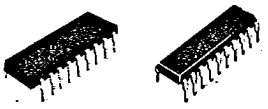
LC7350, 7351

T-75-07-07



3007A 3021B

CMOS LSI

Pulse Dialer with Redial Function

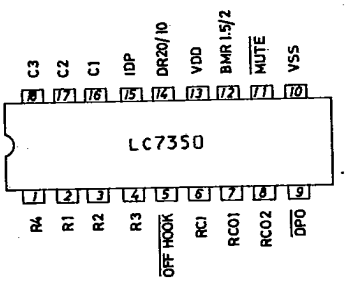
©1529A

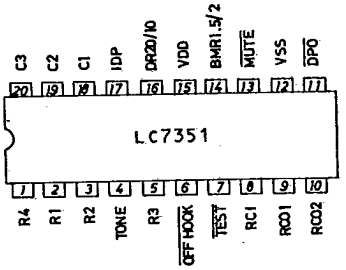
The LC7350(18-pin package)/LC7351(20-pin package) are redial function-provided pulse dialer C-MOS LSIs for use in pushbutton telephones.

Features

(1) Low voltage C-MOS process for direct operation from telephone line.
(2) Possible to use single contact or standard 2-of-7 key pad.
(3) Contains inexpensive R-C oscillator (f_{OSC}=5kHz typ.).
(4) Two selections of output pulse rate (20pps or 10pps).
(5) Two selections of output pulse break/make ratio (1.5 or 2.0).
(6) Two selections of inter-digit pause (400ms or 800ms (Note)).
(7) Provides PBX redial mode ("#" key) with access code (2 digits or less).
(8) Contains 20-digit FIFO (First-In-First-Out) buffer memory.
(9) Key touch tone output (1250Hz/625Hz alternating pacifier tone) capability for LC7351(20-pin package).
(10) Supply voltage/operating temperature ---- V_{DD}=1.5 to 3.5V/Topg=-30 to +70°C
(11) Operating current ---- I_{DD}=100uAmax(V_{DD}=3.5V), I_{DD}=20uAmax(V_{DD}=1.5V)
(Note) Inter-digit pause time 400ms/800ms is for DR=10pps.

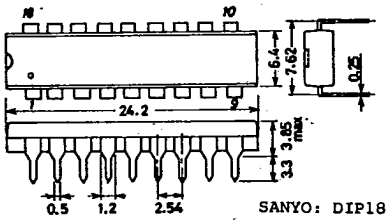
Pin Assignment





Case Outline 3007A-D18IC
(unit:mm)

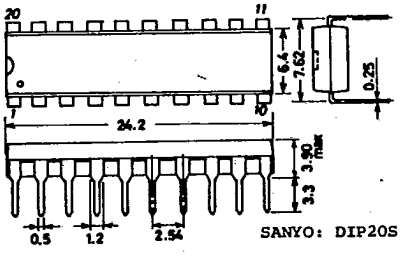
LC7350



SANYO: DIP18

Case Outline 3021B-D20SIC
(unit:mm)

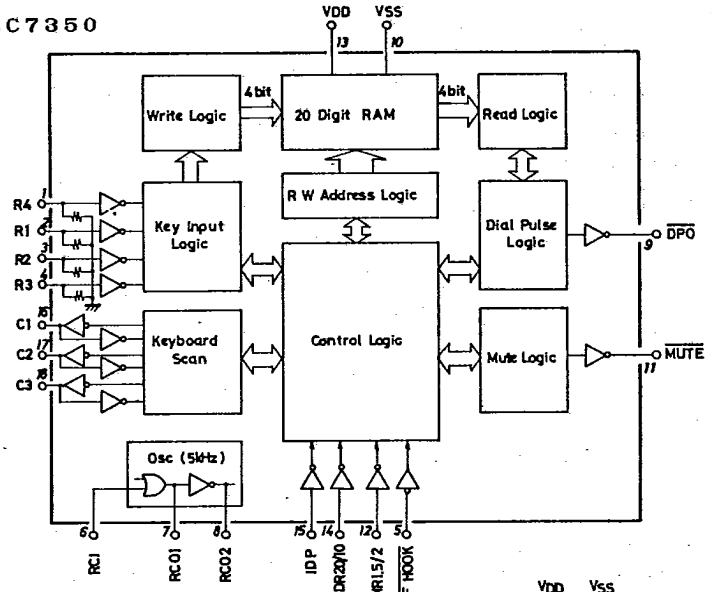
LC7351



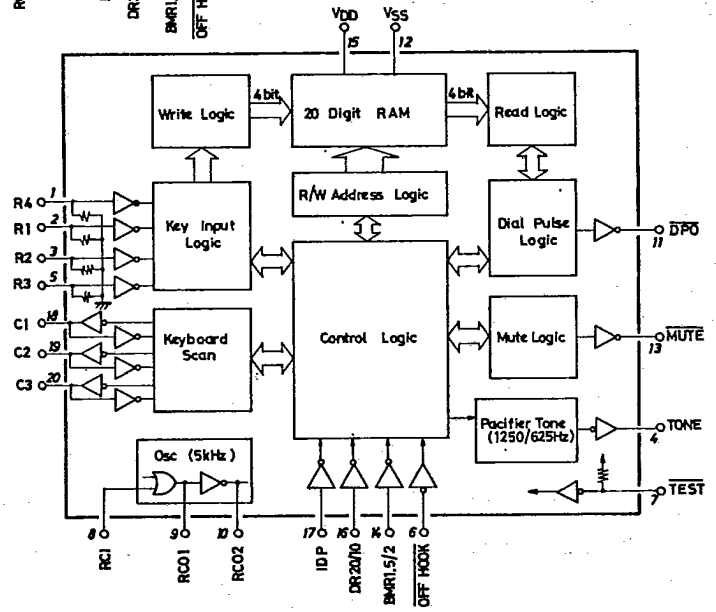
SANYO: DIP20S

Equivalent Circuit Block Diagram

LC7350



LC7351

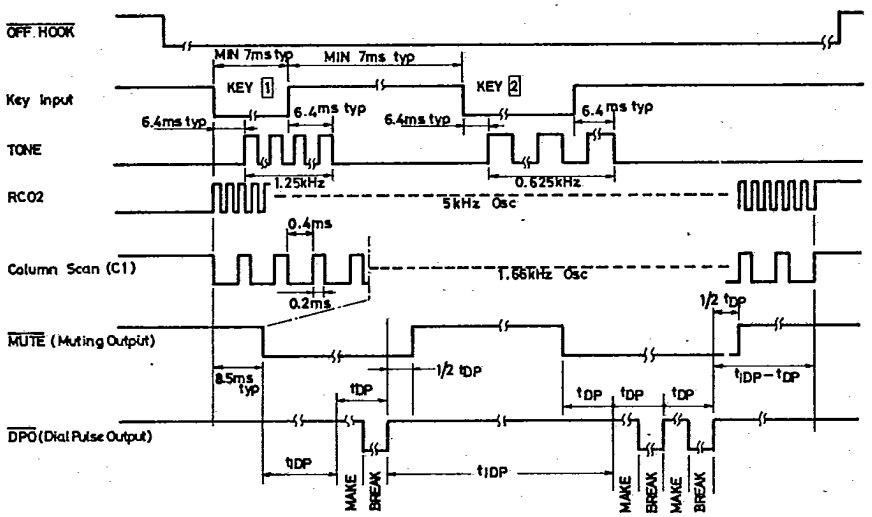


Function Table

(fosc=5kHz)

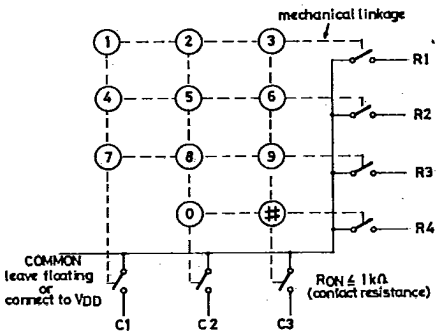
Function	Pin Name	Input Logic Level	Selection	
Dial Pulse Rate	DR20/10	V_{SS}	10pps(t_{DP}=100msec)	
		V_{DD}	20pps(t_{DP}=50msec)	
Make/Break Ratio	BMR 1.5/2.0	V_{SS}	Make=33 1/3(%), Break=66 2/3(%)	
		V_{DD}	Make=40(%), Break=60(%)	
Inter-Digit Pause	IDP	-	D.P.R=10pps	D.P.R=20pps
		V_{SS}	t_{IDP}=800ms	t_{IDP}=400msec
		V_{DD}	t_{IDP}=400ms	t_{IDP}=200ms

Timing

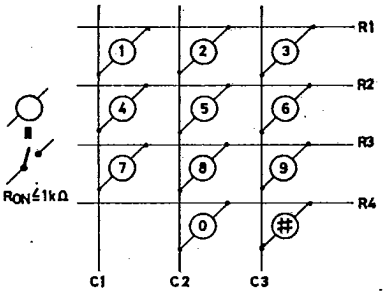


Keyboard Interface

Standard 2 of 7 Keyboard



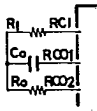
Single Contact Keyboard



Absolute Maximum Ratings at Ta=25±2°C, V_{SS}=0V

				unit
Maximum Supply Voltage	V_{DD}max		-0.3 to +5.5	V
Maxinum Input Voltage	$V_I$max		-0.3 to V_{DD}+0.3	V
Maximum Output Voltage	$V_O$max		-0.3 to V_{DD}+0.3	V
Allowable Power Dissipation	Pdmax	Ta=-30 to +70°C	150	mW
Operating Temperature	Topg		-30 to +70	°C
Storage Temperature	Tstg		-40 to +125	°C

Allowable Operating Conditions at Ta=-30 to +70°C, V_{SS}=0V

				min	typ	max	unit
Supply Voltage	V_{DD}			+1.5		+3.5	V
"H"-Level Input Voltage	V_{IH1}	R1,R2,R3,R4,C1,C2,C3		0.7V_{DD}		V_{DD}	V
	V_{IH2}	$\overline{\text{OFF-HOOK}}$,$\overline{\text{TEST}}$(LC7351 only)		0.8V_{DD}		V_{DD}	V
	V_{IH3}	BMR1.5/2.0,DR20/10,IDP		0.9V_{DD}		V_{DD}	V
"L"-Level Input Voltage	V_{IL1}	R1,R2,R3,R4,C1,C2,C3		V_{SS}		0.3V_{DD}	V
	V_{IL2}	$\overline{\text{OFF-HOOK}}$,$\overline{\text{TEST}}$(LC7351 only)		V_{SS}		0.2V_{DD}	V
	V_{IL3}	BMR1.5/2.0,DR20/10,IDP		V_{SS}		0.1V_{DD}	V
External Constants for Oscillation Guarantee	R_O		(LC7350)	176	300	360	kohm
			(LC7351)	176	220	360	kohm
	C_O		(LC7350)	243	270	396	pF
			(LC7351)	243	360	396	pF
	R_I		(LC7350)	675	820	1650	kohm
			(LC7351)	675	1200	1650	kohm
Oscillation Frequency	f_{OSC}	RCO2			5.0		kHz
Key Contact Resistance	R_{KI}					1.0	kohm
Keyboard Capacitance	C_{KI}					50	pF

Electrical Characteristics at Ta=25±2°C, V_{SS}=0V *V_{CC}(pin)

			min	typ	max	unit
"H"-Level Input Current	I_{IH1}	V_{IN}=V_{DD},*1.5 to 3.5V,(*)			1.0	uA
	I_{IH2}	" ,*1.5V,(R1,R2,R3,R4)	3.0			uA
		" ,*3.5V,(")			60	uA
"L"-Level Input Current	I_{IL1}	V_{IN}=V_{SS},*1.5 to 3.5V,(*)	-1.0			uA
	I_{IL2}	" ,*1.5V,($\overline{\text{TEST}}$)			-3.0	uA
		" ,3.5V,($\overline{\text{TEST}}$)	-140			uA
"L"-Level Input Floating Voltage	V_{IFL}	Input pin open,*1.5 to 3.5V, (R1,R2,R3,R4)	V_{SS}	0.3V_{DD}-0.3		V
"H"-Level Output Voltage	V_{OH1}	I_{OH}=20uA,*1.5V,($\overline{\text{DPO}}$,$\overline{\text{MUTE}}$)	V_{DD}-0.5			V
		I_{OH}=125uA,*3.5V,(")	V_{DD}-1.0			V
	V_{OH2}	I_{OH}=20uA,*1.5V,(TONE)	V_{DD}-0.5			V
		I_{OH}=125uA,*3.5V,(")	V_{DD}-1.0			V
"L"-Level Output Voltage	V_{OL1}	I_{OL}=20uA,*1.5V,($\overline{\text{DPO}}$,$\overline{\text{MUTE}}$)			0.4	V
		I_{OL}=125uA,*3.5V,(")			0.4	V
	V_{OL2}	I_{OL}=20uA,*1.5V,(TONE)			0.4	V
		I_{OL}=125uA,*3.5V,(")			0.4	V
Operating Current	I_{DD1}	(DR=10pps,*1.5V,(V_{DD})			20	uA
		All output pins:open,*3.5V(V_{DD}))			100	uA
Quiescent Current	I_{DD2}	$\overline{\text{OFF-HOOK}}$=$V_{DD}$,All output pins: open,*1.5 to 3.5V,(V_{DD})		0.1	1.0	uA
Frequency Deviation	$\Delta fo/fo$	Ro=300kohms,Co=270pF,RI=820kohms				
		220 , 360 , 1.2Mohms				
		*1.5 to 2.5V,(RCI,RCO1,RCO2)	-3		+3	%
		*2.5 to 3.5V,(")	-3		+3	%
Data Retention Voltage	V_{DR}	($\overline{\text{OFF-HOOK}}$=$V_{DD}$, ($V_{DD}$)	1.0			V
Data Retention Current	I_{DR}	All output pins:open,*1.0V,(V_{DD})			0.4	uA

(*):$\overline{\text{OFF-HOOK}}$,RCI,DR20/10,BMR1.5/2.0,IDP