UM	5	35	400	60	1.4	50	TO-220
IW0140A4	MU0140A4	1		400	60	1.4	50	TO-220

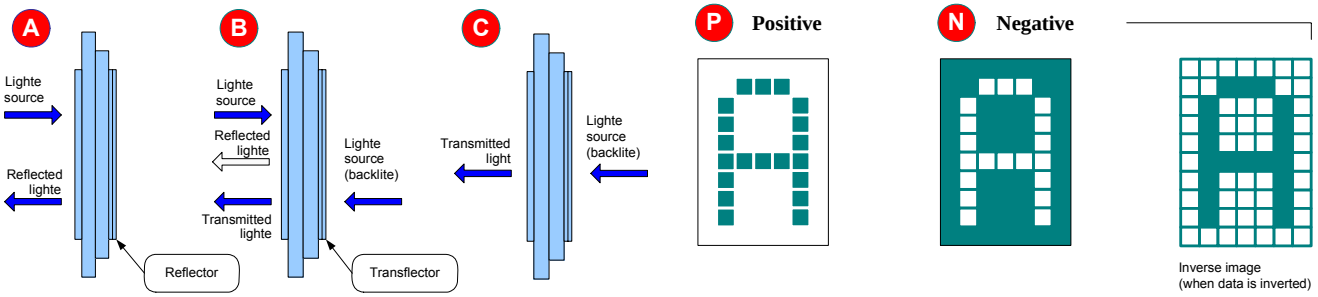
• BASIC SPECIFICATION

№	Item		Climatic performance group (*)			Note
			I	II	III	
1	Operation temperature range, °C		-40…+85	-20…+70	-0…+50	(*1)
2	Contrast		6 : 1	6 : 1	6 : 1	
3	Viewing angle, degrees (at contrast: ≥ 2): - on a vertical; - on a horizontal		 -30…+50 -50…+30 ± 45	 -30…+50 -50…+30 ± 45	 -30…+50 -50…+30 ± 45	(*2)
4	AC applied voltage, V		3 ± 10% 5 ± 10%	3 ± 10% 5 ± 10%	3 ± 10%	
5	Display type	Positive mode	Reflective Transflective Transmissive	Reflective Transflective Transmissive	Reflective Transflective Transmissive	(*1)
		Negative mode	Transmissive	Transmissive	Transmissive	
6	Viewing angle		6 o'clock, 7:30 o'clock, 12 o'clock and other			(*1)
7	Storage temperature range, °C		-60…+85	-50…+80	-50…+60	(*1)

(*1) Climatic performance group, optical mode and maximal contrast angle depend on customer's requirements.
(*2) Vertical field-of-vision angle depends on maximal contrast angle.

• *LCD TYPE: REFLECTIVE/ TRANSFLECTIVE/ TRANSMISSIVE*

• *LCD MODE: POSITIVE/ NEGATIVE*



A. Reflective LCD	B. Transflective LCD	C. Transmissive LCD
Reflector bonded to the rear polarizer reflects the incoming ambient light. *Low power consumption because no backlight is required.*	Transflector bonded to the rear polarizer reflects light from front as well as enabling lights to pass through the back . *Used with backlight off in bright light and with it on in low light to reduce power consumption.*	Whithout reflector or transflector bonded to the rear polarizer. Backlight required . *Most common is transmissive negative image.*

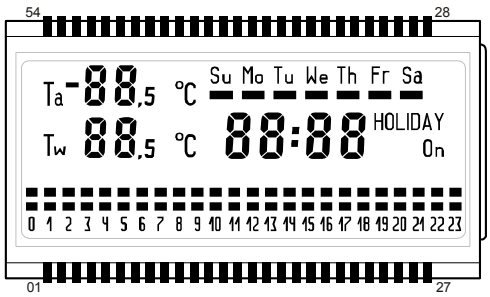
• LCD: System of Designations

Samples of marking:

- ❑ in catalog — **ID-10DP41-MI**
- ❑ during shipments (*) — **ID-10DP41-MI-AP1-2.54**

ID	-	10	DP	1	-	M	-	A	P	1	-	2.54
1		2	3	4		5		7	8	9		10

(*) Optical mode, LCD type, maximal contrast angle and climatic performance group shall be agreed upon during LCD shipments.



LCD marking system at INTEGRAL RPC

Decoding according to the positions numbers

№	Description	Application	Samples
1	*Marking for LCD of INTEGRAL RPC*	For all type LCD	**ID**
2	**LCD characteristic**	For all type LCD	
	Number of digits	LCD of **D** and **DP** type	**8**
	Number of chars in a line, number of lines	LCD of **C** and **CP** type	**1602** - 2 lines till 16 chars
	Number of segment (column), number of common (row) lines	LCD of **G** and **GP** type	**12064** - 120 SEG, 64 COM
	Total number of LCD segments	LCD of **P** type	**8**
3	**Category of the LCD:** **D** – Digital **C** – Characters **G** – Graphic (dot matrix) **P** – contains pictogram (icon)	 LCD of **D** type LCD of **C** type LCD of **G** type LCD of **P** type	 **D, DP** **C, CP** **G, GP** **P**
4	**Design number for a certain type of LCD**	For all type LCD	**45**
5	**Method of LCD mounting on PCB** **M** – using metal pins **R** – using conductive rubber (zebra) or conductive anisotropic glue	For all type LCD	**M** **R**
6	**LCD type:** **A** – reflective LCD **B** – transflective LCD **C** – transmissive LCD	For all type LCD during shipments (*)	**A** **B** **C**
7	**Optical mode:** **N** – Negative LCD **P** – Positive LCD	For all type LCD during shipments (*)	**N** **P**
8	**Operation temperature range:** **1** - temperature - 40…+ 85 °C **2** - temperature - 20…+ 70 °C **3** - temperature 0…+ 50 °C **4** - other	For all type LCD during shipments (*)	**1** **2** **3** **4**
9	**Pitch on metal pins**, mm	For all type LCD during shipments (*)	**1.27** **1.80** **2.00** **2.54**

(*) Optical mode, LCD type, maximal contrast angle and climatic performance group shall be agreed upon during LCD shipments.

Foundry business

- Semiconductor IC and Discrete Devices Manufacturing under the Customer's Design (delivery on base of Probe Test)
- Semiconductor IC and Discrete Devices Manufacturing under the Customer's Design (delivery on the base of PCM)
- Wafer Fab Service – execution of separate Process Flow Steps or blocks (Metal sputtering, film deposition, EPI growing, back grinding, wafers testing and so on)
- Raw Si substrate and EPI manufacturing under the Customer's Spec

Production Capacity available for Foundry Business:

- 8'' wafer production line (0.5-0.35μm design rule)
- 6'' wafer production line (0.8-1.2 μm design rule)
- 4'' wafer production line (1.2-3.0 μm design rule)

Basic Process available:

a) Integrated Circuits:
- DMOS
- CMOS
- BiCMOS
- CDMOS
- BiCDMOS
- Bipolar

b) Discrete devices:
- D-MOS (≤1000 V)
- Multi-Epi (≤700 V)
- Bipolar
- Process for high frequency devices (≤300 V)

Si substrates and EPI, manufacturing and delivery (according to the Customer's Spec):

- 3", 4", 6", 8'' wafers
- EPI parameter range: d=0.5...80 μm, ρ=0.1...50 Ω • cm

Mask making:

- Mask Set manufacturing under the Customer's Spec (GDS II and DB):
  a) for contact lithography
  b) for Projection Reduction (Stepper lithography) (1:1/1:5/1:10)
- Pellicles manufacturing under the Customer's Spec
- Manufacture of photomasks with P/R coatings (glass and quartz substrates)

Contract management

Packaging:

- IC and Discrete Devices assembly (packaging) with Testing
- IC and Discrete Devices assembly (packaging) without Testing
- IC and Discrete Devices assembly (packaging) with Testing and Marking

Packages Types available:

a) Integrated Circuits:
- SOP (8-28 LD)
- DIP (8-40 LD)
- SHRINK DIP (30, 42, 52, 56 LD)
- QFP (48, 64, 100 LD)
- SIL (3, 8, 13, 17 LD)
- SIP (9LD)
- TO -220 (3, 5, 7 LD)
- SOT -23, SOT -143, SOT -223

b) Discrete devices:
- Case 22A-01
- DO-34, DO-35
- MELF, miniMELF
- SOT -23, SOT -143, SOT -223
- ISOWATT
- TO-18, TO-39, TO-72, TO-92, TO-126,
- TO-218, TO-220
- KD-17
- DPAK, D2PAK

Fabless service

IC and discrete devices design:

- IC Design according to the Customer's Data Sheet (Spec) and Process Development
- Discrete Devices Design according to the Customer's Data Sheet (Spec) and Process development
- GDS II and Tape out
- Engineering Consulting service
- Reengineering

Supplementary services

Design of electronic devices/ instruments and manufacture of samples as per Customer's requirements:

- Design and manufacture of PCB
- Design and manufacture of LCD:
  - TN-type ("twist") for electronic clock/watch, calculators, etc,
  - STN-type ("supertwist") for general purposes

Other services:

- Design and manufacture of quartz tooling and accessories, tools
- Design and manufacture of molds, punches, casting/transfer molds
- Marking blocks manufacturing
- High-precision stamping of lead frames for IC manufacturing

• Base Technology Process (short form output characteristics)

Process name	Process Description	Application, electrical, parameters
Bipolar processes for digital-to-analogue IC		
CMOS, 20 V, with p-n junction isolation **«Bp30C-20»**	Photomasks, pcs. 12-14 Mean design rule, μm 2.0 EPI WAFER: Epi layer: Phos/ N-type/ Thk 8/ Res 1.5; Buried layers: Sb/N-type/Thk 6.0/Res 20; Boron/P-type/Thk 1.95/Res210 Substrate: Boron/ P-type/ Thk 460/ Res 10/ Orientation (111) Isolation: p-n junction p-base depth, μm 2.0 N+emitter depth, μm 1.7 Emitter size, μm 7*7 Distance between transistors, μm 4 Switching: contacts 1, μm 3*3 pitch Me 1, μm 9.0 contacts 2, μm 4*4 pitch Me 2, μm 12.0	Small and medium-scale integration digital-analogue IC, V_{DD} < 18 V NPN Vertical: βn=150 Uce=27 V PNP Lateral: βp=30 Uce=35 V PNP Vertical: βp=45 Uce=35 V PNP Vertical with isolated collector: βp=80 Uce=30 V Capacitors: emitter-base; collector-base; Me-n+; Me1-Me2. Resistors in layers: Isolation; Base; Resistor
40 V, with p-n junction isolation **«Bp30-40»**	Photomasks, pcs. 8-13 Mean design rule, **μm** **2.0** EPI WAFER: Epi layer: Phos/ N-type/Thk 13/ Res 3.5; Buried layers: Sb/N-type/Thk 6.0/Res20; Boron/P-type/Thk 1.95/Res210 Substrate: Boron/P-type/Thk 460/Res 10/Orientation(111) p-n junction p-base depth, μm 2.0 N+emitter depth, μm 1.7 Emitter size, μm 9*9 Distance between transistors, μm 4 Switching: contacts 1, μm 3*3 pitch Me 1, μm 9.0 contacts 2, μm 4*4 pitch Me 2, μm 14.0	Small -scale integration digital-analogue IC, V_{DD} < 40 V NPN Vertical: βn =150 Uce=48 V PNP Lateral: βp =65 Uce=60 V PNP Vertical: βp =60 Uce=60 V Capacitors: emitter-base; collector-base; Me-n+; Me1-Me2. Resistors in layers: Isolation; Base; Resistor. PolySi
5 V, «Isoplanar – 1» **«BpI-30-5»**	Photomasks, pcs. 15 Mean design rule, μm 3.0 EPI WAFER: Epi: Phos/N-type/Thk 1.5/Res 0.3; Buried layers: Sb/N-type/Thk 2.5/Res 35; Boron/P-type/Thk 1.95/Res210 Substrate: Boron/P-type/Thk 460/Res 12/Orientation (100) Isolation: LOCOS + p^+ - guard rings p-base depth, μm 0.854 N+ emitter depth, μm 0.55 Emitter size, μm 2*3 Distance between transistors, μm 2 Switching: contacts1, μm 2*3 pitch Me 1, μm 6.5 contacts 2 , μm 4*4 pitch Me 2, μm 10.0	Small and medium-scale integration digital-analogue IC, V_{DD} < 5V NPN Vertical: βp =100 Uce= 8 BV PNP Lateral: βp =25 Uce=20 V Resistors in layer: Base

• Base Technology Process (continued)

Process name	Process Description	Application, electrical parameters
CMOS, 12 V, with LOCOS and p-n junction isolation **«Bp-20Y-12»**	Photomasks, pcs. 18 Mean design rule, μm 2.5 EPI WAFER: Epi: Phos/N-type/Thk 4.0/Res 1.0; Buried layers: Sb/N-type/Thk 2.5/Res 35; Boron/P-type/Thk 2.0/Res550 Substrate: Boron/P-type/Thk 460/Res 12/Orientation (100) Isolation: LOCOS + p^+ - guard rings p-base depth, μm 1.2 N-base depth, μm 1.5 N+emitter depth, μm 0.9 Emitter size, μm 2*3 Distance between transistors, μm 3 Switching: contacts 1, μm 2*3 pitch Me 1, μm 8.0 contacts 2, μm 3*3 pitch Me 2, μm 10.0	Medium-scale integration digital-analogue IC, V_{DD} < 15 V NPN Vertical: βp =80 Uce=18 V PNP Vertical: βp =60 Uce=18 V Capacitors: Poly-SiO2(250A)-Sin+ Resistors in layer: Base, Resistor
CMOS		
5 V, 1.5 μm CMOS, 1 Poly, 2 Me **«CMOS15AC»**	Photomasks, pcs. 14 Design rules, μm 1.5 Substrate: s/N-type/Res 4.5 N/P-well depth, μm 5/5 Interlayer dielectric: BPSG Interlevel dielectric: PEoxide Gate SiO_2, Å 245 Channel length: NMOS/PMOS, μm 1.4/2.0 N LDD- drains space line Poly, μm 3.4 contacts 1, μm 1.5*4.5 space line Me 1, μm 6.0 contacts 2, μm 3.0*4.5 space line Me 2, μm 9.5	Small and medium-scale integration logic IC, V_{DD} < 5 V NMOS: Vtn= 0.8 V , Usd >12 V PMOS: Vtp= -0.8 V, Usd >12 V
5 V, 1.5 μm CMOS, local n^+, p^+ - buried layers 1 Poly, 1 Me, specifically resistant **«CMOS15VY»**	Photomasks, pcs. 14 Design rules, μm 1.5 Substrate: Boron/P-type/Res 12 N^+/P^+-buried layers, μm Epi layer Phos/N-type/Thk 8/Res 4.5 N/P-well depth, μm 6/7 Gate SiO_2, Å 245 Interlayer dielectric BPSG Channel length (active): NMOS/PMOS, μm 2.0/2.0 Channel length (output): NMOS/PMOS, μm 2,4/2,4 space line Poly, μm 4,5 contacts, μm 1.5*4.5 space line Me, μm 6	Small and medium-scale integration logic IC, V_{DD} < 5 V, with Vin/ Vout overvoltage < 10V, specifically resistant NMOS: Vtn= 0,6±0.2 V, Usd>12 V PMOS: Vtp= 0,6±0.2 V, Usd>12 V

• Base Technology Process (continued)

Process name	Process Description	Application, electrical parameters
5 V, 2 μm CMOS, 1 Poly, 1 Me **«CMOS20»**	Photomasks, pcs. 11 Design rules, μm 2.0 Substrate: ype/Res 4.5 2 wells N/P-well depth, μm 6/7 Gate SiO_2, Å 425/300 Interlevel dielectric: BPSG Channel length: NMOS/PMOS, μm 2.5 pitch Poly , μm 4.5 contacts, μm 2.4*2.4 pitch Me, μm 8.5	Small and medium-scale integration logic IC, V_{DD} < 5 V NMOS: Vtn= 0.6/0.5 V, Usd >12 V PMOS: Vtp= -0.7 V/-0.5, Usd >14 V
1.5 V, 1.6 μm, 1 Poly, 1 Me, low threshold **«CMOS16EN»**	Photomasks, pcs. 11 Design rules, μm 1.6 Substrate: /P-type/Res 12 2 wells N/P-well depth, μm 5/6 Gate SiO2, Å 300 Interlayer dielectric – BPSG Channel length: NMOS/PMOS, μm 2.0 pitch Poly , μm 3.2 contacts, μm 1.5 pitch Me, μm 3.6	Medium-scale integration digital IC for electronic timepieces and micro calculators, V_{DD} 1.5 V÷3 V. NMOS: Vtn= 0.5 V , Usd >10 V PMOS: Vtp= -0.5 V, Usd >10 V
5 V, 1.2 μm CMOS, 2 Poly, 2 Me, low threshold EEPROM **«CMOS12X»**	Photomasks, pcs. 3 marked Design rules, μm 1.2 Substrate: Boron/P-type/Res 12 wells N/P-well depth, μm 5/6 Gate SiO2: Low voltage transistors, Å 250 High voltage transistors, Å 350 Tunnel SiO2, Å 77 Interlayer dielectric-1: Si3N4, Å 350 Interlayer dielectric -2: BPSG, Å 7000 Interlevel dielectric: PEoxide+SOG+ PEoxide Channel length: Low voltage NMOS/PMOS, μm 1.4/1.6 High voltage NMOS/PMOS, μm 2.6/2.6 N & P LDD- drains In-built transistors Pitch Poly 1, μm 3.2 Pitch Poly 2, contact free, μm 2.4 Pitch Poly 2, with contact, μm 4,6 contacts-1, μm 1.2 Pitch Me 1, contact free, μm 3.2 Pitch Me 2, with contact, μm 4,4 Contacts 2, μm 1.4 Pitch Me 2, contact free, μm 4.4 Pitch Me 2, with contact, μm 4,8	LSI EEPROM V_{DD} 2,4 V÷6 V LV NMOS: Vtn=(0.4-0,8)V Usd≥12 V LV PMOS: Vtp=-(0.5-0,9)V Usd ≤-12 V HV- NMOS: Vtn=(0,3-0,6)V Usd≥17 V HV- PMOS: Vtp=-(0,6-1,0)V Usd ≤-15 V

• Base Technology Process (continued)

Process name	Process Description	Application, electrical parameters
5 V, 0.8μm CMOS, 2 Poly, 1Me, low threshold EEPROM **«CMOS08XE»**	Photomasks, pcs. 20 (with marks, reverse pads, lightly doped contacts) Design rules, μm 1.2 in «Contacts» & «Metallization» layers, μm 0.8 Substrate: Boron/P-type/Res 12 2 wells N/P-well depth, μm 5/6 Gate SiO2, Å 425 Tunnel SiO2, Å 77 Interlayer dielectric -1: Si_3N_4, Å 350 Interlayer dielectric -2: BPSG, Å 7000 Built-in transistors Channel length: NMOS/PMOS Low voltage transistors, μm 2.4 High voltage transistors, μm 3.6 Pitch Poly 1, contact free, μm 1.8 Pitch Poly 1, with contact, μm 4.6 Pitch Poly 2, μm 4.0 Contacts, μm 0.8 Me Ti-TiN/Al-Si/TiN Pitch Me, contact free, μm 2.4 Pitch Me, with contact, μm 3,2	Medium scale integration EEPROM, V_{DD} 1,8 V÷6 V NMOS: Vtn=(0,60±0,20)V Usd ≥12 V PMOS: Vtp=-(0,6±0,2)V Usd ≤-12 V HV-NMOS: Vtn=(0,3-0,45)V Usd ≥16 V HV-PMOS: Vtp=-(0,6±0,2)V Usd ≤-16 V
5 V, 1.5 μm CMOS, 1 Poly, 1 Me, Poly- resistors **«CMOS15B» / «CMOS15BY»**	Photomasks, pcs. 17 Design rules, μm 1.5 Substrate: Boron/P-type/Res 12; Phos/N-type/Res 4.5 Epi layer no/ Phos/N-type/Thk 8/Res 4.5 2 wells N/P-well depth, μm 5/6 P-type Poly resistors Bipolar vertical NPN transistor Gate SiO2, Å 250 Interlayer dielectric: BPSG S/PMOS channel length, μm 1.7 N&P LDD- drains Pitch Poly, μm 2.5 Contacts, μm 1.3 Pitch Me, μm 3.5	Supply voltage controller IC NMOS: Vtn= 0.5 / 0,6 V, Usd >10 V PMOS: Vtp= -0.5 / -0.6 V, Usd >10 V
3-5 V, 0.8 μm CMOS, 1 Poly (2 Poly), 2 Me **«CMOS08D»**	Photomasks, pcs. 16 (17) Design rules, μm 0.8 Substrate: Phos/N-type/Res 4.5 or Bor/P-type/Res 12 2 wells N/P-well depths, μm 4/4 Interlayer dielectric: BPSG Gate SiO2, Å 130 / 160 channel length NMOS/PMOS, μm 0.9/1.0 N&P LDD- drains Me I Ti-TiN/Al-Si/TiN Pitch Poly, μm 1.9 Contacts 1, μm 0.9 Pitch 2.2 Me 2 Al-Si/TiN Contacts 2, μm 0.9 Pitch Me 2, μm 2.4	IC for telecommunication (SLIC), Customized IC, V_{DD} 3 V÷5 V NMOS: Vtn=0.6 V, Usd >10 V PMOS: Vtp=-0.8 V, Usd >10 V

• Base Technology Process (continued)

Process name	Process Description	Application, electrical parameters
10 V, 3,0 μm Bi-CMOS, local n^+, p^+ - buried layers, Locos+ p-n junction isolation, 2 Poly, 1 Me, specifically resistant, **«BCMOS30Y-10»**	Photomasks, pcs 18 Design rules, μm 3.0 Substrate: Boron/P-type/Res 12 N^+/P^+ buried layers Epi layer Phos/N-type/Thk 20/Res 4.5 N/P-well depth, μm 6/7 Gate SiO_2, Å 425 Interlayer dielectric: BPSG Channel length: NMOS/PMOS, μm 3.5/3.3 Pitch Poly, μm 5 Contacts, μm 5 Pitch Me, μm 6	Serial interface LSIC, RS-485 standard; V_{DD} = 5 V, Vin/ Vout (–7 ± 12)V, specifically resistant NMOS: Vtn= (1.0 ±0.2)V , Usd >16 V PMOS: Vtp= (0.8±0.2)V, Usd >16 V
5V, high voltage 0.8 μm CMOS, 2 Poly, 1 Me, EEPROM **«CMOS08HXE»**	Photomasks, pcs. 19 (with marks, reverse pads, underdoped contacts) Design rules, μm 0.8 (in «Contacts» & «Metallization» layers) Substrate: Boron/P-type/Res 12 1 well N-well depth, μm 4 Gate SiO2: High voltage transistors, Å 350 Tunnel SiO2, Å 77 Interlayer dielectric -1: Si_3N_4, Å 350 Interlayer dielectric -2: BPSG, μm 0,55±0,5 Interlevel dielectric:-3: PEoxide+SOG+ PEoxide, μm 0,7±0,1 Channel length: High-voltage NMOS/PMOS, μm 2,6/2,6 N & P LDD- drains In-built transistors Pitch Poly1, contact free, μm 1.8 Pitch Poly1, with contact, μm 4,6 Pitch Poly 2, contact free, μm 1,8 Contacts, μm 0.8 Me Ti-TiN/Al-Si/TiN Pitch Me, contact free, μm 2.4 Pitch Me, with contact, μm 3,2	LSI EEPROM, V_{DD} 1.8 V÷6 V HV- NMOS: Vtn=(0,3-0,7)V Usd≥17 V HV- PMOS: Vtp=-(0,4-0,9)V Usd ≤-17 V

• Base Technology Process (continued)

Process name	Process Description	Application, electrical parameters
	Bipolar CDMOS	
200 V, with p-n junction isolation, 1 Poly, 1 Me, NDMOS/PDMOS high-voltage transistors **«BCDMOS30-200»**	Photomasks, pcs. 19 Mean design rule, μm 4.0 EPI WAFER: Epi layer: Phos/ N-type/ Thk 27/ Res 8; Buried layers: Sb/N-type/Thk 30/Res 5.5; Boron/P-type/Thk 300/Res2.0 Substrate: Boron/ P-type/ Thk 460/ Res 60/ Orientation (100) Isolation: p-n junction P-well depth, μm 6.5 NDMOS base depth, μm 3.0 Gate SiO2, Å 900 NPN p-base depth, μm 2.5 N+emitter depth, μm 0.8 Interlayer dielectric – low temp. PCG 0,55μm +SIPOS 0.1μm + low temp. PCG 1,1μm Channel length (gate): NDMOS/PMOS, μm 6 Pitch Poly, μm 8 Contacts, μm 4 Pitch Me, μm 12	Small -scale integration analogue IC, V_{DD} < 210 V NPN Vertical: βn =70 Uce=50 V NDMOS: Vtn= 2.0 V, Usd >200 V PDMOS: Vtp= -1.0 V, Usd >200 V NMOS: Vtn= 1.5 V , Usd >20 V Resistors in layer: NPN base, P-drain, Poly. Capacitors: Poly-Si (SiO2 900 Å) Poly-Al (SiO2 1600 Å)
90 V, p-n junction isolation, 1 Poly, 1 Me, NMOS/PMOS low-voltage transistors, NDMOS/PDMOS high-voltage lateral transistors, power vertical NDMOS transistor, bipolar vertical NPN & lateral PNP transistors **«BCDMOS30-90»**	Photomasks, pcs. 19 Mean design rule, μm 4.0 EPI WAFER: Epi layer: Phos/ N-type/ Thk 12/ Res 1.5; Buried layers: Sb/N-type/Thk 20/Res 6; Boron/P-type/Thk 250/Res2.0 Substrate: Boron/ P-type/ Thk 460/ Res 12/ Orientation (100) Isolation: p-n junction P-well depth, μm 6.5 NDMOS base depth, μm 2.5 Gate SiO2, Å 750 NPN p-base depth, μm 2.5 N+emitter depth, μm 0.5 Interlayer dielectric - BPSG, μm 0,8 Channel length (gate): NMOS/PMOS, μm 7 Contacts, μm 2 Pitch Me, μm 8	Small and medium-scale integration analogue IC, V_{DD} < 90 V NPN Vertical: βn =50 Uce=20 V PNP Lateral: βp =25 Uce=20 V LNDMOS Vtn= 2.0 V, Usd >90 V LPDMOS: Vtp= -1.4 V, Usd >90 V NMOS: Vtn= 1.2 V, Usd >18 V PMOS: Vtp= 1.5 V, Usd >18 V VNDMOS: Vtn= 2.0 V, Usd >70 V Resistors in layer: NDMOS base, P-drain, Poly. Capacitors: Poly-Si (SiO2 750 Å) Poly-Al (SiO2 8000 Å)

• Mask Making

ITEM	SPECIFICATIONS
MASKS FOR STEPPER (RETICLES) SCALE 10:1 (SODA LIME PLATE**)**	1. Type of masking layer: C - chromium, ARC - antireflective chromium 2. Min feature – 4 μm Deviation ± 0.15 μm 3. Max defect size – 2.0 μm; 1.5 μm; 1.0 μm 4. Accuracy alignment in mask set – to 0.8 μm 5. Sizes of plate: 127 x 127 x 2.4 mm (5″sq. x 0.090″) 153 x 153 x 2.4 mm (6″sq. x 0.090″)
MASKS FOR STEPPER (RETICLES) SCALE 5:1 (SODA LIME PLATE**)**	1. Type of masking layer: C – chromium, ARC – antireflective chromium 2. Min feature – 2 μm Deviation ± 0.10 μm 3. Max defect size – 2.0 μm; 1.5 μm; 1.0 μm 4. Accuracy alignment in mask set – to 0.6 μm 5. Sizes of plate: 127 x 127 x 2.4 mm (5″sq. x 0.090″) 153 x 153 x 2.4 mm (6″sq. x 0.090″)
MASKS FOR STEPPER (RETICLES) SCALE 5:1 (QUARTZ PLATE)	1. Type of masking layer: C – chromium, ARC–antireflective chromium 2. Min feature – 2 μm Deviation ± 0.10 μm 3. Max defect size – 2.0 μm; 1.5 μm; 1.0 μm 4. Accuracy alignment in mask set – to 0.6 μm 5. Sizes of plate: 152 x 152 x 6.35 mm (6″sq. x 0.250″)
MASKS 1:1 (FOR PROGECTION AND CONTACT LITHOGRAPHY)	1. Type of masking layer: C – chromium, ARC– antireflective chromium, Fe_2O_3 –ferroxide 2. Min feature – 1.2 μm Deviation ± 0.10 μm 3. Accuracy alignment in mask set ± 0.3 μm 4. Sizes of plate: 102 x 102 (4″sq. x 0.090″) 127 x 127 (5″sq. x 0.090″) 153 x 153 (6″sq. x 0.090″)
MASK BLANKS	1. Sizes of plate: 102 x 102 x 2.4 mm (4″sq. x 0.090″) 127 x 127 x 2.4 mm (5″sq. x 0.090″) 153 x 153 x 2.4 mm (6″sq. x 0.090″) 2. Type of glass: soda lime 3. Type of masking layer: C – chromium, ARC– antireflective chromium, Fe_2O_{3-} - ferroxide 4. Type of resist layer: positive photoresist, positive electronoresist

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Silicon Foundry	1. Integrated circuits 2. Discrete devices: - bipolar and MOS transistors - diodes
Foundry Services	1. ICs manufacture (wafer, chips, chips on the wafer) on the base of 0.5 – 2.0 μm design rule and Customer's Technical Specification. 2. Packaging on the base of Customer's dies: SOP, DIP, QFP, SIP,SIL, TO packages. 3. Development of ICs and electronic instruments/ devices. 4. Mask making. 5. Development of electronic devices and manufacture of samples as per Customer's requirements.
Design of Electronic Components	1. Liquid-crystal displays and panels: - twist nematic - super twist nematic
Design and Manufacture of Various Products for Semiconductor and Electronic Industries	1. Lead frames for integrated circuits and discrete devices 2. Photomasks and mask blanks 3. Silicon substrates and epi structures 4. Printed boards 5. Attachment of packageless integrated circuits on printed board and wiring 6. Mounting of parts on printed board 7. Molding of pellets for encapsulation of transistors and ICs
Development of Software	1. Software for integrated circuit CAD systems those use PC/AT and workstations of Hewlett-Packard 2. Adaptation of CAD software of Mentor Graphics and Cadence to user's conditions 3. Application software under the management of MS DOS and WINDOWS shell 4. Software for automatic control systems with the use of various database management systems 5. Tested software for microprocessor systems 6. Manager programs for microprocessor systems 7. Examination of program products
Design and Manufacture of Machine-Tool Attachments	1. Molds 2. Blanking dies 3. Quartz work tools 4. Fluoroplastic tools 5. Hard alloy workpieces and stamping parts 6. Die attachment and bonding tools 7. Jigs, fixtures, mechanisms, etc. 8. Stamping and forming of details. The force is up to 100 tons 9. High-temperature processing of quartz glass
Testing	1. Testing of electronic parts and apparatuses with the purpose of certifying
Analysis	1. Technical examination of electronic products failure causes when a customer and supplier are in discord 2. Non-destructive analysis of solid state materials element composition of high sensivity and locality with electron and ion spectroscopy methods and X-photoemission spectroscopy analysis 3. Object structure and surface microanalysis with the use of 1000000^{x} scanning electron and transmission electron microscopes 4. Measurements of electrophysical and optical parameters of solid state samples including R-, C-, L-parameters, micro- and macroobjects surface temperature extention, spectrophoto metrical measurements, buried defect analysis with the use of acoustic microscopy 5. Test and analysis of various chemical materials for conformity with specifications

TRANSISTOR

• Bipolar Transistors

Part	Pin to Pin Compatibility	Polarity	P_C max, W	V_{CB} max, V	V_{CE} max, V	V_{EB} max, V	I_C max, mA	h_{FE}	V_{CE} sat, V	I_{CBO}, μA	F_T, MHz	Nf, dB	Package
КТ220А9 КТ220Б9 КТ220В9 КТ220Г9	KSC1623	NPN	0.2	60	50	5	100	90…180 135…270 200…400 300…600	0.3	0.1	250		SOT-23
КТ3102АМ	BC547A	NPN	0.25	50	50	5	200	100…250	0.25	0.05	200	10	TO-92
КТ3102БМ	BC547B			50	50			200…500		0.05	200	10	
КТ3102ВМ	BC548B			30	30			200…500		0.015	200	10	
КТ3102ГМ	BC548C			20	20			400…800		0.015	200	10	
КТ3102ДМ	BC549B			30	30			200…500		0.015	300	4	
КТ3102ЕМ	BC549C			20	20			400…1000		0.015	300	4	
КТ3102ЖМ				50	50			100…250		0.05	200	-	
КТ3102ИМ				50	50			200…500		0.05	200	-	
КТ3102КМ				30	30			200…500		0.015	200	-	
КТ3107А	BC307A	PNP	0.3	50	45	5	100	70…140	0.2	0.1	250	10	TO-92
КТ3107Б				50	45			120...220				10	
КТ3107В				30	25			70…140				10	
КТ3107Г	BC308A			30	25			120…220				10	
КТ3107Д	BC308B			30	25			180…460				10	
КТ3107Е				25	20			120…220				4	
КТ3107Ж	BC309B			25	20			180…460				4	
КТ3107И	BC307B			50	45			180…460				10	
КТ3107К	BC308C			30	25			380…800				10	
КТ3107Л	BC309C			25	20			380…800				4	
КТ3117А	2N2221	NPN	0.3	60	60	4	400	40…200	0.6	10	200		TO-18
КТ3117Б	2N2222		0.3	75	75			100…300					TO-92
КТ3117А1	PN2222		0.5	60	60			40…200					TO-92
КТ3126А	BF506	PNP	0.15	30	30	3	30	25…100	1.2	0.5	500	5	TO-92
КТ3127А	2N4411	PNP	0.1	20	20	3	25	25…150		1.0	600	5	TO-72
КТ3128А		PNP	0.1	40	40	3	20	15…150		1.0	700	5	TO-92
КТ3129А9		PNP	0.1	50	40	5	100	30…120	0.2	1.0	200		SOT-23
КТ3129Б9	BC857A			50	40			80…250					
КТ3129В9	BC858A			30	20			80…250					
КТ3129Г9	BC858B			30	20			200…500					
КТ3129Д9				20	20			200…500					
КТ3130А9	BCW71	NPN	0.1	50	40	5	100	100…250	0.3	0.1	150	-	SOT-23
КТ3130Б9	BCW72			50	40			200…500			150	10	
КТ3130В9	BCW32			30	20			200…500			150	10	
КТ3130Г9				20	15			400…1000			300	10	
КТ3130Д9				30	20			200…500			150	4	
КТ3130Е9				20	15			400…1000			300	4	
КТ3130Ж9				30	25			100…500			150	-	
КТ3142А	2N2369	NPN	0.36	40	40	4.5	200	40…120	0.25	0.4	500		TO-18
КТ3157А	BF423	PNP	0.2	250	250	5	30	>50	1.0	0.1	60		TO-92
КТ3189А9	BC847A	NPN	0.225	50	45	6	100	110…220	0.6	0.015	300	10	SOT-23
КТ3189Б9	BC847B							200…450					
КТ3189В9	BC847C							420…800					
КТ368А9 КТ368Б9	BF599	NPN	0.1	15	15	4	30	50…300		0.5	900	3.3	SOT-23

• Bipolar Transistors (continued)

Part	Pin to Pin Compatibility	Polarity	P_C max, W	V_{CB} max, V	V_{CE} max, V	V_{EB} max, V	I_C max, mA	h_{FE}	V_{CE} sat, V	I_{CBO}, μA	F_T, MHz	Nf, dB	Package
KT502A KT502Б KT502B KT502Г KT502Д KT502E	KSA539 BC212	PNP	0.35	40 40 60 60 80 90	25 25 40 40 60 80	5	150	40…120 80…240 40…120 80…240 40…120 40…120	0.6	1	5		TO-92
KT503A KT503Б KT503B KT503Г KT503Д KT503E	KSC815 BC183	NPN	0.35	40 40 60 60 80 100	25 25 40 40 60 80	5	150	40…120 80…240 40…120 80…240 40…120 40…120	0.6	1	5		TO-92
KT520A KT520Б	MPSA42 MPSA43	NPN	0.625	300 200	300 200	6	500	>40	0.5 0.4	100	50		TO-92
KT521A KT521Б	MPSA92 MPSA93	PNP	0.625	300 200	300 200	5	500	>40	0.5 0.4	100	50		TO-92
KT538A	MJE13001	NPN	0.7	600	400	9	500	5…90	0.5	Iкэк 100	4		TO-92
KT6109A KT6109Б KT6109B KT6109Г KT6109Д	SS9012D SS9012E SS9012F SS9012G SS9012H	PNP	0.625	40	20	5	500	64…91 78…112 96…135 112…166 144…202	0.6	0.1			TO-92
KT6110A KT6110Б KT6110B KT6110Г KT6110Д	SS9013D SS9013E SS9013F SS9013G SS9013H	NPN	0.625	40	20	5	500	64…91 78…112 96…135 112…166 144…202	0.6	0.1			TO-92
KT6111A KT6111Б KT6111B KT6111Г	SS9014A SS9014B SS9014C SS9014D	NPN	0.45	50	45	5	100	60…150 100…300 200…600 400…1000	0.3	0.05	150	10	TO-92
KT6112A KT6112Б KT6112B	SS9015A SS9015B SS9015C	PNP	0.45	50	45	5	100	60…150 100…300 200…600	0.7	0.05	100	10	TO-92
KT6113A KT6113Б KT6113B KT6113Г KT6113Д KT6113E	SS9018D SS9018E SS9018F SS9018G SS9018H SS9018I	NPN	0.4	30	15	5	50	28…45 39…60 54…80 72…108 97…146 132…198	0.5	0.05	700		TO-92
KT6114A KT6114Б KT6114B KT6114Г KT6114Д KT6114E	SS8050B SS8050C SS8050D	NPN	1.0 1.0 1.0 0.7 0.7 0.7	40	25	6	1500 1500 1500 1100 1100 1100	85…160 120…200 160…300 85…160 120…200 160…300	0.5	0.1	100		TO-92
KT6115A KT6115Б KT6115B KT6115Г KT6115Д KT6115E	SS8550B SS8550C SS8550D	PNP	1.0 1.0 1.0 0.7 0.7 0.7	40	25	6	1500 1500 1500 1100 1100 1100	85…160 120…200 160…300 85…160 120…200 160…300	0.5	0.1	100		TO-92
KT6116A KT6116Б	2N5401 2N5400	PNP	0.625	160 130	150 120	5	600	60…240 40…180	0.5	0.05 0.1	100	8	TO-92
KT6117A KT6117Б	2N5551 2N5550	NPN	0.625	180 160	160 140	6	600	80…250 60…250	0.2 0.25	0.05 0.1	100	8	TO-92

• Bipolar Transistors (continued)

Part	Pin to Pin Compatibility	Polarity	P_C max, W	V_{CB} max, V	V_{CE} max, V	V_{EB} max, V	I_C max, mA	h_{FE}	V_{CE} sat, V	I_{CBO}, μA	F_T, MHz	Nf, dB	Package
КТ6128А КТ6128Б КТ6128В КТ6128Г КТ6128Д КТ6128Е	SS9016D SS9016E SS9016F SS9016G SS9016H SS9016I	NPN	0.4	30	20	4	25	28…45 39…60 54…80 72…108 97…146 132…198	0.3	0.1	400	5	TO-92
КТ6136А	2N3906	PNP	0.625	40	40	5	200	100…300	0.4	0.05	250		TO-92
КТ6137А	2N3904	NPN	0.625	60	40	6	200	100…300	0.3	0.05	300		TO-92
	BC639	NPN	0.625	100	80	5	1500	≥25	0.5	0.1	100		TO-92
	BC640	PNP	0.625	100	80	5	1500	≥25	0.5	0.1	100		TO-92
КТ635Б	2N3725	NPN	0.5	60	60	5	1000	20 …150	0.52	30	300		TO-126
КТ646А КТ646Б КТ646В	2SC495 2CS496	NPN	1.0	60 40 40	60 40 40	4	1000	40…200 >150 150…340	0.85 0.25 0.25	10 10 0.05	250		TO-126
КТ660А КТ660Б	BC337 BC338	NPN	0.5	50 30	45 30	5	800	110…220 200…450	0.5	1.0	200		TO-92
КТ732А КТ733А	MJE4343 MJE4353	NPN PNP	125	160	160	7	16000	8…15	2.0	750	1.0		TO-218
КТ738А КТ739А	TIP3055 TIP2955	NPN PNP	90	70	60	5	15000	20…100	1.1	1000			TO-218
КТ805АМ КТ805БМ КТ805ВМ КТ805ИМ		NPN	30	300	Ucer 160 135 135 60	5	5000	>15 >15 >15 >25	- - 2.5 3.0	1.0			TO-92
КТ814А КТ814Б КТ814В КТ814Г	BD136 BD138 BD140	PNP	10		40 50 70 100	5	1500	40…275 40…275 40…275 30…275	0.6	50	40		TO-126
КТ815А КТ815Б КТ815В КТ815Г	BD135 BD137 BD139	NPN	10		40 50 70 100	5	1500	40…275 40…275 40…275 30…275	0.6	50	40		TO-126
КТ816А КТ816Б КТ816В КТ816Г	BD234 BD236 BD238	PNP	25		40 45 60 100	5	3000	25…275	0.6	100	3.0		TO-126
КТ817А КТ817Б КТ817В КТ817Г	BD233 BD235 BD237	NPN	25		40 45 60 100	5	3000	25…275	0.6	100	3.0		TO-126
КТ8126А1 КТ8126Б1	MJE13007 MJE13006	NPN	80	700 600	400 300	9	8000	8…40	1.0	1000	4.0		TO-220
КТ8164А КТ8164Б	MJE13005 MJE13004	NPN	75	700 600	400 300	9	4000	8…40	1.0	1000			TO-220
КТ8170А1 КТ8170Б1	MJE13003 MJE13002	NPN	40	700 600	400 300	9 9	1500	8…40	1.0	1000	4.0		TO-126
КТ8176А КТ8176Б КТ8176В	TIP31A TIP31B TIP31C	NPN	40	60 80 100	60 80 100	5	3000	>25	1.2	I_{CES}=300	3.0		TO-220

• Bipolar Transistors (continued)

Part	Pin to Pin Compatibility	Polarity	P_C max, W	V_{CB} max, V	V_{CE} max, V	V_{EB} max, V	I_C max, mA	h_{FE}	V_{CE} sat, V	I_{CBO}, μA	F_T, MHz	Nf, dB	Package
KT8177A KT8177Б KT8177B	TIP32A TIP32B TIP32C	PNP	40	60 80 100	60 80 100	5	3000	>25	1.2	I_{CES}=300	3.0		TO-220
KT8212A KT8212Б KT8212B	TIP41C TIP41B TIP41A	NPN	65	60 80 100	60 80 100	5	6000	15…75	1.5	I_{CES}=400	3.0		TO-220
KT8213A KT8213Б KT8213B	TIP42C TIP42B TIP42A	PNP	65	60 80 100	60 80 100	5	6000	15…75	1.5	I_{CES}=400	3.0		TO-220
KT8213A	MJE2955	PNP	75	70	60	5	10000	20…100	1.1	1000			TO-220
KT8212A	MJE3055	NPN	75	70	60	5	10000	20…100	1.1	1000			TO-220
KT8224A KT8224Б	BU2508A BU2508D	NPN	100	1500	700	7.5	8000	4…7 4…9	1.0 1.5	1000			TO-218
KT8225A	BU941ZP	NPN	155	350	350	5	15000	>300	2.7	100			TO-218
KT8228A KT8228Б	BU2525A BU2525D	NPN	125	1500	800	7.5 6.0	12000	5.0…9.5	5.0	Iebo=1.0			TO-218
KT8229A	TIP35F	NPN	125	180	180	5	25000	15…75	1.8	Iceo=1.0	3.0		TO-218
KT8230A	TIP36F	PNP	125	180	180	5	25000	15…75	1.8	1.0	3.0		TO-218
KT8247A	BUL45D2	NPN	75	700	400	12	5000	>22	0.5	100			TO-220
KT8248A1	BU2506D	NPN	90	Ucek 1500	700	7.5	5000	3.8…9.0	3.0				TO-218
KT8261A	BUD44D2	NPN	25	700	400	9	2000	>10	0.65	0.1			TO-126
	BUL44D2	NPN	40	700	400	9	5000	>10	0.65	0.1			TO-220
KT8270A	MJE13001	NPN	0.7	600	400	9	0.5	5…90	0.5	1000	4		TO-126
KT8271A KT8271Б KT8271B	BD136 BD138 BD140	PNP	10.0	45 60 80	45 60 80	5	1500	>25	0.5	0.1			TO-126
KT8272A KT8272Б KT8272B	BD135 BD137 BD139	NPN	10.0	45 60 80	45 60 80	5	1500	>25	0.5	0.1			TO-126
KT8290A	BUH100	NPN	100	700	400	9	10000	>10	1.0				TO-220
KT8296A KT8296Б KT8296B KT8296Г	KSD882R KSD882O KSD882Y KSD882G	NPN	10	40	30	5	3000	60…120 100…200 160…320 200…400	0.5	100			TO-126
KT8297A KT8297Б KT8297B KT8297Г	KSB772R KSB772O KSB772Y KSB772G	PNP	10	40	30	5	3000	60…120 100…200 160…320 200…400	0.5	100			TO-126
KT872A KT872Б KT872B	BU508A BU508	NPN	100	1500 1500 1200	700 700 600	6	8000	>6	0.5 5.0 1.0	1.0 1.0 0.6	4.0		TO-218
KT928A	2N2218	NPN	0.5	60	60	5	0.8	20…100	1.0	5.0	250		TO-126
KT928Б	2N2219	NPN	0.5	60	60	5	0.8	50…200	1.0	5.0	250		TO-126
KT928B	2N2219A	NPN	0.5	75	75	5	0.8	100…300	1.0	1.0	250		TO-126
KT940A KT940Б KT940B	BF459 BF458 BF457	NPN	10	300 250 160	300 250 160	5	100	>25	1.0	0.05			TO-126
KT969A	BF469	NPN	6	300	250	5	100	50…250	1.0	0.05	60		TO-126

• Power Bipolar Darlington Transistors

Part	Pin to Pin Compatibility	Polarity	P_C max, W	V_{CB} max, V	V_{CE} max, V	V_{EB} max, V	I_C max, mA	h_{FE}	V_{CE} sat, V	I_{CBO}, μA	F_T, MHz	Package
КТ8115А КТ8115Б КТ8115В	TIP127 TIP126 TIP125	PNP	65	100 80 60	100 80 60	5	5000	>1000	2.0	200	4	TO-220
КТ8116А КТ8116Б КТ8116В	TIP122 TIP121 TIP120	NPN	65	100 80 60	100 80 60	5	5000	>1000	2.0	200	4	TO-220
КТ8214А КТ8214Б КТ8214В	TIP110 TIP111 TIP112	NPN	50	60 80 100	60 80 100	5	2000	>500	2.5	1000		TO-220
КТ8215А КТ8215Б КТ8215В	TIP115 TIP116 TIP117	PNP	50	60 80 100	60 80 100	5	2000	>500	2.5	1000		TO-220
КТ8156А КТ8156Б	BU807	NPN	60	330	150 200	6	8000	>100	1.5	1000		TO-220
КТ8158А КТ8158Б КТ8158В	BDV65A BDV65B BDV65C	NPN	125	60 80 100	60 80 100	5	12000	>1000	2.0	400		TO-218
КТ8159А КТ8159Б КТ8159В	BDV64A BDV64B BDV64C	PNP	125	60 80 100	60 80 100	5	12000	>1000	2.0	400		TO-218
КТ8225А	BU941ZP	NPN	155	350	350	5	15000	>300	2.7	100		TO-218
КТ8251А	BDV65F	NPN	125	180	180	5	10000	>100	2.0	0.4		TO-218
КТ972А КТ972Б КТ972В КТ972Г	BD875	NPN	8.0	60 45 60 60	60 45 60 60	5	2000	>750 >750 750…5000 750…5000	1.5 1.5 1.5 0.95		200	TO-126
КТ973А КТ973Б КТ973В	BD876	PNP	8.0	60 45 60	60 45 60	5	2000	>750 >750 750…5000	1.5 1.5 1.5		200	TO-126

• Unijunction Transistors

Part	Pin to Pin Compatibility	P max, W	Vb, b2 max, V	Ie pulse, A	Ie rev, μA	Veb sat, V	η	Package
КТ132А КТ132Б	2N2646 2N2647	0.3	35	2.0	12.0 0.2	0.7…3.5	0.56…0.75 0.68…0.82	Case 22A-01
КТ133А КТ133Б	2N4870 2N4871	0.3	35	1.5	1.0	0.7…2.5	0.56…0.75 0.70…0.85	TO-92

• Low Power N-Channel MOSFETs

Part	Pin to Pin Compatibility	P max, W	Vgs max, V	Vds max, V	Vgs(off), V	Rds(on) Ohm	Id max, mA	g fs, A/V	Package
КП214А9	2N7002LT1	0.2	±40	60	1.0÷2.5	7.5	115	0.08	SOT-23
КП501А КП501Б КП501В	ZVN2120	0.5	±20	240 200 200	1.0÷3.0 1.0÷3.0 -	10 10 15	180	>0.1	TO-92
КП502А	BSS124	0.7	±10	400	1.5÷2.5	28	120	0.1	TO-92
КП504А,Б КП504В КП504Г КП504Д КП504Е	BSS88	1.0 0.7 0.7 0.7 0.7	±10	240 200 250 240 240	0.6÷1.2	8 8 10 8 8	250 200 180 200 200	0.14	TO-92
КП505А,Б КП505В КП505Г	BSS295	1.0 1.0 0.7	±20 ±20 ±10	50 60 8	0.8÷2.0 0.8÷2.0 0.4÷0.8	0.3 0.3 1.2	1400 1400 500	0.5 0.5 -	TO-92
КП509А9 КП509Б9 КП509В9	BSS131	0.36 0.50 0.36	±14	240 240 200	0.8÷2.0 0.6÷1.2 0.8÷2.0	16 8 16	100 250 100	0.16 0.14 0.06	TO-92
КП511А КП511Б	TN0535 TN0540	0.75	±20	350 400	0.8÷2.0	22	140	0.125	TO-92
КП523А	BSS297A	0.7	±14	200	0.8÷2.0	2.0	480	0.5	TO-92

• Low Power P-Channel MOSFETs

Part	Pin to Pin Compatibility	P max, W	Vgs max, V	Vds max, V	Vgs(off), V	Rds(on), Ohm	Id max, mA	g fs, A/V	Package
КП507А	BSS315	1.0	±20	-50	-0.8÷(-2.0)	0.8	-1100	0.25	TO-92
КП508А	BSS92	1.0	±20	-240	-0.8÷(-2.0)	20	-150	0.06	TO-92

• Logic Level N-Channel MOSFETs

Part	Pin to Pin Compatibility	Vds max, V	Rds (on) Ohm	Id max, A	Vgs max, V	P max, W	Vgs (th), V	Package
КП723Г	IRLZ44	60	0.028	50	±10	150	1.0…2.0	TO-220
КП727В	IRLZ34	60	0.05	30	±10	88	1.0…2.0	TO-220
КП744Г	IRL520	100	0.27	9.2	±10	60	1.0…2.0	TO-220
КП745Г	IRL530	100	0.22	15	±10	88	1.0…2.0	TO-220
КП746Г	IRL540	100	0.077	28	±10	150	1.0…2.0	TO-220
КП737Г	IRL630	200	0.4	18	±10	50	1.0…2.0	TO-220
КП750Г	IRL640	200	0.18	18	±10	50	1.0…2.0	TO-220
КП775А КП775Б КП775В	2SK2498A 2SK2498Б 2SK2498В	60 55 60	0.009 0.009 0.011	50	±20	150	1.0…2.0 1.0…2.0 1.0…2.0	TO-220

• Power N-Channel MOSFETs

Part	Pin to Pin Compatibility	Vds max, V	Rds (on), Ω	Id max, A	Vgs max, V	P max, W	Vgs (th), V	Package
КП723А КП723Б КП723В	IRFZ44 IRFZ45 IRFZ40	60 60 50	0.028 0.035 0.028	50 50 50	±20	150	2.0…4.0	TO-220
КП726А КП726Б	BUZ90A BUZ90	600	2.0 1.6	4.0 4.5	±20	75	2.0…4.0	TO-220
КП727А КП727Б	BUZ71 IRFZ34	50 60	0.1 0.05	14 30	±20	75	2.0…4.0	TO-220
КП728Г1,Г2 КП728С1,С2 КП728Е1,Е2	BUZ80A	700 650 600	5.0 4.0 3.0	3.0	±20	75	2.0…4.0	TO-220
КП737А КП737Б КП737В	IRF630 IRF634 IRF635	200 250 200	0.4 0.45 0.68	9.0 8.1 6.5	±20	74	2.0…4.0	TO-220
КП739А КП739Б КП739В	IRFZ14 IRFZ10 IRFZ15	60 50 60	0.2 0.2 0.3	10 10 8.3	±20	43	2.0…4.0	TO-220
КП740А КП740Б КП740В	IRFZ24 IRFZ20 IRFZ25	60 50 60	0.1 0.1 0.12	17 17 14	±20	60	2.0…4.0	TO-220
КП741А КП741Б	IRFZ48 IRFZ46	60 50	0.018 0.024	50	±20	190 150	2.0…4.0	TO-220
КП742А КП742Б	STH75N06 STH80N05	60 50	0.014 0.012	75 80	±20	200	2.0…4.0	TO-218
КП743А КП743Б КП743В	IRF510 IRF511 IRF512	100 80 100	0.54 0.54 0.74	5.6 5.6 4.9	±20	43	2.0…4.0	TO-220 TO-126
КП743А1	IRF510	100	0.54	5.5	±20	40	2.0…4.0	TO-126
КП744А КП744Б КП744В	IRF520 IRF521 IRF522	100 80 100	0.27 0.27 0.36	9.2 9.2 8.0	±20	60	2.0…4.0	TO-220
КП745А КП745Б КП745В	IRF530 IRF531 IRF532	100 80 100	0.16 0.16 0.23	14.0 14.0 12.0	±20	88	2.0…4.0	TO-220
КП746А КП746Б КП746В	IRF540 IRF541 IRF542	100 80 100	0.077 0.077 0.1	28.0 28.0 25.0	±20	150	2.0…4.0	TO-220
КП747А	IRFP150	100	0.055	41.0	±20	230	2.0…4.0	TO-218
КП748А КП748Б КП748В	IRF610 IRF611 IRF612	200 150 200	1.5 1.5 2.4	3.3 3.3 2.6	±20	36	2.0…4.0	TO-220
КП749А КП749Б КП749В	IRF620 IRF621 IRF622	200 150 200	0.8 0.8 1.2	5.2 5.2 4.0	±20	50	2.0…4.0	TO-220
КП750А КП750Б КП750В	IRF640 IRF641 IRF642	200 150 200	0.18 0.18 0.22	18.0 18.0 16.0	±20	125	2.0…4.0	TO-220
КП731А КП731Б КП731В	IRF710 IRF711 IRF712	400 350 400	3.6 3.6 5.0	2.0 2.0 1.7	±20	36	2.0…4.0	TO-220

• Power N-Channel MOSFETs (continued)

Part	Pin to Pin Compatibility	Vds max, V	Rds (on), Ohm	Id max, A	Vgs max, V	P max, W	Vgs (th), V	Package
КП751А КП751Б КП751В	IRF720 IRF721 IRF722	400 350 400	1.8 1.8 2.5	3.3 3.3 2.8	±20	50	2.0…4.0	TO-220
КП771А	STP40N10	100	0.04	40	±20	150	2.0…4.0	TO-220
КП778А	IRFP250	200	0.085	30.0	±20	190	2.0…4.0	TO-220
КП780А КП780Б КП780В	IRF820 IRF821 IRF822	500 450 500	3.0 3.0 4.0	2.5 2.5 2.2	±20	50	2.0…4.0	TO-220

• Power P-Channel MOSFETs

Part	Pin to Pin Compatibility	Vds max, V	Rds (on), Ohm	Id max, A	Vgs max, V	P max, W	Vgs (th), V	Package
КП784А	IRF9Z34	-60	0.14	-18.0	±20	88	-2.0…-4.0	TO-220
КП785А	IRF9540	-100	0.20	-19.0	±20	150	-2.0…-4.0	TO-220
КП796А *Under Development*	IRF9634	-250	1.0	-4.1	±20	74	-2.0…-4.0	TO-220
КП7128Б	IRF5210	-100	0.08	-35	±20	200	-2.0÷(-4.0)	TO-220

• Variable Capacitance Diodes

Part	Pin to Pin Compatibility	Cd, pF	Cd ratio min	Vrmax, V	Ir, μA	Q min	Package
КВ109А,АГ,АТ/А9,АГ9,АТ9	ВВ417	2.24÷2.74	4.0÷5.5	28	0.5	300	КД-17 / SOT-23
КВ109Б,БГ,БТ/Б9,БГ9,БТ9		2.0 ÷2.3	4.5÷6.5		0.5	300	
КВ109В,ВГ,ВТ/В9,ВГ9,ВТ9		1.9 ÷3.1	4.0÷6.0		0.5	160	
КВ109Г/Г9		8.0 ÷17.0	4.0		0.5	160	
КВ109Д/Д9		7.0 ÷16.0	2.2		0.5	30	
КВ109Е,ЕГ,ЕТ/Е9,ЕГ9,ЕТ9		2.0 ÷2.3	4.5÷6.0		0.02	450	
КВ109Ж,ЖГ,ЖТ/Ж9,ЖГ9,ЖТ9		1.8 ÷2.8	4.0÷6.0		0.02	300	
КВ121А,АГ,АТ/А9,АГ9,АТ9	ВВ909	4.3÷6.0	7.6	30	0.5	200	КД-17 / SOT-23
КВ121Б,БГ,БТ/Б9,БГ9,БТ9					0.5	150	
КВ121В,ВГ,ВТ/В9,ВГ9,ВТ9					0.02	240	
КВ122А,АГ,АТ/А9,АГ9,АТ9	ВВ240	2.24÷2.74	4.0÷5.5	30	0.2	450	КД-17 / SOT-23
КВ122Б,БГ,БТ/Б9,БГ9,БТ9		2.0 ÷2.3	4.5÷6.5		0.02	450	
КВ122В,ВГ,ВТ/В9,ВГ9,ВТ9		1.9 ÷3.1	4.0÷6.0		0.2	300	
КВ131А2,АР2,АТ2	ВВ112	440÷530	18.0	14	0.25	130	SOT-23
КВ134А1,АР1,АТ1		18÷22	3.0	23	0.05	400	SOT-23
КВ153А9	ВВ515	1.85÷2.25	8.0÷9.6	30	0.02	400	SOT-23
КВ153Б9		1.80÷2.60	7.6÷10.0			360	
КВ155А9	ВВ620	2.9÷3.4	19.5÷25.0	30	0.02	245	SOT-23
КВ155Б9		2.6÷3.3	18.0÷25.0				

• Switching Diode Arrays

Part	Pin to Pin Compatibility	Vr max, V	If max, mA	Vf, V	Trr, ns	Ir, μA	Number of elements	Circuit	Package
КД629АС9	BAY84	90	200	1.0	100	0.1	2	Two serial connected diodes	SOT-23
КД704АС9	BAV70	70	100	1.3	6.0	5.0	2	Common cathode	SOT-23

• Variable Capacitance Diode Arrays

Part	Pin to Pin Compatibility	Cd, pF	Cd ratio min	Vr max, V	Ir, μA	Q min	Number of elements	Circuit	Package
КВС111А2	ВВ204	29.7…36.3	2.1	30	1	200	2	Common cathode	TO-92

• Power Diode Arrays

Part	Pin to Pin Compatibility	Vr max, V	If max, A	Vf, V	trr, ns	Ir, μA	Number of elements	Circuit	Package
КД638АС	BYV16-200T	200	2×8.0	1.25	≤35	5.0	2	Common cathode	TO-220
КД642АС	10JTF20	200	2x10.0	1.20	≤50	100	2	Common anode	TO-220
КД667АС	MUR3040PT	400	2×15.0	1.25	≤60	10.0	2	Common cathode	TO-220
КД668АС9	TUP2200	200	2×2.0	1.25	≤35	5.0	2	Common cathode	DPAK
КД669АС91	TUP2600	600	2×2.0	1.5	≤50	10.0	2	Common cathode	DPAK
КД670АС9	MUR1660	600	2×8.0	1.5	≤60	10.0	2	Common cathode	D2PAK
КД645А	MUR860	600	8.0	1.5	≤60	10.0	1		TO-220

• Power Schottky Diode

Part	Pin to Pin Compatibilty	If max, A	If p, A	Vr p max, V	Vf, V	If, A	Ir max, mA	Package
КДШ2101А-5	SB140	1	40	40	0.57	1	0.5	Chip
КДШ2101Б-5	SB160	1	40	60	0.66	1	0.5	
КДШ2101В-5	SB1100	1	40	100	0.97	1	0.5	
КДШ2102А-5	SB240	2	50	40	0.52	2	0.5	Chip
КДШ2102Б-5	SB260	2	50	60	0.66	2	0.5	
КДШ2102В-5	SB2100	2	50	100	0.77	2	0.5	
КДШ2103А-5	SB340	3	150	40	0.55	3	0.5	Chip
КДШ2103Б-5	SB360	3	150	60	0.58	3	0.5	
КДШ2103В-5	SB3100	3	150	100	0.85	3	0.6	
КДШ2104А-5	SB540	5	250	40	0.55	5	0.5	Chip
КДШ2104Б-5	SB560	5	250	60	0.67	5	0.5	
КДШ2104В-5	SB5100	5	250	100	0.8	5	0.6	
КДШ2105В	1N5819	1.0	10	40	0.60/0.80	1/2	1.0	TO-92
КДШ2114АС9	6CWQ06F	2x3	42	60	0.58/0.79	3/6	3.0	DPAK
КДШ2114БС9	6CWQ04F	2x3	42	40	0.55/0.71	3/6	3.0	
КДШ2114ВС9	6CWQ10F	2x3	42	100	0.85/1.05	3/6	3.0	
КДШ2963АС	PBYL1025	2x10	200	30	0.49/0.58	10/20	1.5	TO-220AB
КДШ2964А	12TQ060	15	220	60	0.62/0.82	15/30	0.8	TO-220AC
КДШ2964Б	12TQ045	15	250	45	0.56/0.71	15/30	1.75	
КДШ2965А	20TQ060	20	350	60	0.64/0.84	20/40	1.8	TO-220AC
КДШ2965Б	20TQ045	20	400	45	0.57/0.73	20/40	2.7	
КДШ2966А	SC200S45	50	1150	45	0.65	50	5.0	
КДШ2968АС	25CTQ045	2x15	250	45	0.56/0.71	15/30	1.5	TO-220AB
КДШ2968БС	30CTQ060	2x15	250	60	0.62/0.82	15/30	1.5	
КДШ2968ВС		2x15	250	100	0.8/1.05	15/30	1.5	
КД2970В	MBR1045	10	150	45	0.63/0.75	10/20	0.8	TO-220AC
КД2970Б	MBR1060	10	150	60	0.68/0.86	10/20	0.8	
КД2970А	MBR10100	10	150	100	0.85/1.05	10/20	0.8	
КДШ297АС	MBR1545	2x7.5	150	45	0.55/0.70	7.5/15	0.8	TO-220AB
КДШ297БС	MBR1560	2x7.5	150	60	0.67/0.85	7.5/15	0.8	
КДШ297ВС	MBR15100	2x7.5	150	100	0.80/1.0	7.5/15	0.8	
КДШ298АС	15CTQ45	2x5	120	45	0.55/0.71	5/10	0.8	TO-220AB
КДШ298БС		2x5	120	60	0.67/0.85	5/10	1.0	
КДШ298ВС		2x5	120	100	0.80/1.05	5/10	1.0	
КД643АС	MBR2045	2x10	150	45	0.63/0.75	10/20	0.8	TO-220AB
КД643БС	MBR2060	2x10	150	60	0.68/0.86	10/20	0.8	
КД643ВС	MBR20100	2x10	150	100	0.85/1.05	10/20	0.8	
КДШ297АС91	MBRB1545	2x7.5	150	45	0.55/0.70	7.5/15	0.8	D2PAK
КДШ297БС91	MBRB1560	2x7.5	150	60	0.67/0.85	7.5/15	0.8	
КДШ297ВС91	MBRB15100	2x7.5	150	100	0.80/1.0	7.5/15	0.8	
КД643АС91	MBRB2045	2x10	150	45	0.63/0.75	10/20	0.8	
КД643БС91	MBRB2060	2x10	150	60	0.68/0.86	10/20	0.8	
КД643ВС91	MBRB20100	2x10	150	100	0.85/1.05	10/20	0.8	

Circuit - Common cathode

• Power Thyristors and Triacs

Part	Pin to Pin Compatibility	Repetitive Peak Off-State Voltages V_{DRM}, V_{RRM} V	RMS On-State Current $I_{T(RMS)}$ A	I^2t for Fusing I^2t, A^2c	Off-State Leakage Current I_D, I_R mA	Holding Current I_H mA	Latching Current I_L mA	Gate Trigger Current I_{GT} mA	Peak Gate Current I_{GM} A	Package
Thyristor										
КУ405А КУ405Б	BT300-600R BT300-800R	600 800	8.0	21	≤0.5	≤100	≤120	≤30	2.0	TO-220AB
КУ713А КУ713Б		600 800	40	1060	≤0.1	≤100	≤100	≤50	4.0	TO-218
КУ714А КУ714Б		1200 1600	25	265	≤0.2	≤80	≤100	≤60	2.0	TO-218
Triac			8.0							
КУ613А КУ613Б	BTA208-600B BTA208-800B	600 800		21	≤0.5	≤90	≤60	≤50	2.0	TO-220AB
КУ903А КУ903Б		600 800	40	880	≤0.1	≤80	≤100	≤50	8.0	TO-218
КУ904А КУ904Б		1200 1600	25	265	≤0.2	≤100	≤120	≤100	2.0	TO-218

• Voltage Regulators

Part	Pin to Pin Compatibility	Output Voltage, V	Output Current, A	Output Voltage Tolerance, %	Tested Operating Junction Temp. Range, °C	Package
Positive Voltage Regulators						
КР1180ЕНХХА КР1180ЕНХХБ КР1180ЕНХХВ	78XXAC 78XXC 78XXB	5; 6; 8; 9; 10, 12; 15; 18; 20; 24	1.0	2 4 4	Tj= -10…+125 Tj= -10…+125 Tj= -45…+125	TO-220
К1261ЕНХХП	78FXX	5; 6; 8; 9:10;12;15;18;24	1.0	4	Tj= -10…+125	TO-126
КР1181ЕНХХА КР1181ЕНХХБ	78LXXAC 78LXXC	5; 6; 8; 9; 12; 15; 18; 24	0.1	5 10	Tj= -10…+125	TO-92
Positive Low Dropout Regulators						
IL2931Z-X IL2931AZ-X	LM2931Z-X LM2931AZ-X	3.3; 5.0; 9.0	0.1	5 3.8	Tj= -40…+125	TO-92 TO-220
IL2940CT-5	LM2940CT-5	5.0	1.0	3	Tj= -10…+125	TO-220
IL2940CT-12	LM2940CT-12	12.0	1.0	3	Tj= -10…+125	TO-220
IL78RXX	KA78RXX	3.3; 5; 8; 9; 12; 15	1.0	2.5	Tj= -20…+80	TO-220
IL1117A-XX	AMS1117A-XX	1.2; 1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 5	1.0	1.5	Tj= -40…+125	TO-220 TO-126
К1283ЕНХХ	UR233-XX	1.2; 1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 5	0.8	1.5	Tj= -40…+125	TO-220 TO-126
IL2954IT-3.3	LM2954IT-3.3	3.3	0.250	1	Tj= -40…+125	TO-220
IL2940IT-5.0	LM2940IT-5.0	5.0	0.250	1	Tj= -40…+125	TO-220
IL3480-X	LM3480	3.3; 5.0	0.1	4	Tj= -10…+125	TO-92
К1282ЕНХХ	LT1084-XX	1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 3.6; 5.0	5.0	1.5	Tj= -10…+125	TO-220
IL1085-X	LT1085	1.25; 1.5; 1.8; 2.5; 2.85; 3.3; 3.6; 5.0	3.0	1.5	Tj= -10…+125	TO-220
К1234ЕН3АП	LT1086-3.3	3.3	1.5	2	Tj=-10…+125	TO-220
Negative Regulators						
КР1179ЕНХХА КР1179ЕНХХБ КР1179ЕНХХВ	IL79XXAC IL79XXC IL79XXB	5; 6; 8; 9; 12; 15; 18; 20; 24	1.0	2 4 4	Tj= -10…+125 Tj= -10…+125 Tj= -45…+125	TO-220
КР1199ЕНХХА КР1199ЕНХХБ	79LXXAC 79LXXC	5; 6; 8; 9; 12; 15; 18; 24	0.1	5 10	Tj= -10…+125	TO-92

Adjustable Voltage Regulators

Part	Pin to Pin Compatibility	Function	Package
К1285ЕР1П	LM317L	Adjustable Output Positive Voltage Regulator 0.1 A; Tj= -40…+125°C	TO-92
IL2931CD	LM2931C	Adjustable Dropout Voltage Regulator 0.1 A; (3…24 V) Tj= -40…+125°C	SO-8

Switching Regulator

Part	Pin to Pin Compatibility	Function	Package
IL2596 – 3.3 IL2596 – 5 IL2596 – 12 IL2596 – ADJ	LM2596 – 3.3 LM2596 – 5 LM2596 – 12 LM2596 – ADJ	Power Converter 150kHz 3A Step-Down Voltage Regulator Tj=-40…+125°C	TO-220 AB/5

• Precision Low Voltage Reference

Part	Pin to Pin Compatibility	Function	Features	Package
К1242ЕР1	TL431	Programmable precision references. This monolithic IC voltage references operate as a low temperature coefficient zener which is programmable from U_{ref} to 37 with two external resistors. The characteristics of these references make them excellents replacements for zener diodes in many applications such as digital voltmeters, power supplies, and operation amplifier circultry.	□ Vref = 2.5…37 V □ I k max=100 mA □ Shunt Reference Dynamic □ Impedance Z ≤ 0.5 Ω □ Tolerance 0.5%; 1%; 2%	TO-92 SOT-23 SO-8
К142ЕР2ПИМ	TL432	Programmable precision references. This monolithic IC voltage references operate as a low temperature coefficient zener which is programmable from U_{ref} to 16 with two external resistors. The characteristics of these references make them excellents replacements for zener diodes in many applications such as digital voltmeters, power supplies, and operation amplifier circultry.	□ Vref= 1.24…16V □ Ikmax = 100 mA □ Shunt Reference Dynamic □ Impedance Z ≤ 0.5 Ω □ Tolerance 0.5%; 1%	TO-92

• Voltage Detectors

Part	Pin to Pin Compatibility	Function	Package
К1274СПХХП	KIA70XX	Voltage Detector Ucc max= 15 V; I_{OL}max<16 mA; Us= 2.1/2.3/2.5/2.9/ 3.3/ 3.6/3.7/ 3.9/ 4.2/ 4.5 V	TO-92

• Melody IC

Part	Maximum Number of Tunes (Notes)	Vcc V	Icc, μA		Package
			Tune Play	Stop	
BT8028-XX	16 (64)	1.3 – 3.3	60	0.5	TO-92
BT8031-XX	2 (127)	1.3 – 3.3	1.0	0.5	TO-92

XX – Melody code

• ICs for Television

Part	Pin to Pin Compatibility	Function	Characteristics	Package
ЭКР1087ЕУ1	TDA4605-02	Control IC for SMPS Using MOS-Transistors	Vcc = 8.0 ÷ 14 V Consumption Current - at start-up ≤1.5 mA - on-state ≤ 6.0 mA	DIP-8
К1033ЕУ25Р К1033ЕУ25Т	UC3843	Current Mode PWM Controller	Vcc = 7.0 ÷ 25 V Consumption Current - before turn on ≤1.0 mA - after turn on ≤17 mA Start Threshold $V_{TH\ (ST)}$ = 7.8 ÷ 9.0 V PWM 0 ÷ 94%	DIP-8 SO-8
ЭКР1568КН1		TV Band Decoder	Vcc = 10.8 ÷ 13.2 V Icc ≤ 20 mA Vo = -0.3 ÷ Vcc+0.3 V	DIP-8
IL3842ANF	UC3842	Current Mode PWM Controller	Vcc = 11.5 ÷ 25 V Consumption Current - before turn on ≤1.0 mA - after turn on ≤17 mA Start Threshold $V_{TH\ (ST)}$ = 14.5 ÷ 17.5 V PWM 0 ÷ 94%	DIP-8
IL3844NF	UC3844	Current Mode PWM Controller	Vcc = 11.5 ÷ 25V Consumption Current - before turn on ≤1.0 mA - after turn on ≤17 mA Start Threshold $V_{TH\ (ST)}$ = 14.5 ÷ 17.5 V PWM 0 ÷ 50%	DIP-8
IL3845NF	UC3845	Current Mode PWM Controller	Vcc = 11.5 ÷ 25V Consumption Current: - before turn on ≤1.0 mA - after turn on ≤17 mA Start Threshold $V_{TH\ (ST)}$ = 7.8 ÷ 9.0 V PWM 0 ÷ 50%	DIP-8
IL9005N		TV Band Decoder	Vcc = 4.5 ÷ 5.5 V Icc ≤ 15 mA Vo =-0.3 ÷ Vcc + 0.3 V	DIP-8

TSVETOTRON

• Silicon Epitaxial Planar Switching Diodes

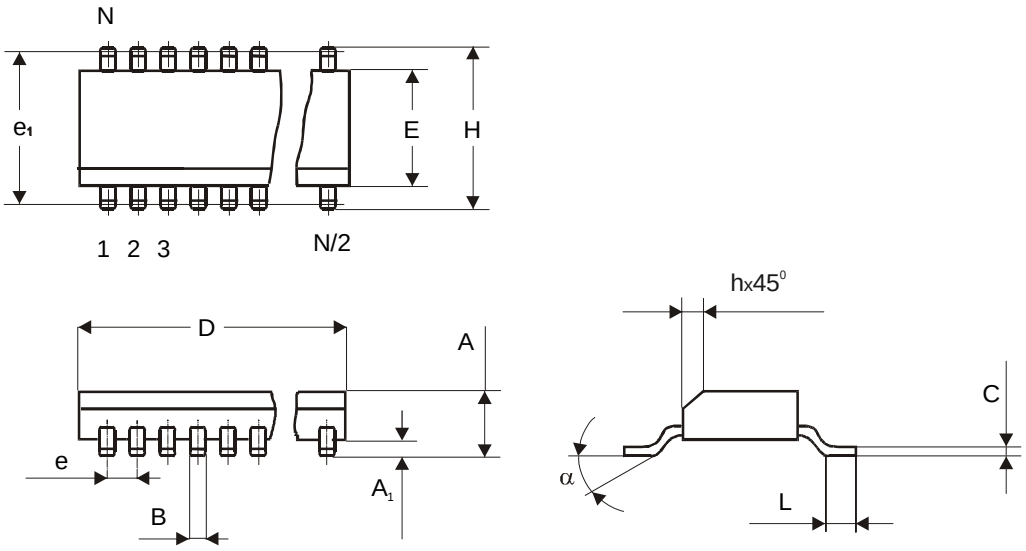
Part	V_F, V	I_F, mA	Ir, µA	Vr, V	Cd, pF	Package
1N4148	1.0	10	5.0	75	4.0	DO-35
1N4147	1.0	30	5.0	30	10.0	DO-35
LL4148	1.0	10	5.0	75	4.0	SOD-80
LL4147	1.0	30	5.0	30	10.0	SOD-80

• Zener Diodes (P_{max}=500 mW)

Part	V_Z, V	I_Z, mA	Rdif max., Ω	I_Z, mA	Ir, µA	Vr, V	I_Z max, mA	Package
BZV55-C2V7	2.7	5	85	5	10.0	1.0	135	SOD-80
BZV55-C3V0	3.0	5	85	5	4.0	1.0	125	SOD-80
BZV55-C3V3	3.3	5	85	5	2.0	1.0	115	SOD-80
BZV55-C3V6	3.6	5	85	5	2.0	1.0	105	SOD-80
BZV55-C3V9	3.9	5	85	5	2.0	1.0	95	SOD-80
BZV55-C4V3	4.3	5	75	5	1.0	1.0	90	SOD-80
BZV55-C4V7	4.7	5	60	5	0.5	1.0	85	SOD-80
BZV55-C5V1	5.1	5	35	5	0.1	1.0	80	SOD-80
BZV55-C5V6	5.6	5	25	5	0.1	1.0	70	SOD-80
BZV55-C6V2	6.2	5	10	5	0.1	2.0	64	SOD-80
BZV55-C6V8	6.8	5	8	5	0.1	3.0	58	SOD-80
BZV55-C7V5	7.5	5	7	5	0.1	5.0	53	SOD-80
BZV55-C8V2	8.2	5	7	5	0.1	6.0	47	SOD-80
BZV55-C9V1	9.1	5	10	5	0.1	7.0	43	SOD-80
BZV55-C10	10.0	5	15	5	0.1	7.5	40	SOD-80
BZV55-C11	11.0	5	20	5	0.1	8.5	36	SOD-80
BZV55-C12	12.0	5	20	5	0.1	9.0	32	SOD-80
BZX55-C2V7	2.7	5	85	5	10.0	1.0	135	DO-35
BZX55-C3V0	3.0	5	85	5	4.0	1.0	125	DO-35
BZX55-C3V3	3.3	5	85	5	2.0	1.0	115	DO-35
BZX55-C3V6	3.6	5	85	5	2.0	1.0	105	DO-35
BZX55-C3V9	3.9	5	85	5	2.0	1.0	90	DO-35
BZX55-C4V3	4.3	5	75	5	1.0	1.0	90	DO-35
BZX55-C4V7	4.7	5	60	5	0.5	1.0	85	DO-35
BZX55-C5V1	5.1	5	35	5	0.1	1.0	80	DO-35
BZX55-C5V6	5.6	5	25	5	0.1	1.0	70	DO-35
BZX55-C6V2	6.2	5	10	5	0.1	2.0	64	DO-35
BZX55-C6V8	6.8	5	8	5	0.1	3.0	58	DO-35
BZX55-C7V5	7.5	5	7	5	0.1	5.0	53	DO-35
BZX55-C8V2	8.2	5	7	5	0.1	6.0	47	DO-35
BZX55-C9V1	9.1	5	10	5	0.1	7.0	43	DO-35
BZX55-C10	10.0	5	15	5	0.1	7.5	40	DO-35
BZX55-C11	11.0	5	20	5	0.1	8.5	36	DO-35
BZX55-C12	12.0	5	20	5	0.1	9.0	32	DO-35
BZX55-C13VO	13.0	5	26	5	0.1	10.0	29	DO-35
BZX55-C15VO	15.0	5	30	5	0.1	11.0	27	DO-35
BZX55-C16VO	16.0	5	40	5	0.1	12.0	24	DO-35
BZX55-C18VO	18.0	5	50	5	0.1	14.0	21	DO-35
BZX55-C20VO	20.0	5	55	5	0.1	15.0	20	DO-35
BZX55-C22VO	22.0	5	55	5	0.1	17.0	18	DO-35
BZX55-C24VO	24.0	5	80	5	0.1	18.0	16	DO-35
BZX55-C27VO	27.0	5	80	5	0.1	20.0	14	DO-35
BZX55-C30VO	30.0	5	80	5	0.1	22.0	13	DO-35
BZX55-C33VO	33.0	5	80	5	0.1	24.0	12	DO-35
BZX55-C36VO	36.0	5	80	5	0.1	27.0	11	DO-35
BZX55-C39VO	39.0	2.5	90	2.5	0.1	28.0	10	DO-35
BZX55-C43VO	43.0	2.5	90	2.5	0.1	32.0	9.2	DO-35

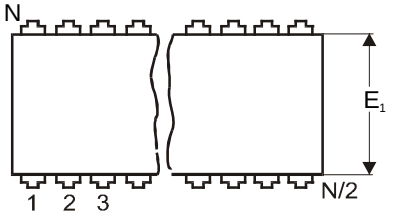
PACKAGE OUTLINES

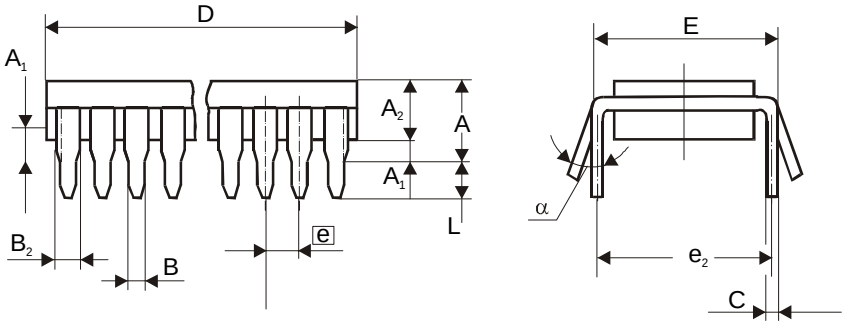
• 8- to 28-Pin Plastic SO (D/DW)



Pins, N		8	14	16	16	18	20	24	28
JEDEC Analog		MS-012AA	MS-012AB	MS-012AC	MS-013AA	MS-013AB	MS-013AC	MS-013AD	MS-013AE
Suffix		D	D	D	DW	DW	DW	DW	DW
Dimension, mm									
A	min	1.35	1.35	1.35	2.35	2.35	2.35	2.35	2.35
	max	1.75	1.75	1.75	2.65	2.65	2.65	2.65	2.65
A_1	min	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	max	0.25	0.25	0.25	0.30	0.30	0.30	0.30	0.30
B	min	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
	max	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
C	min	0.19	0.19	0.19	0.23	0.23	0.23	0.23	0.23
	max	0.25	0.25	0.25	0.32	0.32	0.32	0.32	0.32
D	min	4.80	8.55	9.80	10.10	11.35	12.60	15.20	17.70
	max	5.00	8.75	10.00	10.50	11.75	13.00	15.60	18.10
E	min	3.80	3.80	3.80	7.40	7.40	7.40	7.40	7.40
	max	4.00	4.00	4.00	7.60	7.60	7.60	7.60	7.60
e	nom	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
e_1	nom	5.72	5.72	5.72	9.53	9.53	9.53	9.53	9.53
H	min	5.80	5.80	5.80	10.00	10.00	10.00	10.00	10.00
	max	6.20	6.20	6.20	10.65	10.65	10.65	10.65	10.65
h	min	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
	max	0.50	0.50	0.50	0.75	0.75	0.75	0.75	0.75
L	min	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
	max	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
α	min	0°	0°	0°	0°	0°	0°	0°	0°
	max	8°	8°	8°	8°	8°	8°	8°	8°

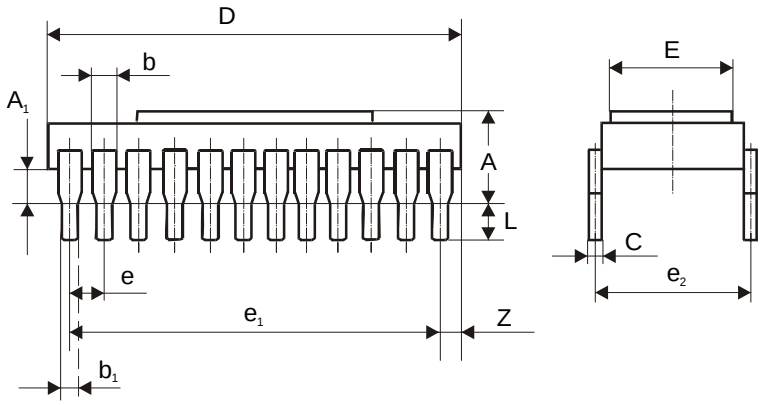
• 8- to 64-Pin Plastic Dual-in-Line (N/NS)





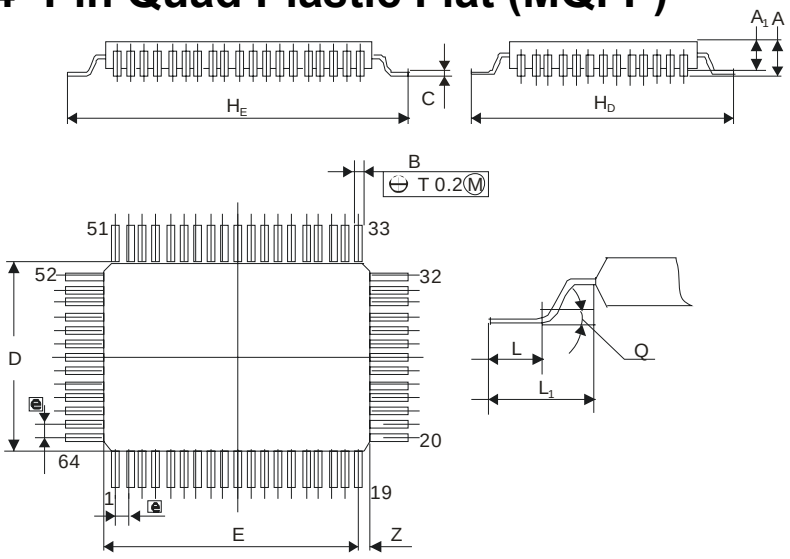
Pins, N		8	14	16	18	20	22	24	28	30	40	42	52	56	64
JEDEC Analog		MS-001BA	MS-001AA	MS-001BB	MS-001AC	MS-001AD	MS-010AA	MS-001AF	MS-011AB	MO-026BB	MS-011AC	MS-020AB	MS-020AD	MS-020AE	SOT 274-1
Suffix		N	N	N	N	N	N	N	N	NS	N	NS	NS	NS	NS
Dimension, mm															
A	max	5.33	5.33	5.33	5.33	5.33	5.33	5.33	6.35	5.08	6.35	5.08	5.08	5.08	5.84
A_1	min	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.51	0.38	0.51	0.51	0.51	0.51
A_2	min	2.92	2.92	2.92	2.92	2.92	3.18	2.92	3.18	3.05	3.18	3.05	3.05	3.05	3.05
	max	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.95	4.57	4.95	4.57	4.57	4.57	4.57
B	min	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.38	0.38	0.38	0.4
	max	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.58	0.56	0.56	0.56	0.56	0.53
B_2	min	1.14	1.14	1.14	1.14	1.14	1.14	1.14	0.77	0.76	0.77	0.89	0.89	0.89	0.8
	max	1.78	1.78	1.78	1.78	1.78	1.65	1.78	1.78	1.40	1.78	1.14	1.14	1.14	1.3
C	min	0.20	0.20	0.20	0.20	0.20	0.23	0.20	0.20	0.20	0.20	0.23	0.23	0.23	0.23
	max	0.36	0.36	0.36	0.36	0.36	0.38	0.36	0.38	0.36	0.38	0.38	0.38	0.38	0.38
D	min	8.51	18.67	18.67	22.35	24.89	27.05	31.24	35.10	26.67	50.30	36.58	45.72	45.72	57.7
	max	10.16	19.69	19.69	23.37	26.92	28.45	32.51	39.70	28.49	53.20	37.08	46.23	46.23	58.67
E	min	7.62	7.62	7.62	7.62	7.62	9.91	7.62	15.24	9.91	15.24	15.24	15.24	15.24	19.05
	max	8.26	8.26	8.26	8.26	8.26	10.80	8.26	15.87	11.05	15.87	16.00	16.00	16.00	19.61
E_1	min	6.1	6.1	6.1	6.1	6.1	8.38	6.1	12.32	7.62	12.32	12.70	12.70	12.70	16.9
	max	7.11	7.11	7.11	7.11	7.11	9.91	7.11	14.73	9.40	14.73	14.48	14.48	14.48	17.2
e	nom	2.54	2.54	2.54	2.54	2.54	2.54	2.54	2.54	1.778	2.54	1.778	1.778	1.778	1.778
e_2	nom	7.62	7.62	7.62	7.62	7.62	10.16	7.62	15.24	10.16	15.24	15.24	15.24	15.24	19.05
L	min	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.54	2.92	2.54	2.54	2.54	2.8
	max	3.81	3.81	3.81	3.81	3.81	4.06	3.81	5.08	3.81	5.08	3.56	3.56	3.56	3.2
α	min	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°
	max	10°	10°	10°	10°	10°	15°	10°	10°	10°	10°	10°	10°	15°	15°

• 24-Pin Metal Ceramic Dual-in-Line



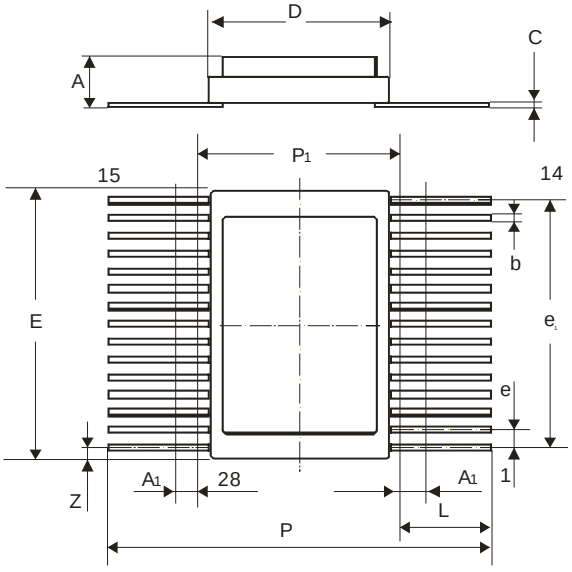
Dimension	mm	
	min	max
A		4.63
A_1	0.8	1.8
b		1.5
b_1	0.41	0.55
C	0.22	0.3
D	28.9	29.5
E	14.43	14.85
e	2.5	
e_1	27.5	
e_2	15.0	
L	3.26	3.74
Z		1.25

• 64- Pin Quad Plastic Flat (MQFP)



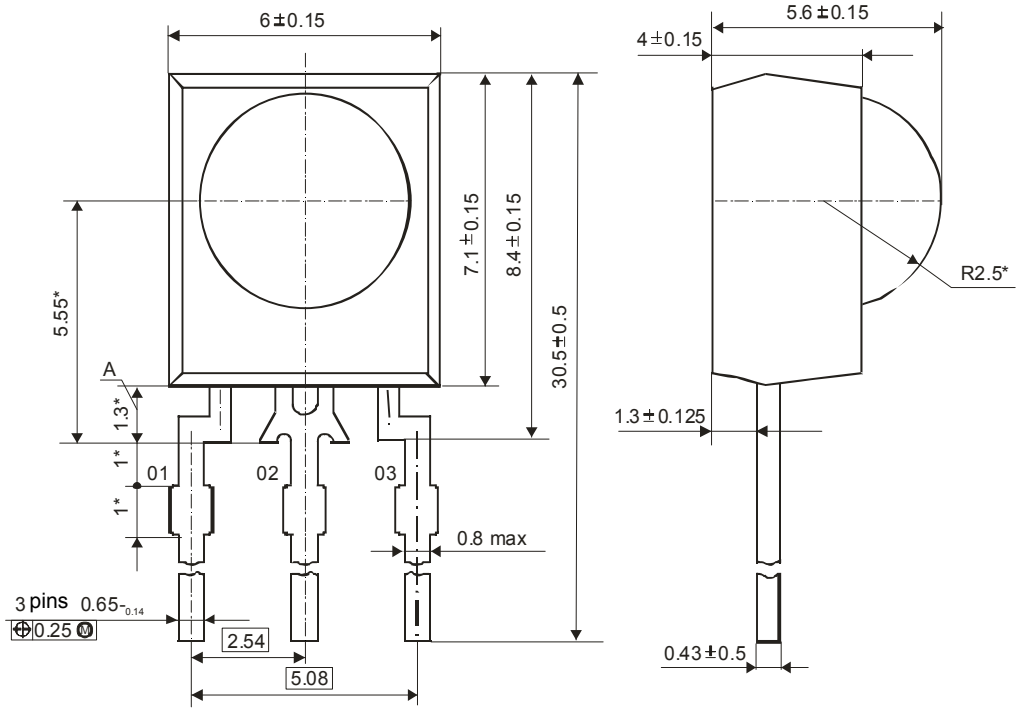
Dimension	мм	
	min	max
A		2.5
A_1	2.05	
B	0.36	0.5
C	0.13	0.2
D	13.85	14.15
E	19.85	20.15
e		1.0
H_D	18.9	19.5
H_E	24.9	25.5
L	1.05	1.45
L_1	2.4	2.8
Y		0.15
Z		1.1
Q	3°	7°

• 28-Pin Metal Ceramic Flat

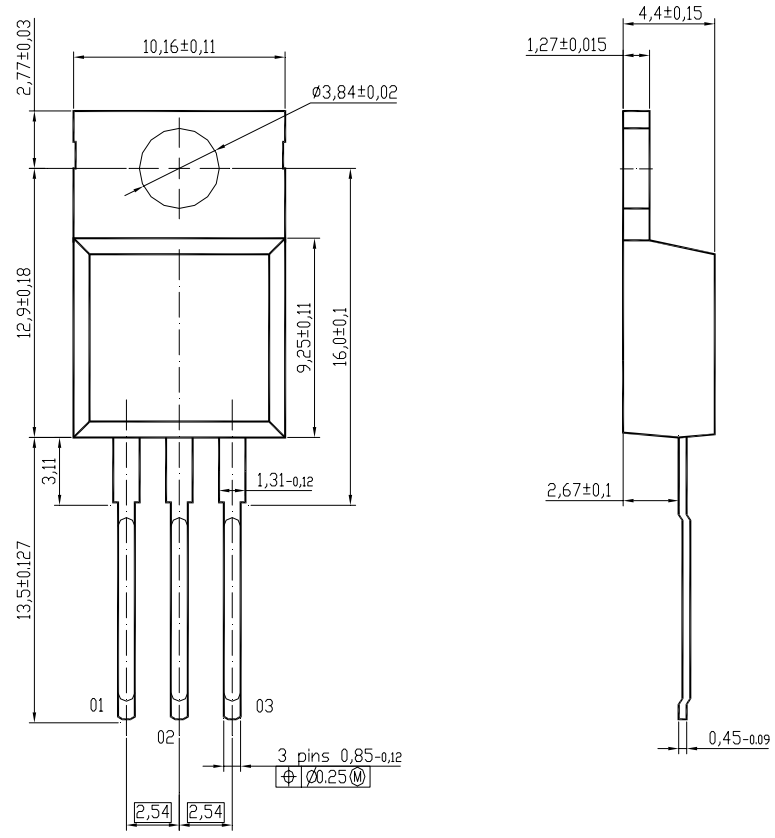


Dimension	mm	
	min	max
A	2.75	3.46
A_1		0.7
b	0.31	0.45
C	0.13	0.2
D	12.43	12.7
E	18.09	18.3
e	1.25	
e_1	16.25	
L	6.0	
P	25.77	26.1
P_1	13.43	13.7
Z		1.05

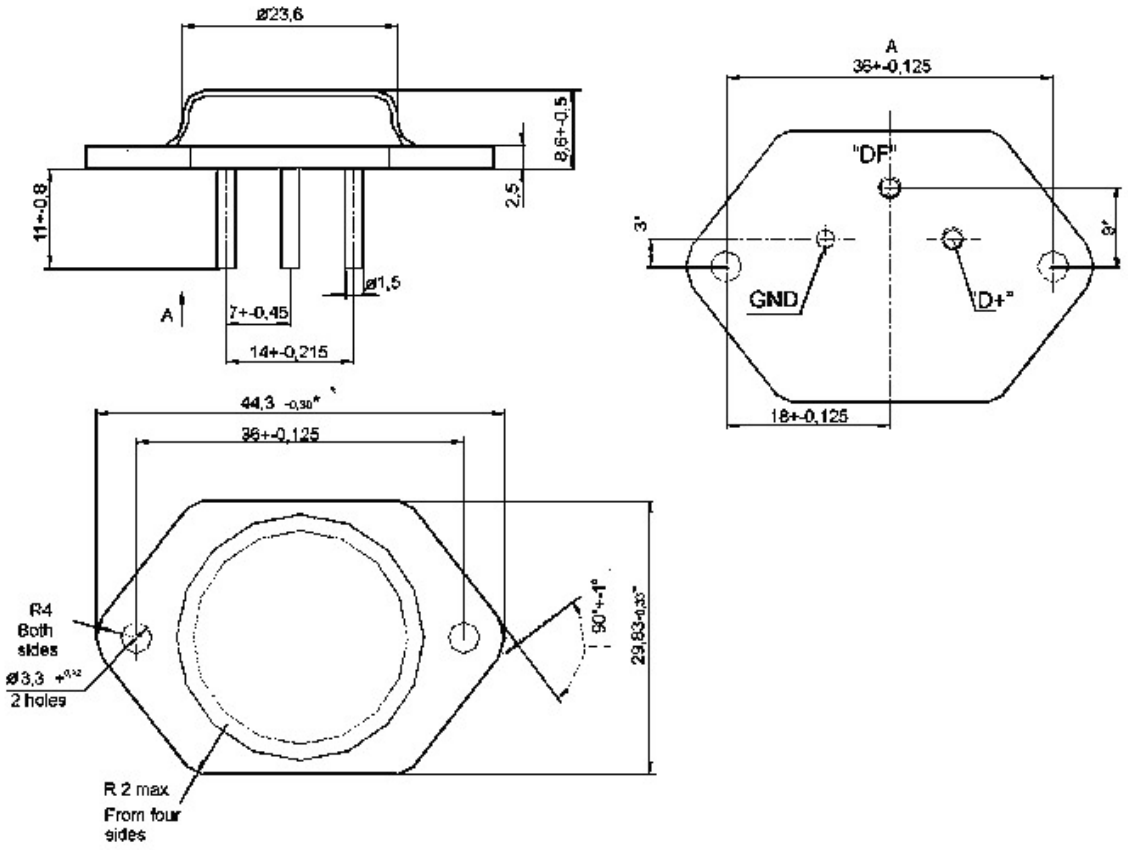
• 3-Pin Special Plastic Single-in-Line (SIL-3P)



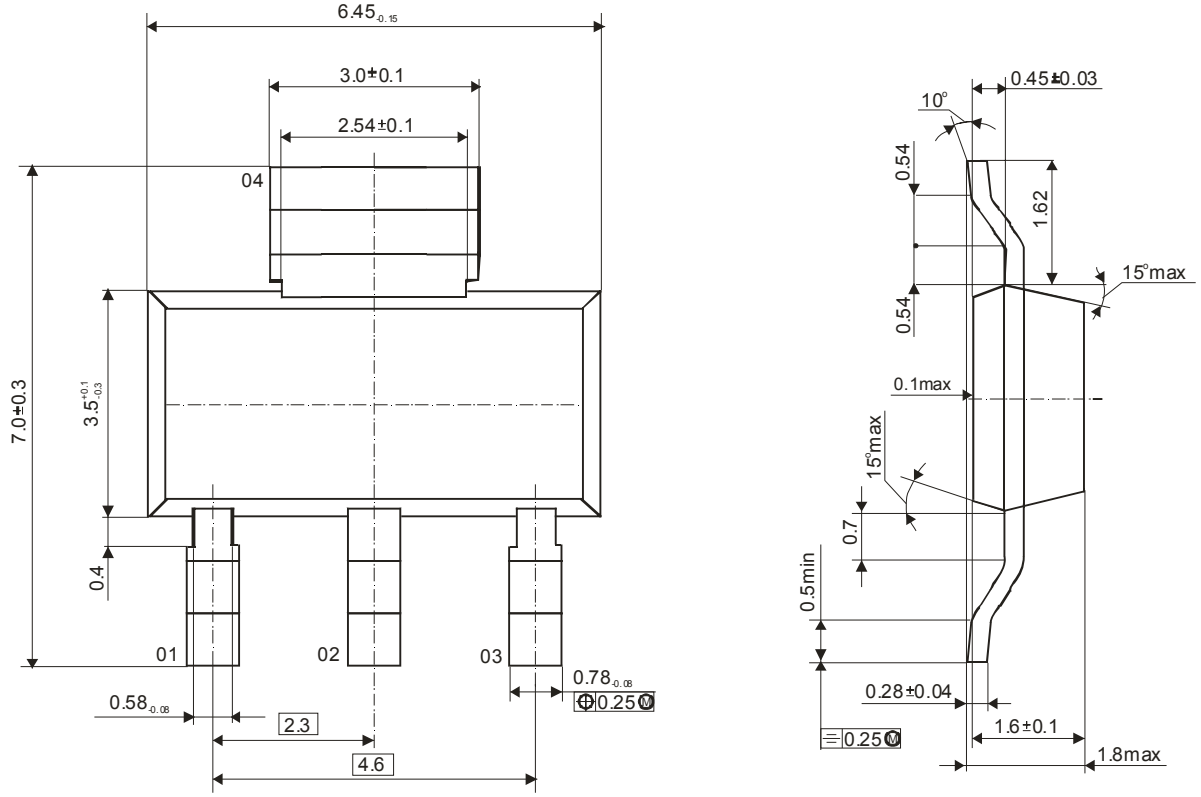
• TO-220AB/3



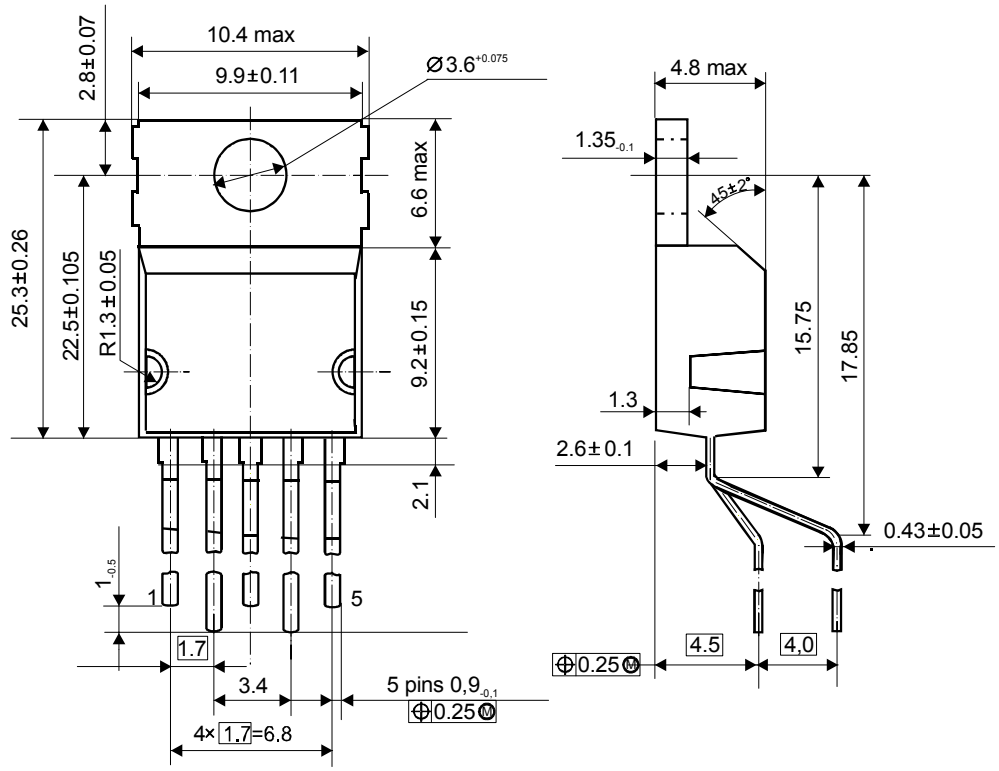
• TO-3 Jumbo



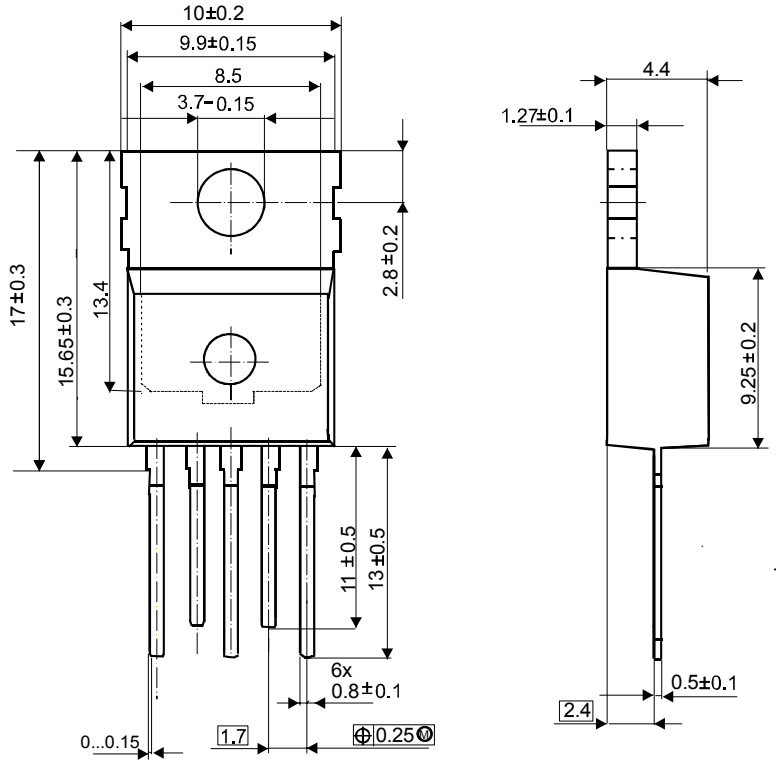
• P-SOT223-4-1, P-SOT223-4-2



•P-TO-220-5-11 (TO-220AB/5)

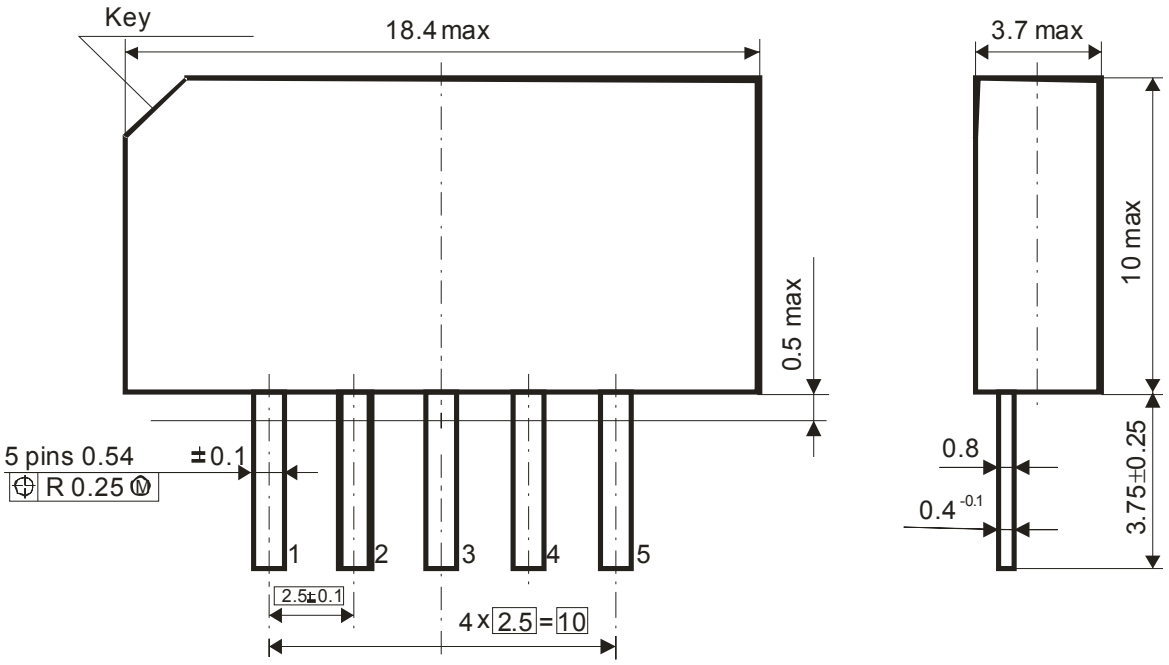


•P-TO-220-5-12

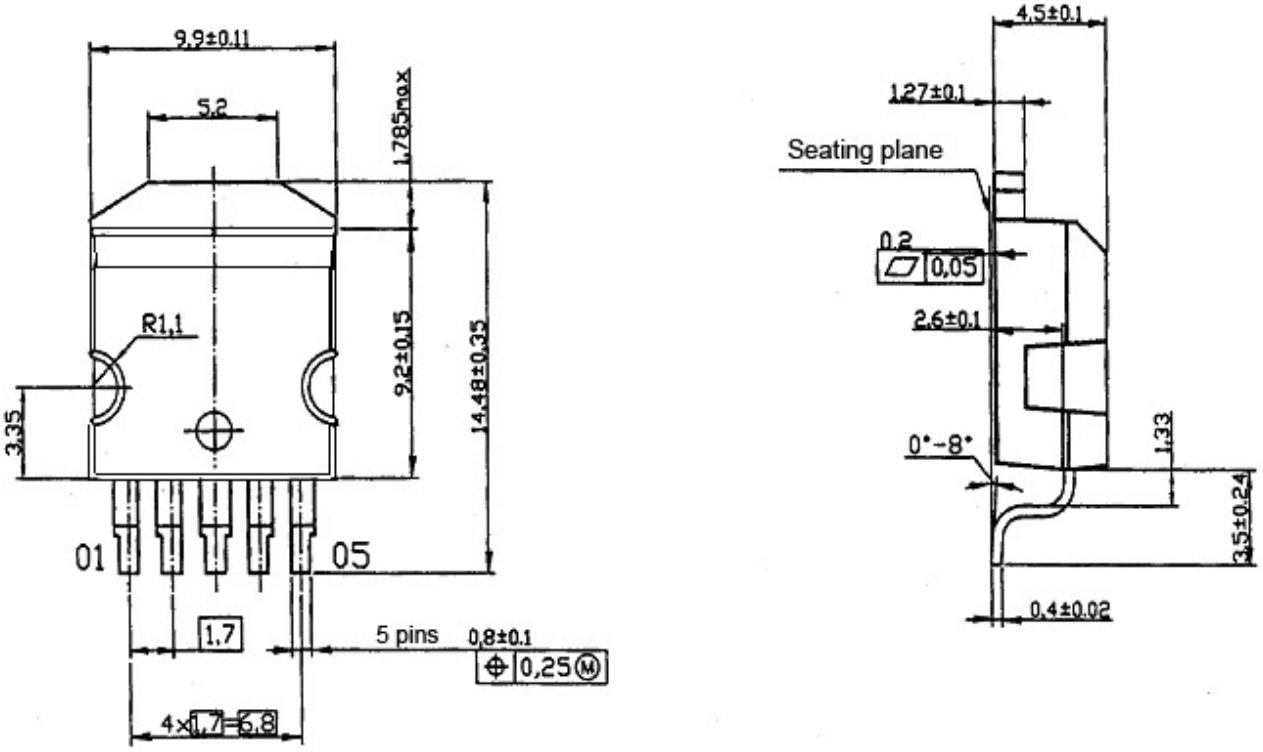


PACKAGE OUTLINES

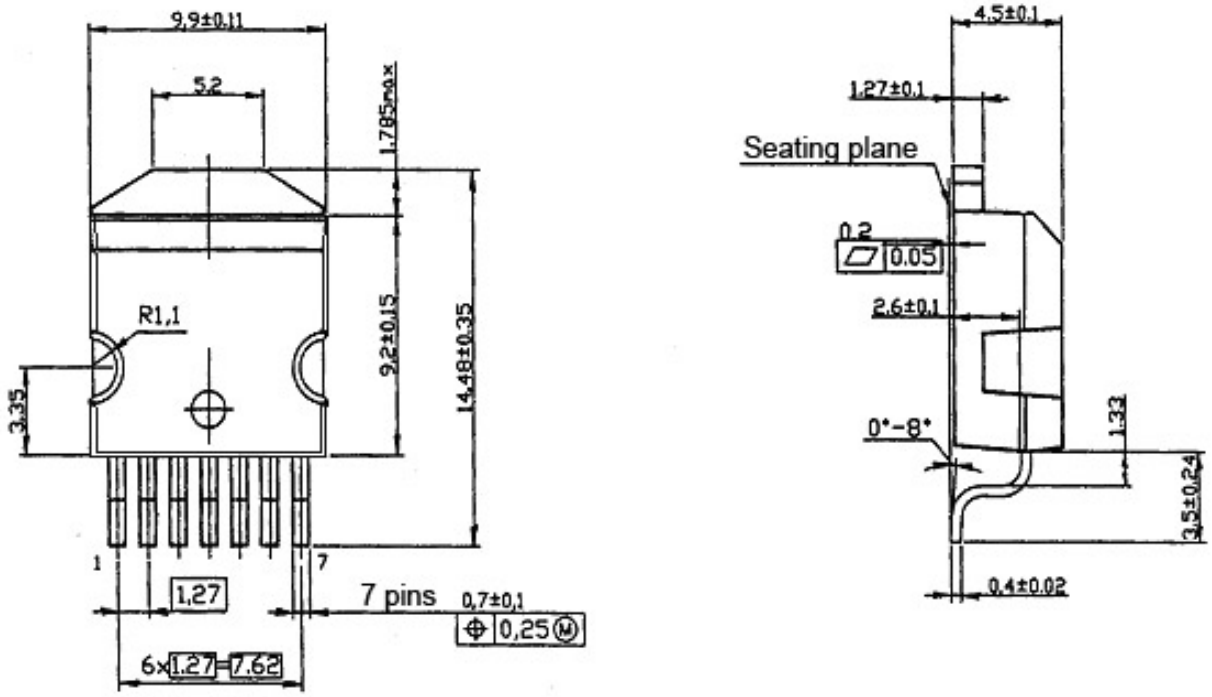
• SIP 5



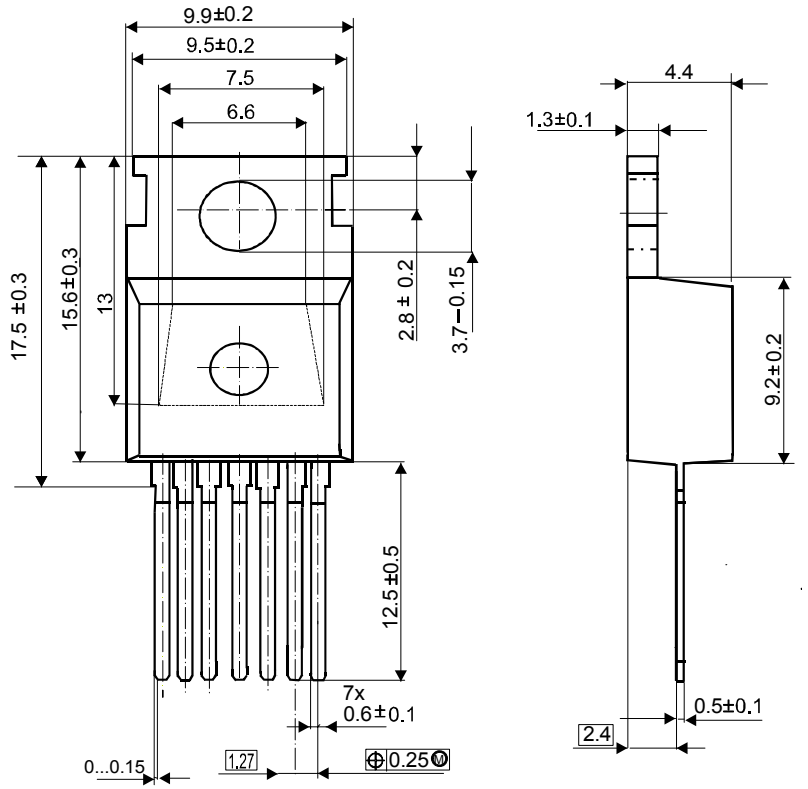
•P-TO-263-5-1



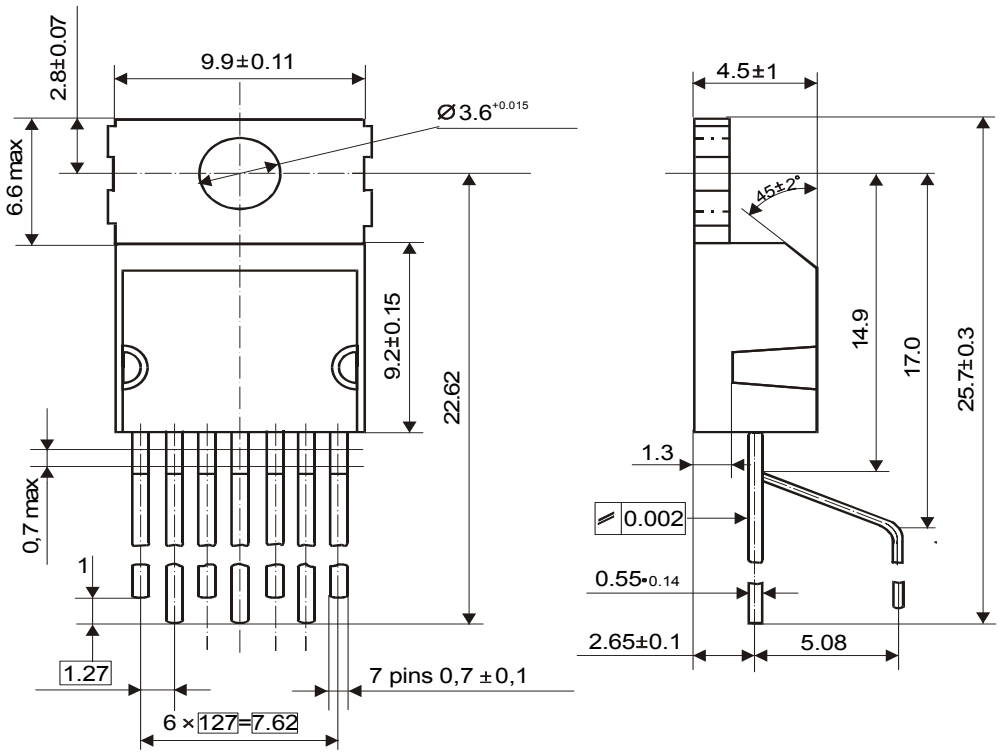
•P-TO-220-7-180



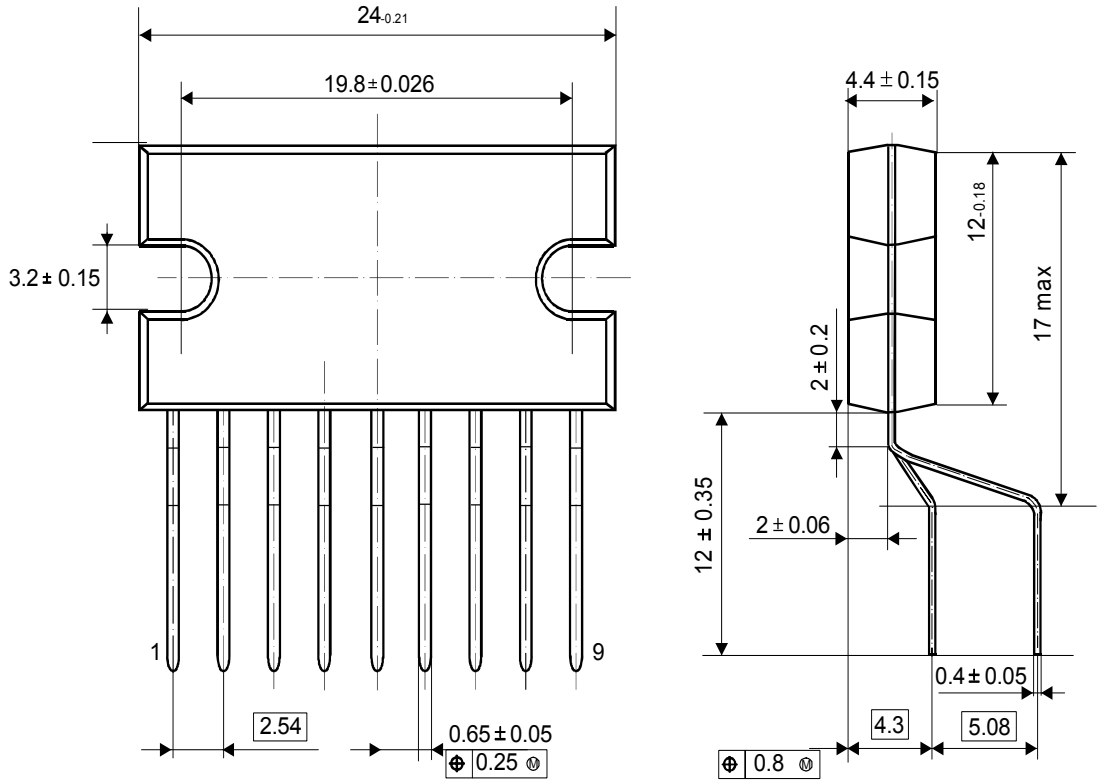
•P-TO-220-7-230



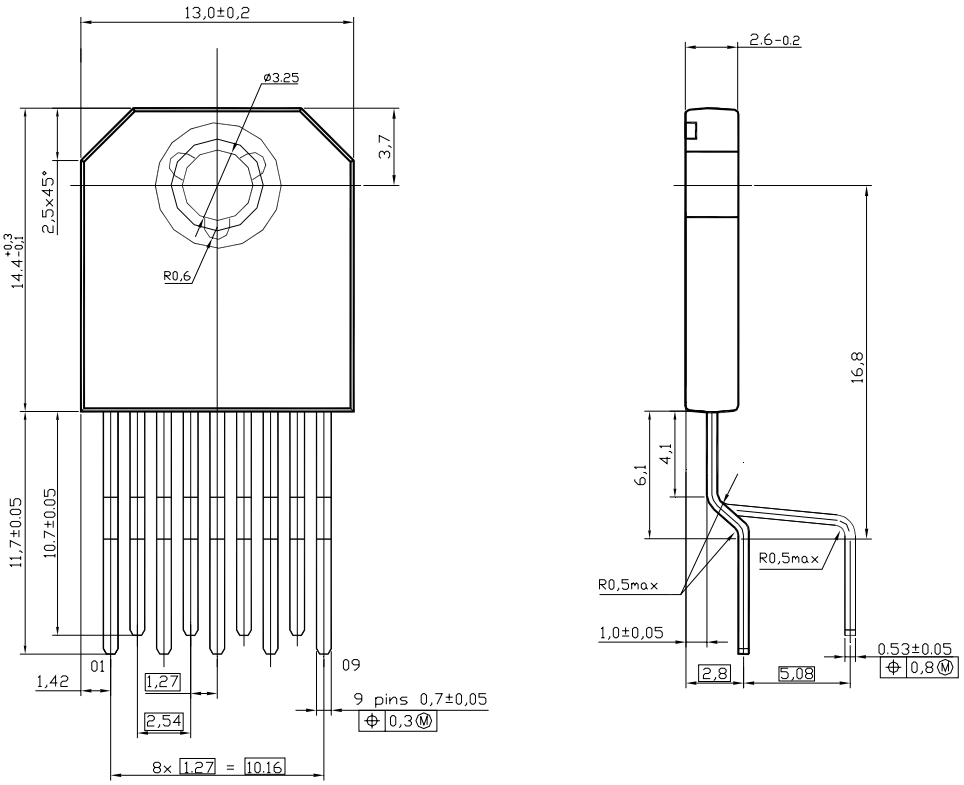
• 7-Pin Plastic Power Dual-in-Line (TO-220 AB/7)



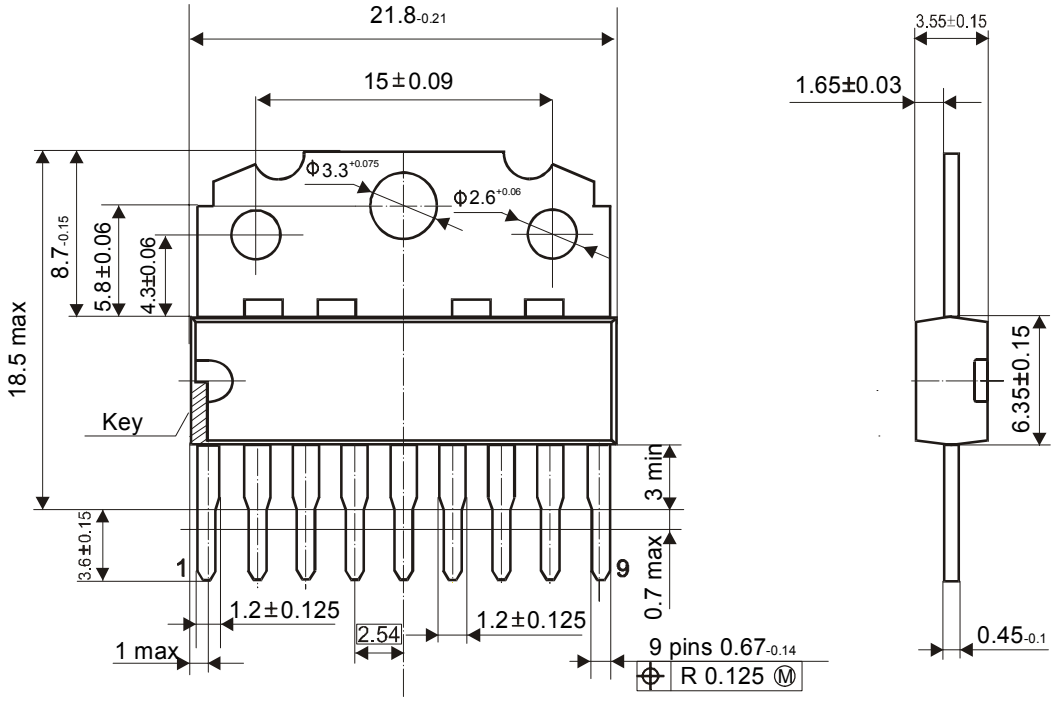
• 9-Pin Plastic Power DIL-Bent-SIL (DBS-9P)



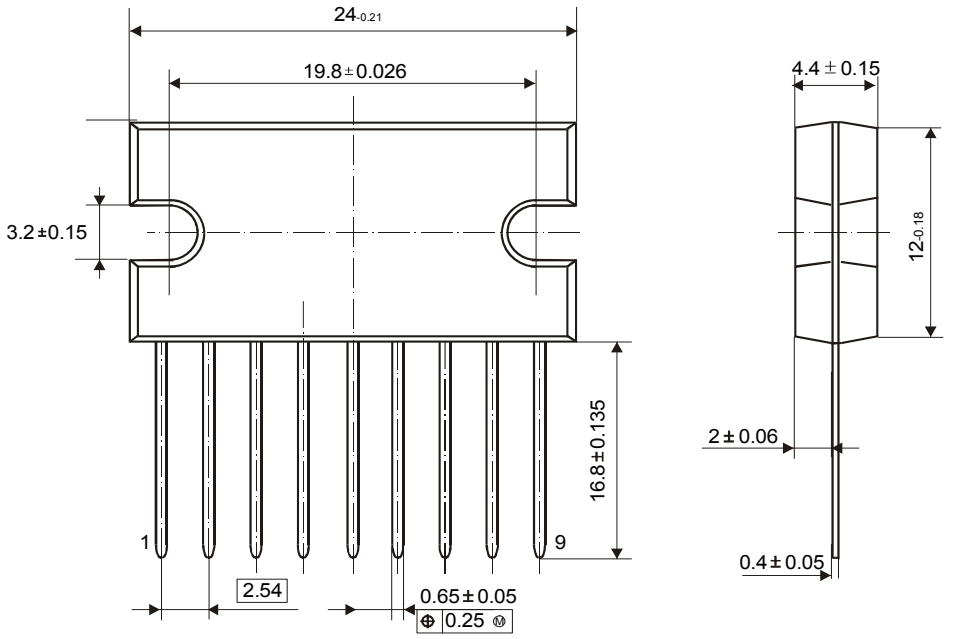
• SOT523-1



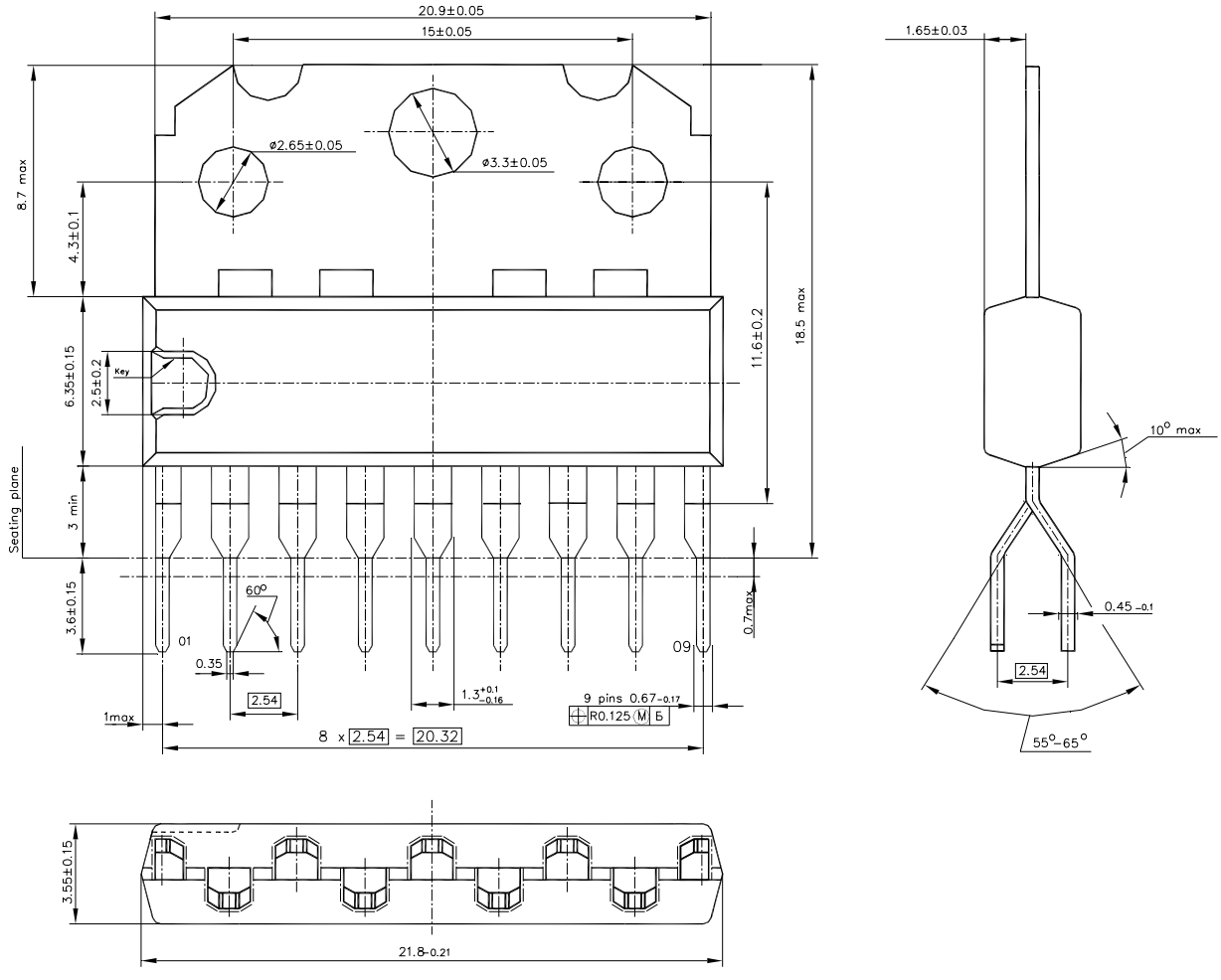
• 9-Pin Plastic Power Single-in-Line (SIL-9MPF)



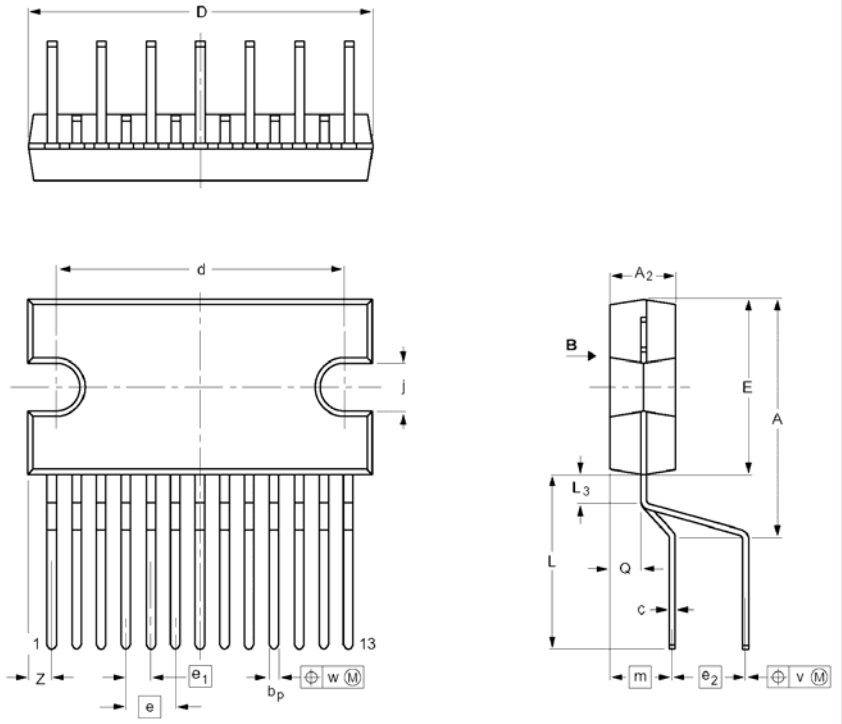
• 9-Pin Plastic Power Single-in-Line (SIL-9P)



• 9-Pin Plastic Power DIL-Bent-SI (DBS-9MPF)

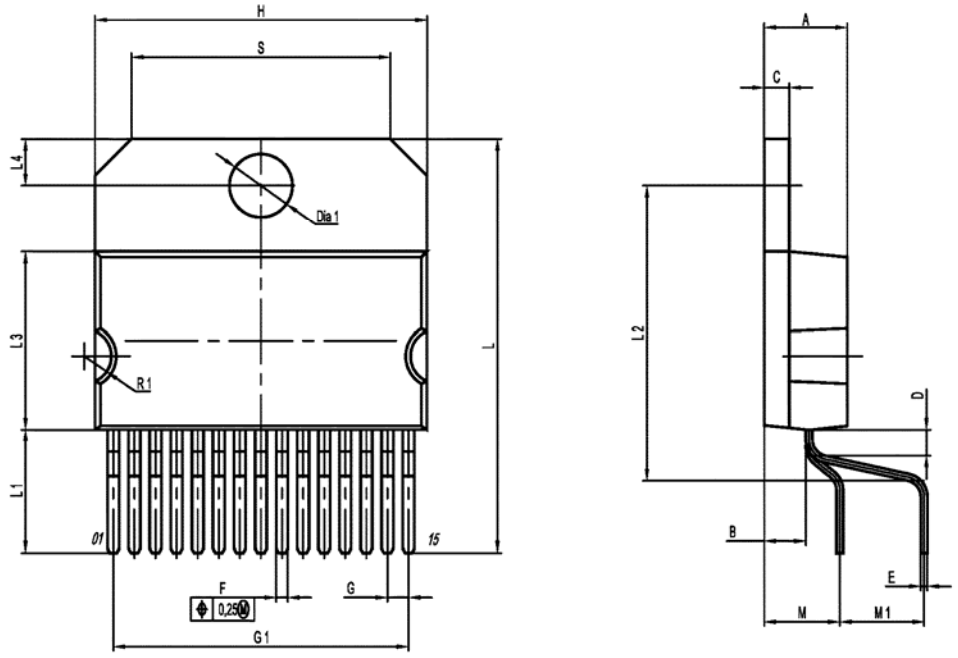


• SIL-13P



Dimension	mm	
	Min	Max
A	15.5	17.0
A_2	4.2	4.6
bp	0.60	0.75
c	0.38	0.48
D(1)	23.6	24.0
d	19.6	20.0
Dh	10	
E(1)	11.8	12.2
e	3.4	
e_1	1.7	
e_2	5.08	
Eh	6	
j	3.1	3.4
L	11.0	12.4
L3	1.6	2.4
m	4.3	
Q	1.8	2.1
v	0.8	
w	0.25	
x	0.03	
Z(1)	1.45	2.00

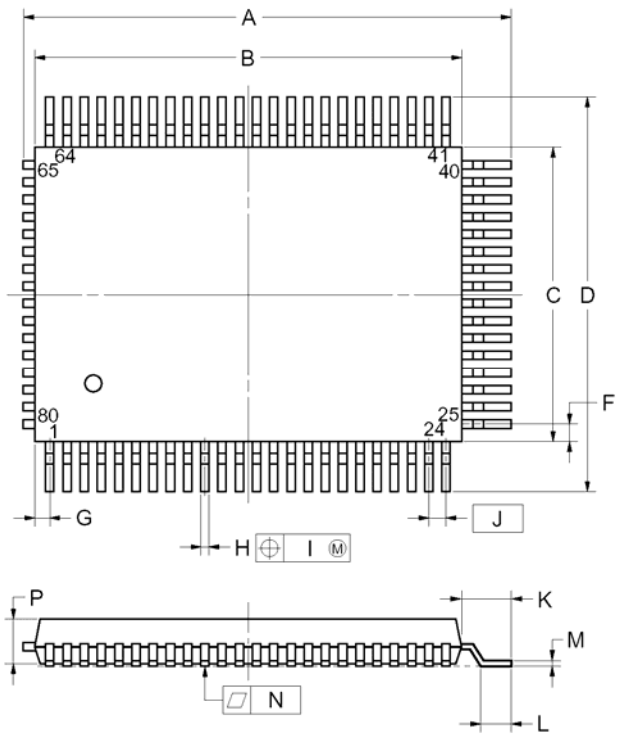
• SIL-15P

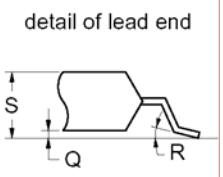


Dimension	mm	
	Min	Max
A	-	5.0
B	2.5	2.7
C	1.45	1.55
D	1.475	1.725
E	0.38	0.48
F	0.65	0.75
G	-	1.27
G1	-	17.78
H	-	20.2
L	24.64	25.16
L1	7.2	7.6
L2	17.54	18.06
L3	10.7	10.85
L4	2.73	2.87
M	-	4.55
M1	-	5.08
S	15.35	15.85
Dia1	3.8	3.875
R1	1.38	1.88

PACKAGE OUTLINES

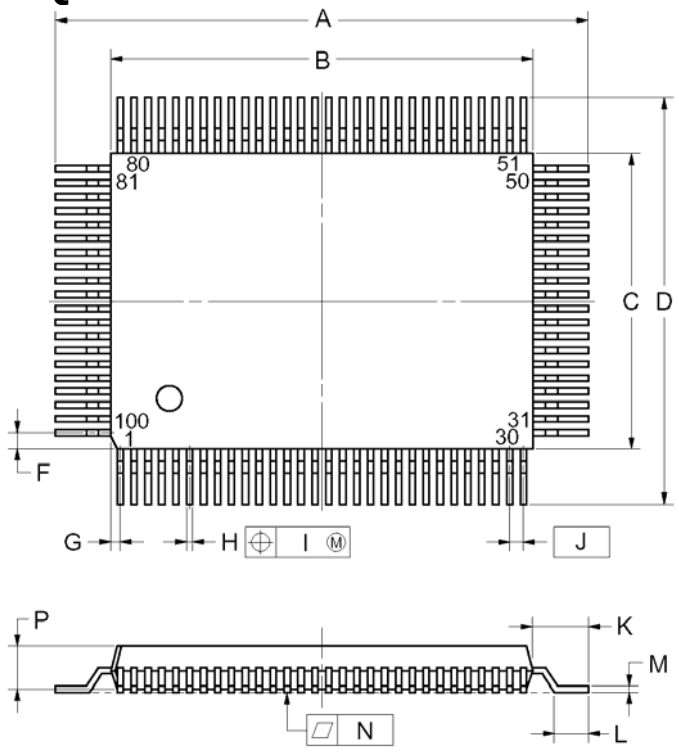
• QFP-80





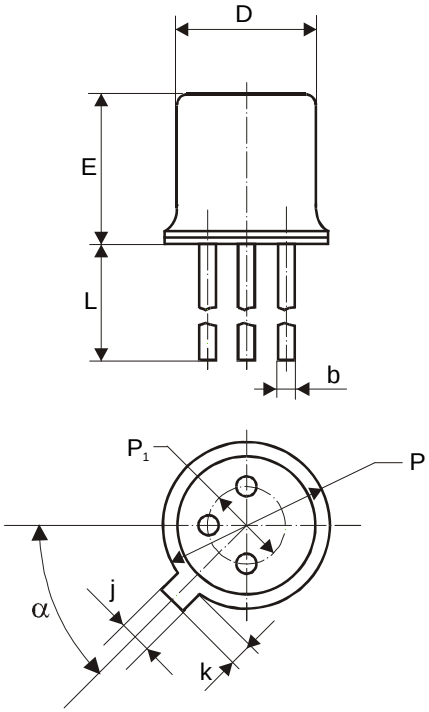
Dimension	mm	
	MIN	MAX
A	21.9	22.7
B	19.8	20.2
C	13.8	14.2
D	17.2	18.0
F	1.0	
G	0.8	
H	0.25	0.45±0.10
I	0.15	
J	0.8 (T.P.)	
K	1.6	2.0
L	0.6	1.0
M	0.15	
N	0.10	
P	2.7	
Q	0	0.2
R	0^o	10^o
S	-	3.0

• QFP-100



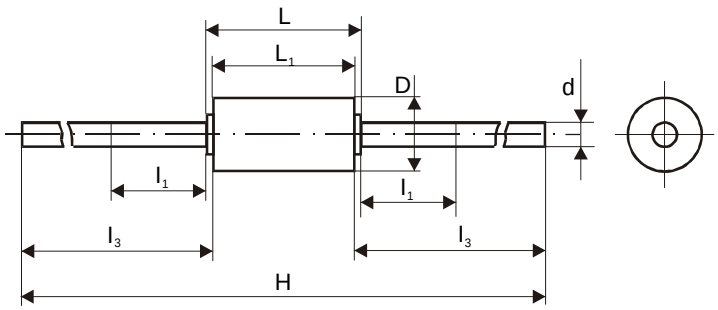
Dimension	mm	
	MIN	MAX
A	23.0	23.4
B	19.8	20.2
C	13.0±0.2	14.2
D	17.0	17.4
F	0.8	
G	0.6	
H	0.20	0.40
I	0.15	
J	0.65 (T.P.)	
K	1.4	1.8
L	0.6	1.0
M	0.05	0.25
N	0.10	
P	2.7	
Q	0.125±0.075	0.125±0.075
R	0^o	10^o
S	-	3.0

• Case 22A-01



Dimension	mm	
	min	max
b		0.5
D		4.95
E		5.3
L	12.5	14.5
P		5.84
P_1	2.2	2.6
j	0.94	1.12
k	0.88	1.12
α	40°	50°

• DO-35



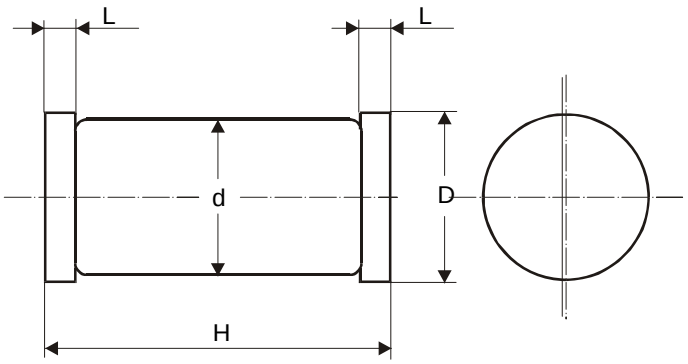
Dimension	mm	
	min	max
D		1.9
d		0.56
L		4.4
L_1		3.8
H		63.8
l_1		2.5
l_3	26.0	30.0

Notes:

1. **l_1** - Lead length is not controlled and unmounted in this zone.
2. The following type of packages exist:
   l_3 ≥ 15 mm **H** ≤ 34.5 mm and
   l_3 ≥ 29.6 mm **H** = 62.78 ± 0.6 mm

• MELF

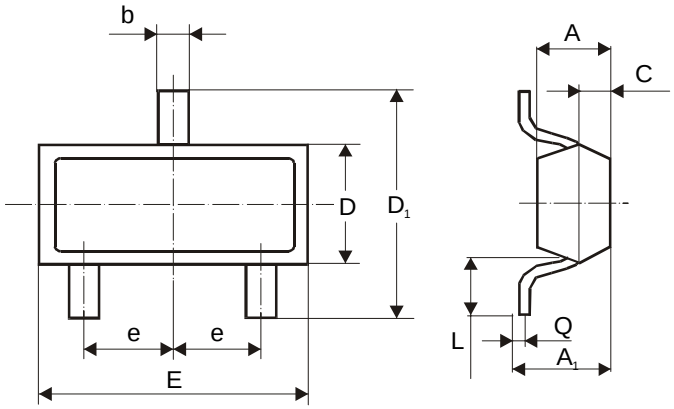
Dimension	mm	
	min	max
D	2.4	2.5
d	2.3	2.4
H	4.7	5.1
L		0.4



• SOD-80 (MiniMELF)

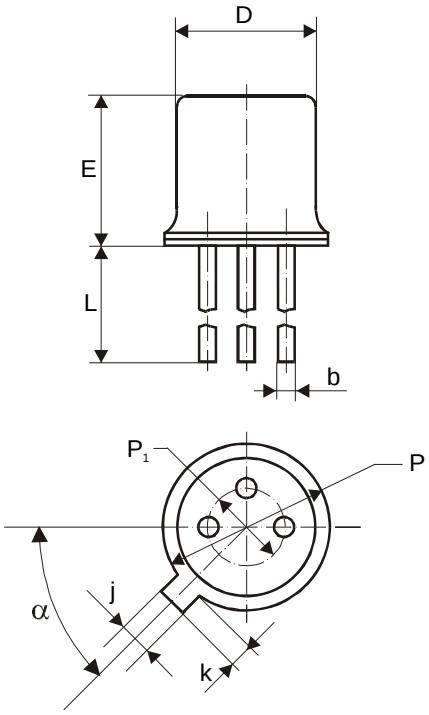
Dimension	mm	
	min	max
D	1.6	1.7
d		1.5
H	3.3	3.7
L		0.4

• SOT-23



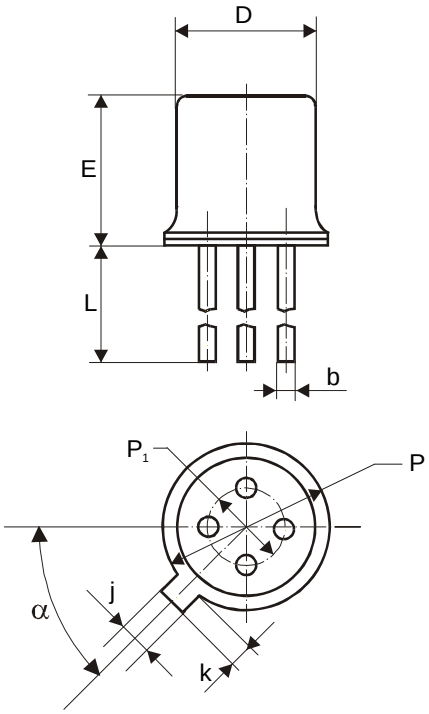
Dimension	mm	
	min	max
A	0.75	0.95
A_1	0.25	1.1
b	0.38	0.46
C	0.5	0.65
D	1.2	1.4
D_1	2.1	2.5
E	2.8	3.0
e	0.85	1.05
L	0.4	0.6
Q	0.09	0.15

• TO-18



Dimension	mm	
	min	max
b		0.5
D		4.95
E		5.3
L	12.5	14.5
P		5.84
P_1	2.2	2.6
j	0.94	1.12
k	0.88	1.12
α	40°	50°

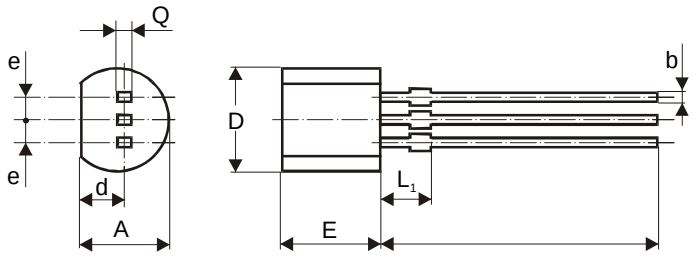
• TO-72



Dimension	mm	
	min	max
b		0.5
D		4.95
E		5.3
L	12.5	14.5
P		5.84
P_1	2.2	2.6
j	0.94	1.12
k	0.88	1.12
α	40°	50°

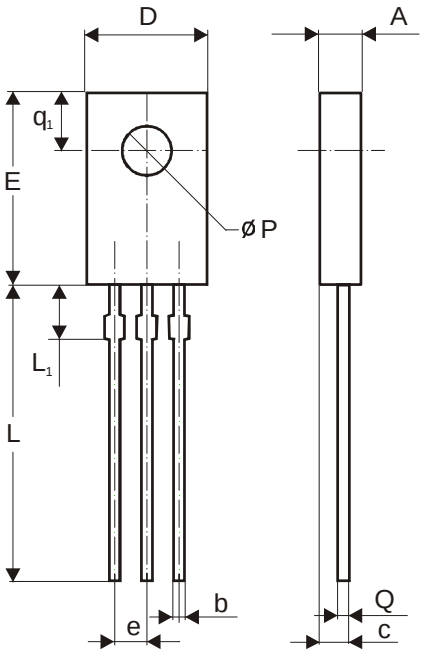
PACKAGE OUTLINES

• TO-92



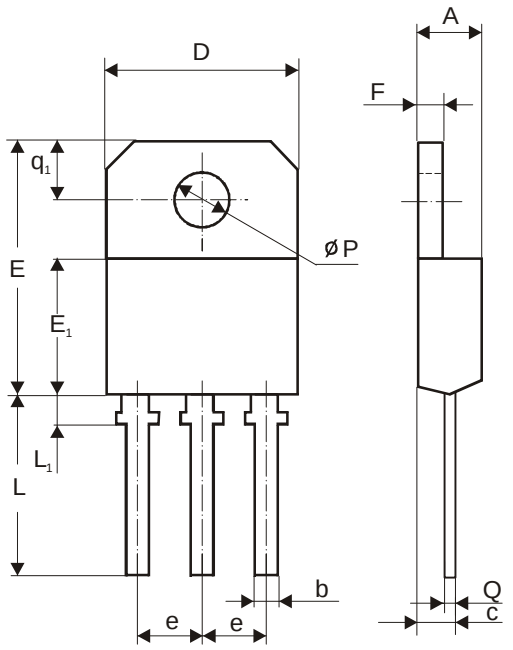
Dimension	mm	
	min	max
E	4.6	5.1
b		0.5
D	4.6	5.0
d	1.61	1.65
A	3.5	3.8
e	1.2573	1.2827
L	12.5	14.5
L_1		2.0
Q		0.5

• TO-126



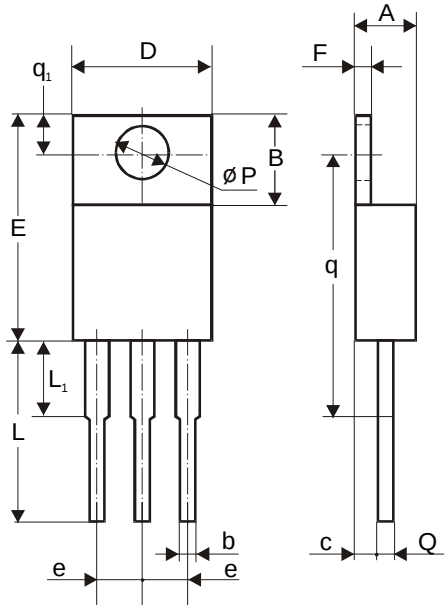
Dimension	mm	
	min	max
A	2.5	2.8
b		0.88
c	0.9	1.5
D	7.4	7.8
E	10.6	11.0
e	2.2	2.4
L	15.6	16.4
L_1		2.54
P	3.05	3.20
Q		0.6
q_1	3.6	4.0

• TO-218



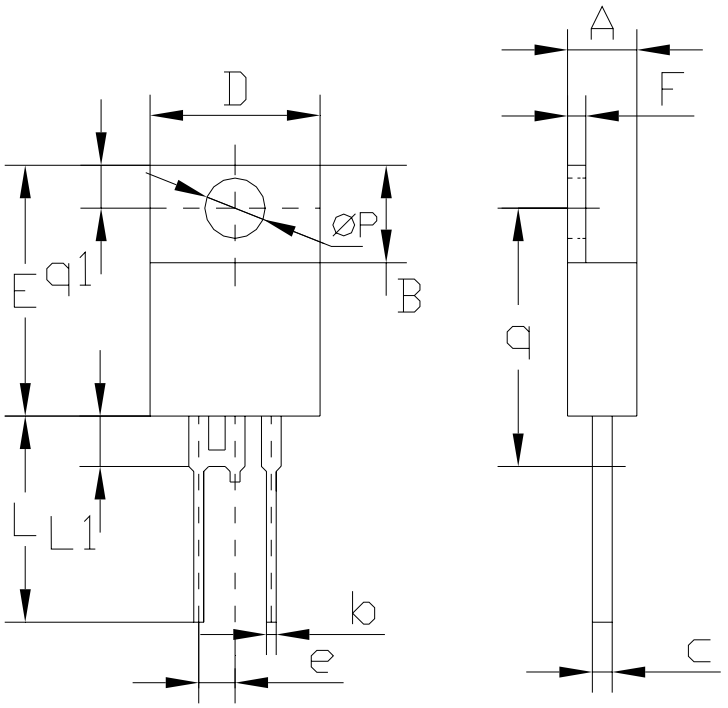
Dimension	mm	
	min	max
A	4.9	5.0
b	1.0	1.2
C	2.2	2.8
D	14.8	15.2
E	20.1	20.5
E_1	12.5	12.7
e	5.4	5.6
F	1.98	2.1
L	14.0	15.0
L_1	1.5	1.9
P	4.0	4.2
Q	0.5	0.6
q_1	4.0	4.1

• TO-220AB



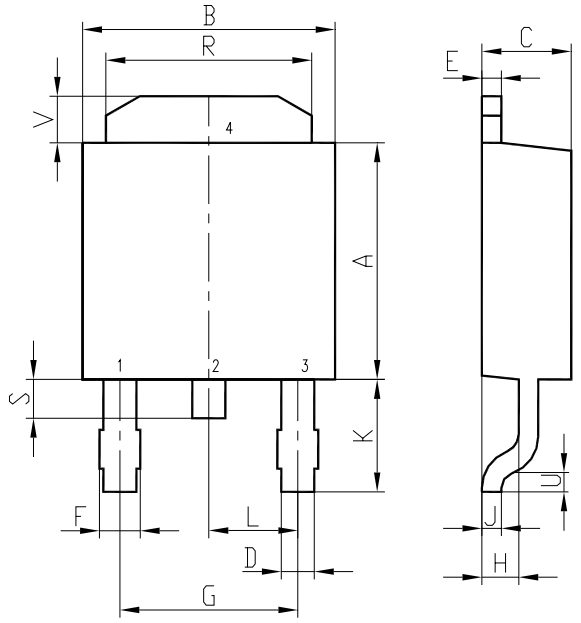
Dimension	mm	
	min	max
A	4.2	4.8
B	5.9	6.8
b	0.6	0.8
c	2.3	2.6
D	10.3	10.7
E	15.2	15.9
e	2.2	2.6
F	1.1	1.2
L	12.5	14.5
L_1	3.06	3.54
P	3.6	3.72
Q	0.55	0.75
q	15.785	16.215
q_1	2.6	3.0

• TO-220AC



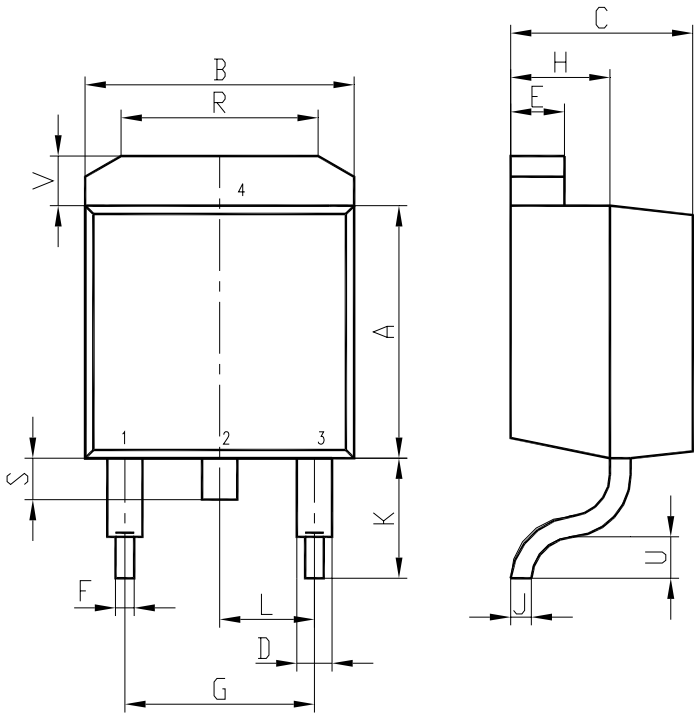
Dimension	mm	
	min	max
A	4.2	4.8
B	5.9	6.8
b	0.6	0.8
c	2.3	2.6
D	10.3	10.7
E	15.2	15.9
e	2.2	2.6
F	1.1	1.2
L	12.5	14.5
L1	3.06	3.54
P	3.6	3.72
Q	0.55	0.75
q	15.785	16.215
q1	2.6	3

• DPACK



Dimension	mm	
	min	max
A	5.99	6.22
B	6.37	6.73
C	2.23	2.37
D	0.71	0.85
E	0.46	0.61
F	-	1.05
G	4.58	
H	0.9	1.0
J	0.46	0.61
K	2.65	2.9
L	2.24	2.34
R	5.21	5.39
S	0.7	1.0
U	0.51	-
V	1.15	1.25

• D2PACK



Dimension	mm	
	min	max
A	8.49	8.71
B	9.92	10.28
C	4.25	4.55
D	1.15	1.4
E	1.1	1.3
F	0.71	0.85
G	5.08	
H	2.3	2.5
J	0.46	0.6
K	4.76	5.24
L	2.54	
R	6.89	7.11
S	1.45	1.55
U	2.3	2.7
V	-	1.4

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