INTEGRATED CIRCUIT

TECHNICAL DATA

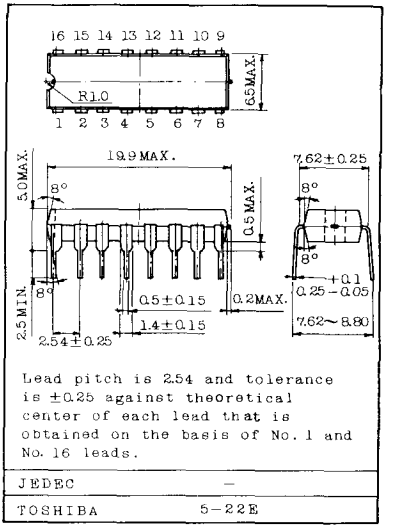
TA7660P TA7661P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

PIF SUBSYSTEM FOR A TV RECEIVER

Unit in mm



Lead pitch is 2.54 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No. 1 and No. 16 leads.

JEDEC	—
TOSHIBA	5−22E

The TA7660P/TA7661P is a picture IF subsystem that provides 3-stage IF amplifier, Video Detector, Black and white noise inverting circuits and AFT detector for a TV receiver.

The TA7660P/TA7661P also provides internal fast response AGC with dual time constants for the IF amplifier stages and delayed AGC for an external RF amplifier stage. The TA7660P is designed for FET top front-end (reverse AGC), and TA7661P is for Bipolar top front-end (forward AGC).

The TA7660P/TA7661P is an AGC response time improved version of the TA7607AP/TA7611AP, and also utilizes a 16 leads dual-in-line plastic package.

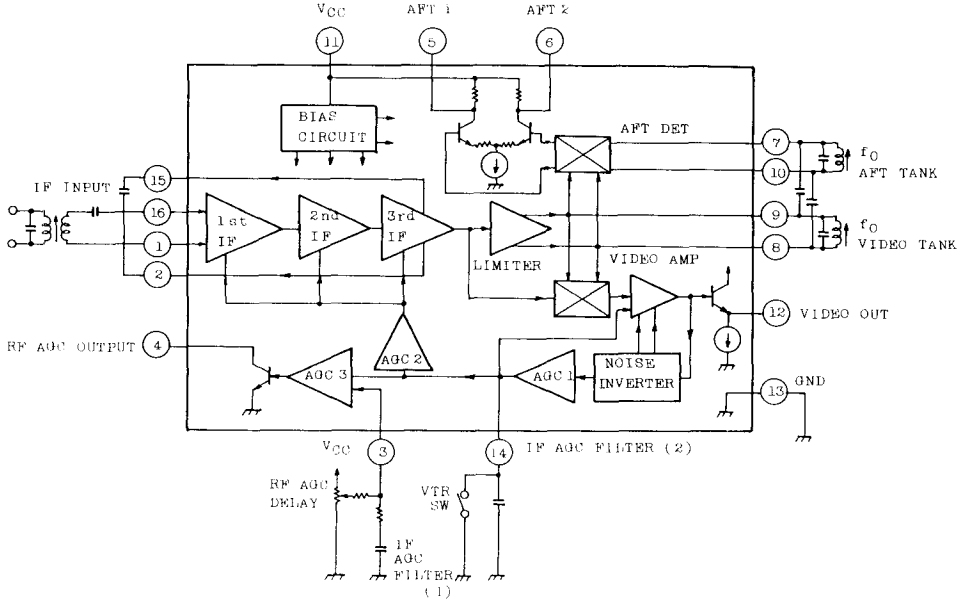
- High Input Sensitivity 3-stage IF Amplifier: 58.75MHz 100μV_{rms} Typ.
- Gain Reduction with Excellent Stability; Reduction Range 65dB Typ.
- Video Detector with Linear Characteristics
- Black and White Noise Inverting Circuits
- Balanced AFT Output
- Improved Fast AGC Response
- Delayed AGC Output for a Front-end FET Top Front-end; TA7660P
  Bipolar Top Front-end; TA7661P
- Minimal External Components and Adjustments Required

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Pin 11 Supply Voltage	V_{CC}	15	V
Pin 4 Open Loop Voltage	V_{14}	15	V
Pin 12 Video DC Output Current	I_{12}	6	mA
Power Dissipation (Note)	P_D	1.4	W
Storage Temperature	Topr	-20~65	°C
Operating Temperature	Tstg	-55~150	°C

Note: Derated above Ta=25°C in the proportion of 11.2mW/°C.

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS (Ta=25°C)

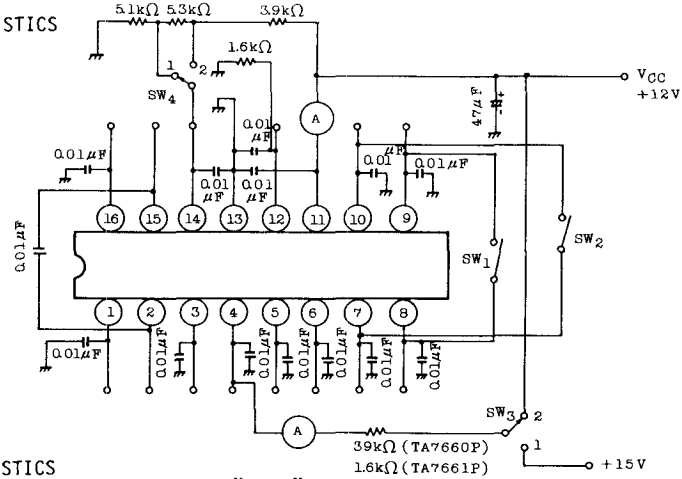
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Recommended Supply Voltage	$V_{CC}(V_{11})$	-	-	10.8	12.0	13.2	V
Supply Current	$I_{CC}(I_{11})$	1	V_{CC}=12V	42	51	63	mA
Video DC Output Voltage	V_{12}	1	V_{CC}=12V	5.2	5.5	5.8	V
AFT DC Output Voltage	V_5	1	V_{CC}=12V, SW_1:ON, SW_2:ON	5.3	6.8	8.3	V
	V_6	1	V_{CC}=12V, SW_1:ON, SW_2:ON	5.3	6.8	8.3	V
AFT Output Offset Voltage	V_5-V_6	1	V_{CC}=12V, SW_1:ON, SW_2:ON	-1.5	0	1.5	V
RF AGC Residual Output Voltage	V_4 SAT	1	V_{CC}=12V, SW_3:2, SW_4:1.....TA7660P SW_4:2.....TA7661P	-	-	0.5	V
RF AGC Leakage Current	I_4 LEAK	1	V_{CC}=12V, SW_3:1, SW_4:1.....TA7661P SW_4:2.....TA7660P	-	-	1	μA
Video Sensitivity	v_i PIN1-16	2	V_{CC}=12V, V_{12}=0.8V_{p-p} f_P=58.75MHz, AM:30%	50	100	220	μV_{rms}
AGC Range	ΔA (IF)	2	V_{CC}=12V, f_P=58.75MHz V_{14}=11.5V→4.0V	60	65	-	dB
Sync Tip Level Voltage	V_{SYNC} (V_{12})	2	V_{CC}=12V, f_P=58.75MHz	2.3	2.5	2.7	V
Maximum Input Voltage	$v_{IN\ MAX}$	2	V_{CC}=12V, f_P=58.75MHz	100	120	-	mV_{rms}

ELECTRICAL CHARACTERISTICS (Ta=25°C)

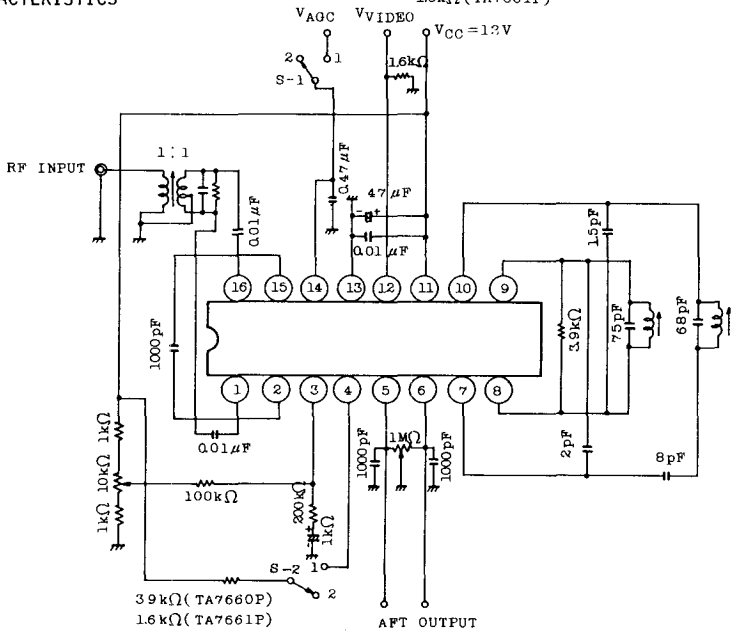
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
White Noise	Threshold Level	$V_{W\ TH}$ (V_{12})	2	V_{CC}=12V, f_P=58.75MHz	6.0	6.4	6.8	V
	Clamp Level	$V_{W\ CL}$ (V_{12})	2	V_{CC}=12V, f_P=58.75MHz	3.7	4.1	4.5	V
Black Noise	Threshold Level	$V_{B\ TH}$ (V_{12})	2	V_{CC}=12V, f_P=58.75MHz	1.4	1.6	1.8	V
	Clamp Level	$V_{B\ CL}$ (V_{12})	2	V_{CC}=12V, f_P=58.75MHz	2.9	3.3	3.7	V
Video Frequency Response		f_{BW}	2	f=58.75MHz, Sweep Generator	4.5	5.5	-	MHz
Carrier Suppresion		CL	4	SG_1=100mV_{rms}, SG_2, SG_3 OFF	40	50	-	dB
2nd Carrier Suppresion		I_{2nd}	4	SG_1=100mV_{rms}, SG_2, SG_3 OFF	40	50	-	dB
920kHz Carrier Beat Suppresion		I_{920}	4	SG_1=100mV_{rms}, SG_2=32mV_{rms} SG_3=32mV_{rms}	33	38	-	dB
Differential Phase		DP	3	-	-	3.5	5	deg
Differential Gain		DG	3	-	-	7	10	%
Input Impedance		R_{IN}	-	f=58.75MHz Between Pin 1 and Pin 16	3.0	4.5	6.0	kΩ
		C_{IN}			-	2.0	5.0	pF
AFT Sensitivity		$\Delta F/\Delta V_{5-6}$	2	f=58.75MHz	-	16	-	kHz/v
AFT Output Upper Voltage		V_5, V_6 U	2	f=58.75MHz	11.7	11.9	12.0	V
AFT Output Lower Voltage		V_5, V_6 L	2	f=58.75MHz	1.8	2.3	2.8	V
Maximum Available Current		I_4 MAX	-	TA7660P	0.3	-	-	mA
				TA7661P	7	-	-	mA
RF Delay		$V_{IN\ DELAY}$	-	f=58.75MHz	-	-	-	-

TEST CIRCUIT

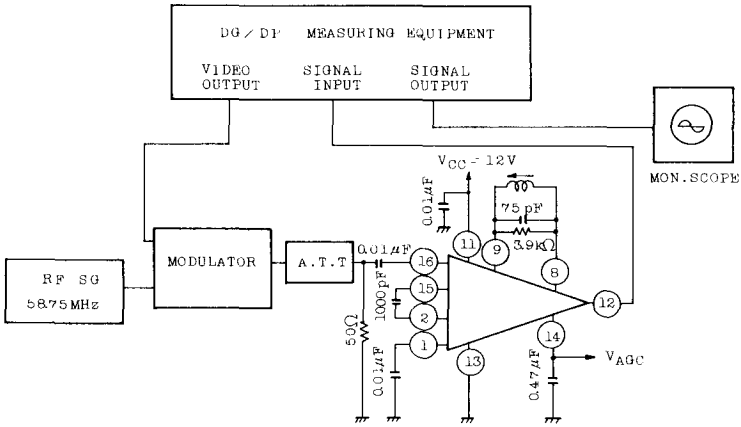
1. DC CHARACTERISTICS



2. AC CHARACTERISTICS



3. DG/DP

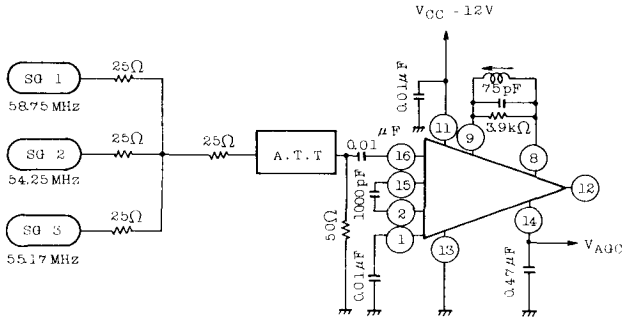


V_{AGC} : Adjust gain reduction to 40dB

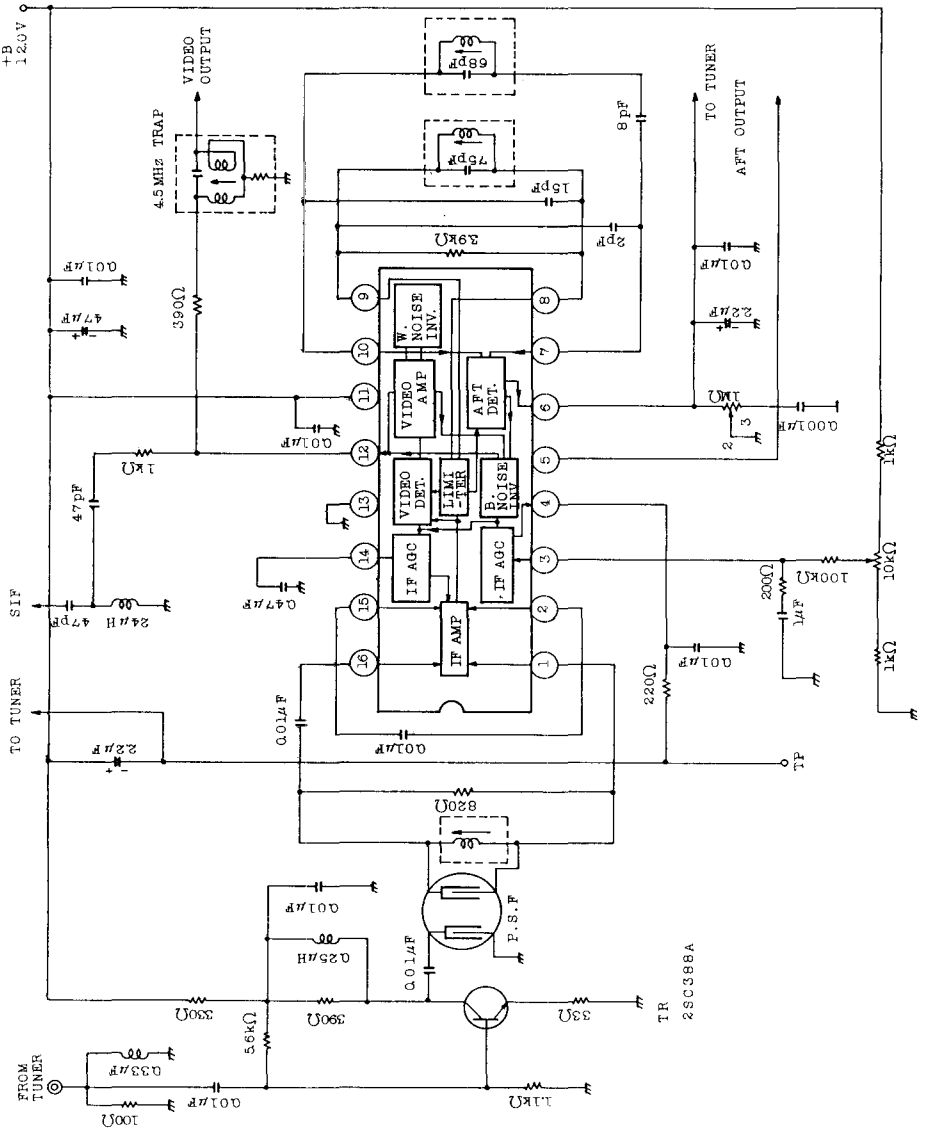
A.T.T : Adjust sync tip level to DC 2.5V

A.P.L : 50%

4. INTER MODULATION



APPLICATION CIRCUIT



AFT OUTPUT VOLTAGE – FREQUENCY CHARACTERISTICS