

**TA7787AP / AF**  
**TA8110AP / AF**

AM/FM IF SYSTEM

TA7787AP/AF, TA8110AP/AF are the AM/FM IF SYSTEM ICs which are designed for Radio Cassette Players and 3V Head Phone Radios.

TA8110AP/AF is Upper Heterodyne use and TA7787AP/AF is Lower Heterodyne use.

- . AM Detector Coil and IF By-pass Condenser are not necessary.
- . Common Output for AM/FM
- . One Terminal Type AM Low Cut Circuit is built in.
- . AM OSC Circuit with ALC is adopted.
- . FM Soft Muting Circuit is built in.
- . A Terminal is provided to stop the FM MPX IC VCO during AM reception and when the FM signal is too weak.
- . Low Supply Current. ( $V_{CC}=3V$ ,  $T_a=25^{\circ}C$ )  
 FM :  $I_{CC(1)}=5.3mA$ (Typ.)  
 AM :  $I_{CC(2)}=4.8mA$ (Typ.)  
 Operating Supply Voltage Range. ( $T_a=25^{\circ}C$ )  
 $V_{CC(opr)}=1.8\sim 8.0V$  (TYP:  $V_{CC}=3V$ )

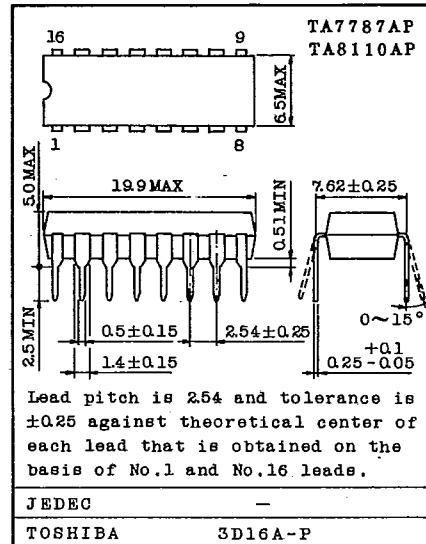
MAXIMUM RATINGS ( $T_a=25^{\circ}C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		$V_{CC}$	8	V
LED Current		$I_{LED}$	10	mA
LED Voltage		$V_{LED}$	10	V
Power Dissipation	DIP-16	PD	750	mW
	(Note 1) MFP-16		(Note 2) 350	
Operating Temperature		$T_{opr}$	-25~75	$^{\circ}C$
Storage Temperature		$T_{stg}$	-55~150	$^{\circ}C$

Note 1 : TA7787AP, TA8110AP...DIP-16,  
TA7787AF, TA8110AF...MFP-16

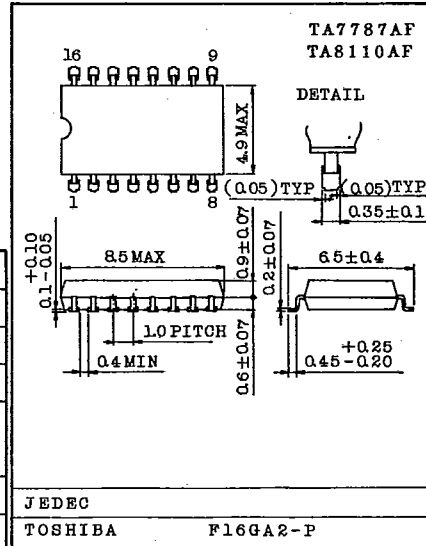
Note 2 : Derated above  $T_a=25^{\circ}C$  in the proportion of 6mW for DIP-16 and of 2.8mW for MFP-16.

Unit in mm



Weight : 1.00g

Unit in mm

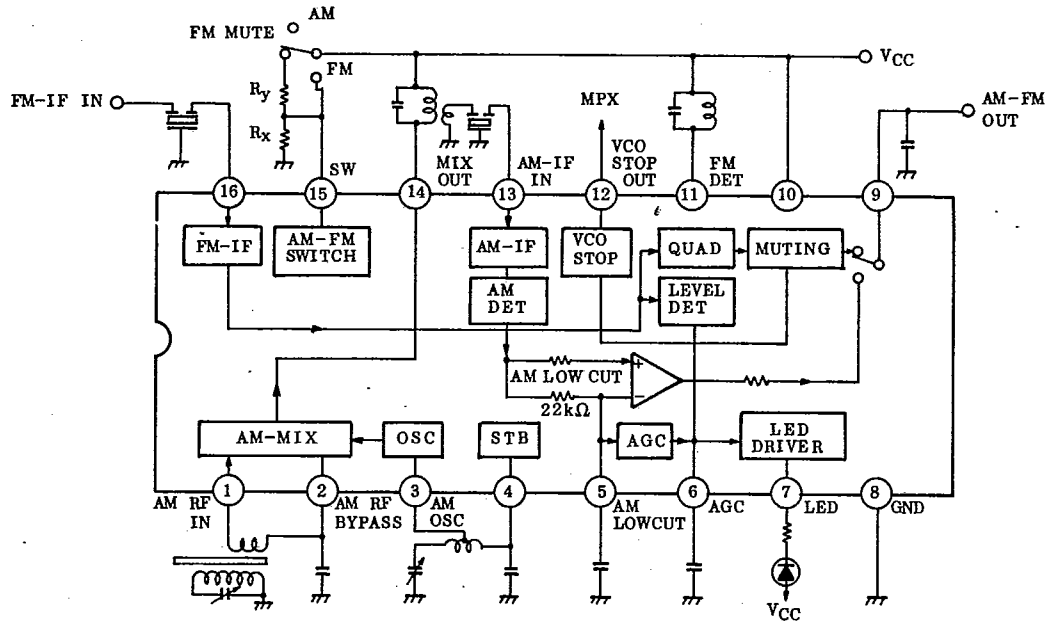


Weight : 0.14g

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BLOCK DIAGRAM



TERMINAL VOLTAGE AT NO SIGNAL ( $V_{CC}=3V$ ,  $T_a=25^\circ C$ )

PIN No.	ITEM	SYMBOL	TYPICAL VALUE		UNIT
			AM	FM	
1	(AM RF IN)	V1	1.1	1.1	V
2	(AM RF BY-PASS)	V2	1.1	1.1	V
3	(AM OSC)	V3	1.6	1.6	V
4	(STB)	V4	1.6	1.6	V
5	(AM LOW CUT)	V5	0.4	0.3	V
6	(AGC)	V6	0.4	0.35	V
7	(LED)	V7	-	-	V
8	(GND)	V8	0	0	V
9	(AM-FM OUT)	V9	1.1	1.1	V
10	(VCC)	V10	3.0	3.0	V
11	(FM DET)	V11	3.0	3.0	V
12	(VCO STOP OUT)	V12	-	-	V
13	(AM IF IN)	V13	1.1	1.1	V
14	(AM MIX OUT)	V14	3.0	3.0	V
15	(AM-FM SWITCH)	V15	0	-	V
16	(FM IF IN)	V16	1.1	1.1	V

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**ELECTRICAL CHARACTERISTICS**

Unless otherwise specified,  $T_a=25^{\circ}\text{C}$ ,  $V_{CC}=3\text{V}$

FM :  $f=10.7\text{MHz}$ ,  $\Delta f=\pm 22.5\text{kHz}$ ,  $f_m=1\text{kHz}$

AM :  $f=1\text{MHz}$ ,  $\text{Mod}=30\%$ ,  $f_m=1\text{kHz}$

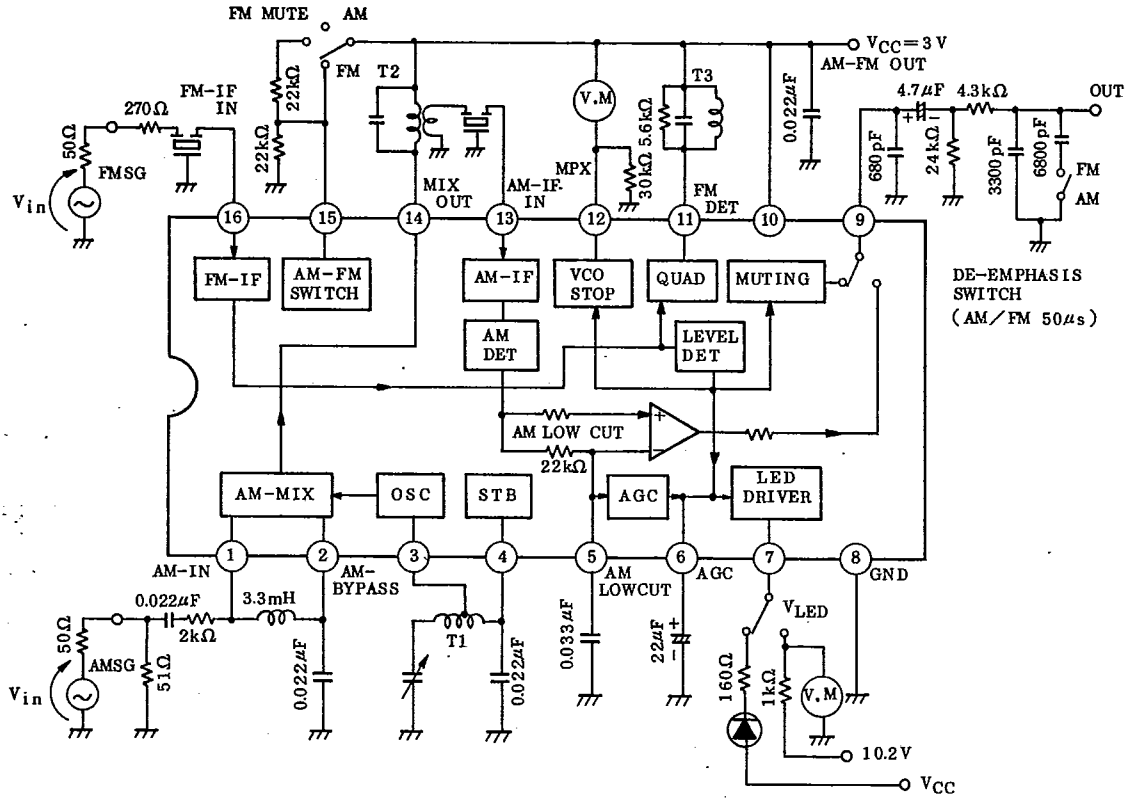
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	$I_{CC(1)}$	1	FM Mode $V_{IN}=0$	-	5.3	8.2	mA
	$I_{CC(2)}$		AM Mode $V_{IN}=0$	-	4.8	7.5	
Input Limiting Voltage	$V_{IN(lim)}$	1	-3dB Limiting Point	-	43	49	dB $\mu$
Recovered Output Voltage	$V_{OD}$	1	$V_{IN}=80\text{dB}\mu$	55	80	110	mV $_{rms}$
Signal to Noise Ratio	S/N	1	$V_{IN}=80\text{dB}\mu$ $\Delta f=22.5\text{kHz} \rightarrow 0$	-	68	-	dB
Total Harmonic Distortion	THD	1	$V_{IN}=80\text{dB}\mu$	-	0.1	-	%
FM AM Rejection Ratio	AMR	1	$V_{IN}=80\text{dB}\mu$	-	32	-	dB
Lamp ON Sensitivity	$V_L$	1	$I_L=1\text{mA}$	37	43	49	dB $\mu$
VCO Stop Sensitivity	$V_{stop}$	1		-	45	-	dB $\mu$
Muting Level	MUT	1	$R_x=22\text{k}\Omega$ , $R_y=22\text{k}\Omega$	-	33	-	dB
7 Pin Saturation Voltage	$V_{LED}$	1	$I_L=10\text{mA}$ , $V_6=1.2\text{V}$	-	80	200	mV
12 Pin Saturation Voltage	$V_{VCO}$	1	$I_{VCO}=100\mu\text{A}$	-	40	65	mV
Recovered Output Voltage	$V_{OD}$	1	$V_{IN}=60\text{dB}\mu$ , $V_6 \rightarrow \text{GND}$	50	75	100	mV $_{rms}$
Signal to Noise Ratio	S/N	1	$V_{IN}=60\text{dB}\mu$	-	41	-	dB
Total Harmonic Distortion	THD	1	$V_{IN}=60\text{dB}\mu$	-	1.0	-	%
			$V_{IN}=100\text{dB}\mu$ , $\text{Mod}=80\%$	-	2.0	-	
Lamp ON Sensitivity	$V_L$	1	$I_L=1\text{mA}$	-	29	35	dB $\mu$
Gain	$G_v$	1	$V_{IN}=26\text{dB}\mu$	22	33	70	mV $_{rms}$
Output Resistance	$R_{o9}$	1	FM Mode	-	0.5	-	k $\Omega$
			AM Mode	-	10	-	

\*  $V_{IN}$  OPEN Display

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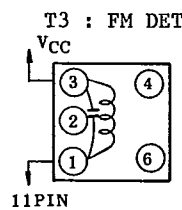
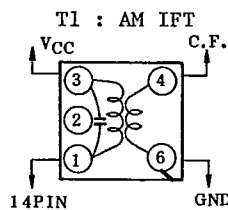
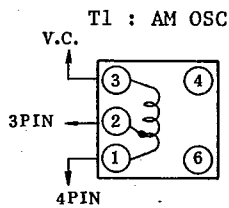
TEST CIRCUIT 1



COIL DATA (TEST CIRCUIT)

S : SUMIDA ELECTRIC Co.,Ltd.

COIL No.	f	L ( $\mu$ H)	C <sub>0</sub> (pF)	Q <sub>0</sub>	TURN				WIRE (mm)	REF. (COIL No.)
					1-2	2-3	1-3	4-6		
T1 AM OSC	796kHz	288		155	13	73			0.08 UEW	4147-1356-038
T2 AM IFT	455kHz		180	120			180	15	0.06 UEW	2150-2162-165
T3 FM DET	10.7MHz		47	165			16		0.09 UEW	2153-4095-122



**TOSHIBA**