

TOSHIBA INTEGRATED CIRCUIT

TECHNICAL DATA

TA7378F

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT
SILICON MONOLITHIC

FM FRONT END IC

The TA7378F is low operation voltage FM FRONT END IC for the portable equipments which are suitable for the headphone stereo radios and radio cassette players.

It is available TV band frequency (VHF).

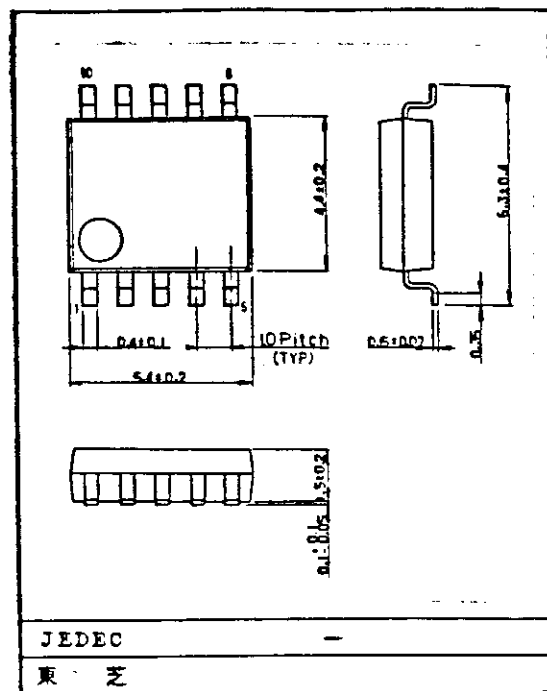
FEATURES

- Built-in Varicap Diode for AFC
- Operating supply voltage range
: $V_{CC}=1.6-6.0V$ ($T_a=25^\circ C$)
- Excellent Supply Voltage Dependence of Local Oscillator : Oscillation Stop $V_{CC}=0.9V$ (Typ)
- Excellent Inter-Modulation Characteristics by Double Balanced Type Mixer Circuit
- Built-in clamping Diode for the Local Oscillator Output

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	8	V
Power Dissipation (Note)	P_D		mW
Operating Temperature	T_{opr}	$-25 \sim 75$	$^\circ C$
Storage Temperature	T_{stg}	$-55 \sim 150$	$^\circ C$

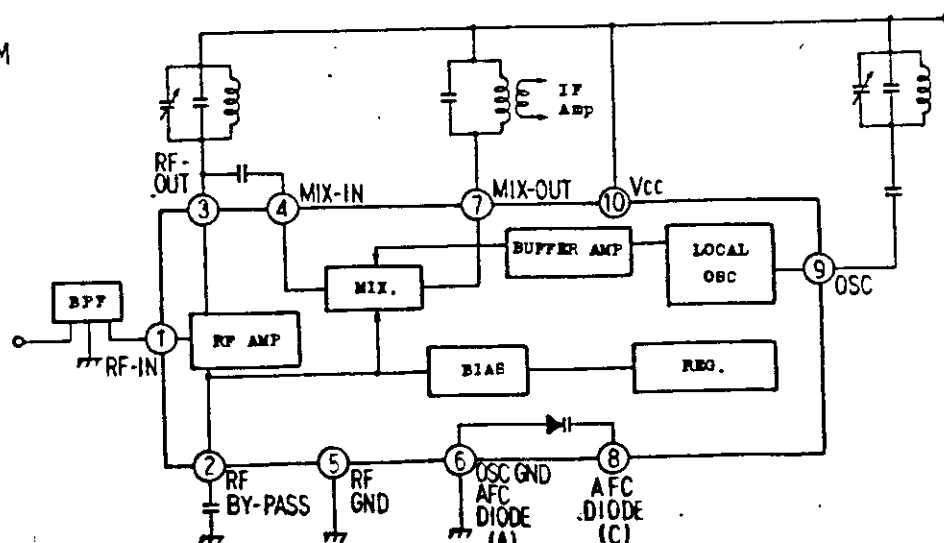
Note : Derated above $T_a=25^\circ C$ in the proportion of $mW/^\circ C$.



ORIGINAL

DATE: 08 NOV 1994

BLOCK DIAGRAM



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TOSHIBA CORPORATION

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, $V_{CC}=5V$, $f=83MHz$, $f_m=1kHz$, $\Delta f=22.5kHz$ dev., $T_a=25^\circ C$

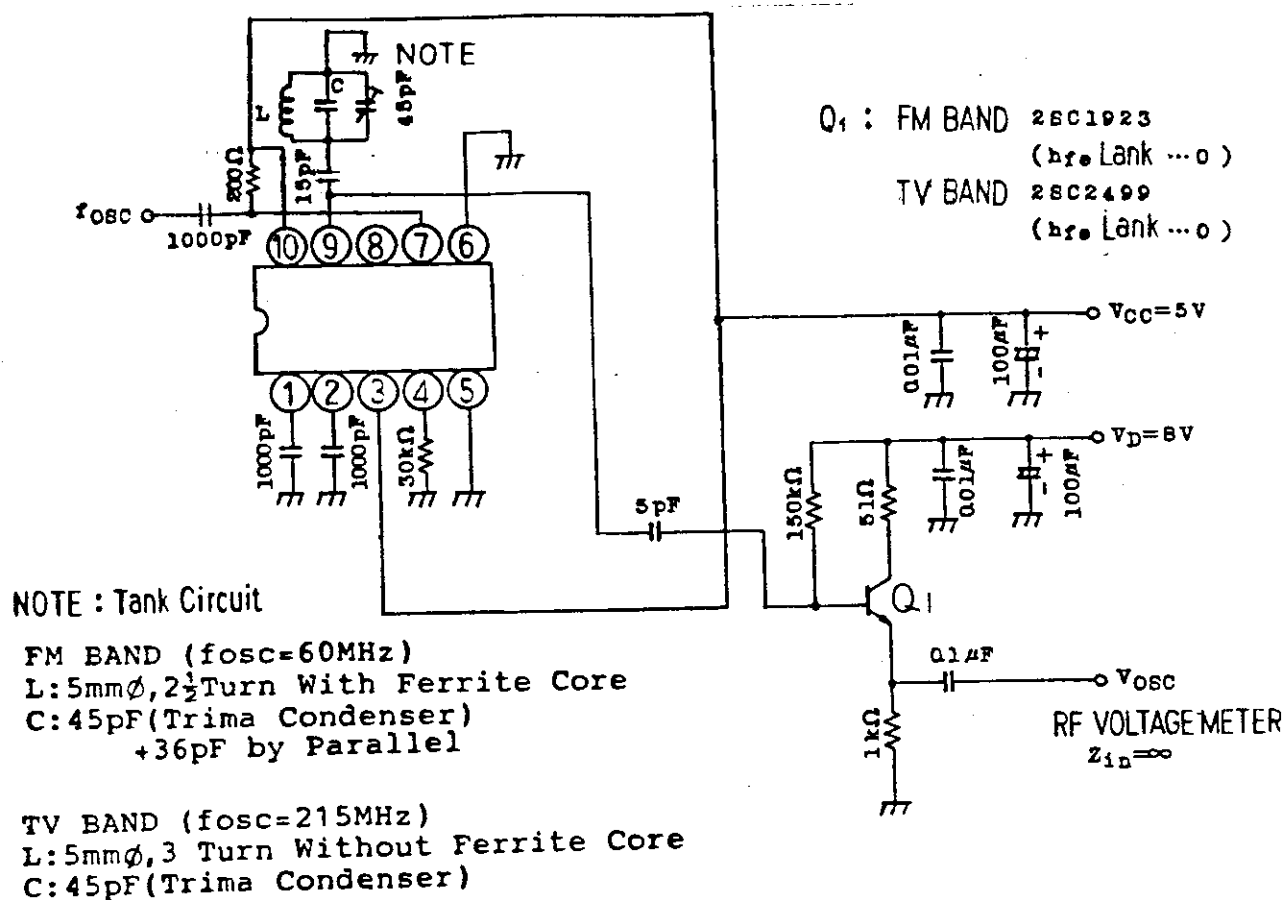
CHARACTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		ICC	2	VIN=0	-	5.2	-	mA
-3dB Limiting Sensitivity		VIN(lim)	2		-	3.0	-	dB μ
Quiescent Sensitivity		QS	2		-	11.0	-	dB μ
Conversion Gain		GC	-		-	31	-	dB
Local OSC Voltage		VOSC1	1	fOSC=60MHZ	-	440	-	mVrms
		VOSC2	1	fOSC=215MHZ	-	120	-	
1 Pin Impedance	Parallel Input Resistance	rip1	3	f=83MHZ	-	57	-	Ω
3 pin Impedance	Parallel Output Resistance	rop3	3		-	25	-	k Ω
	Parallel Output Capacitance	cop3			-	2.0	-	pF
4 pin Impedance	Parallel Input Resistance	rip4	3		-	2.7	-	k Ω
	Parallel Input Capacitance	cip4			-	3.3	-	pF
6 pin Impedance	Parallel Output Resistance	rop6	3	f=10.7MHZ	-	100	-	k Ω
	Parallel Output Capacitance	cop6			-	4.8	-	pF
Local OSC Stop Voltage		Vstop	1		-	0.9	-	V

ELECTRICAL CHARACTERISTICS

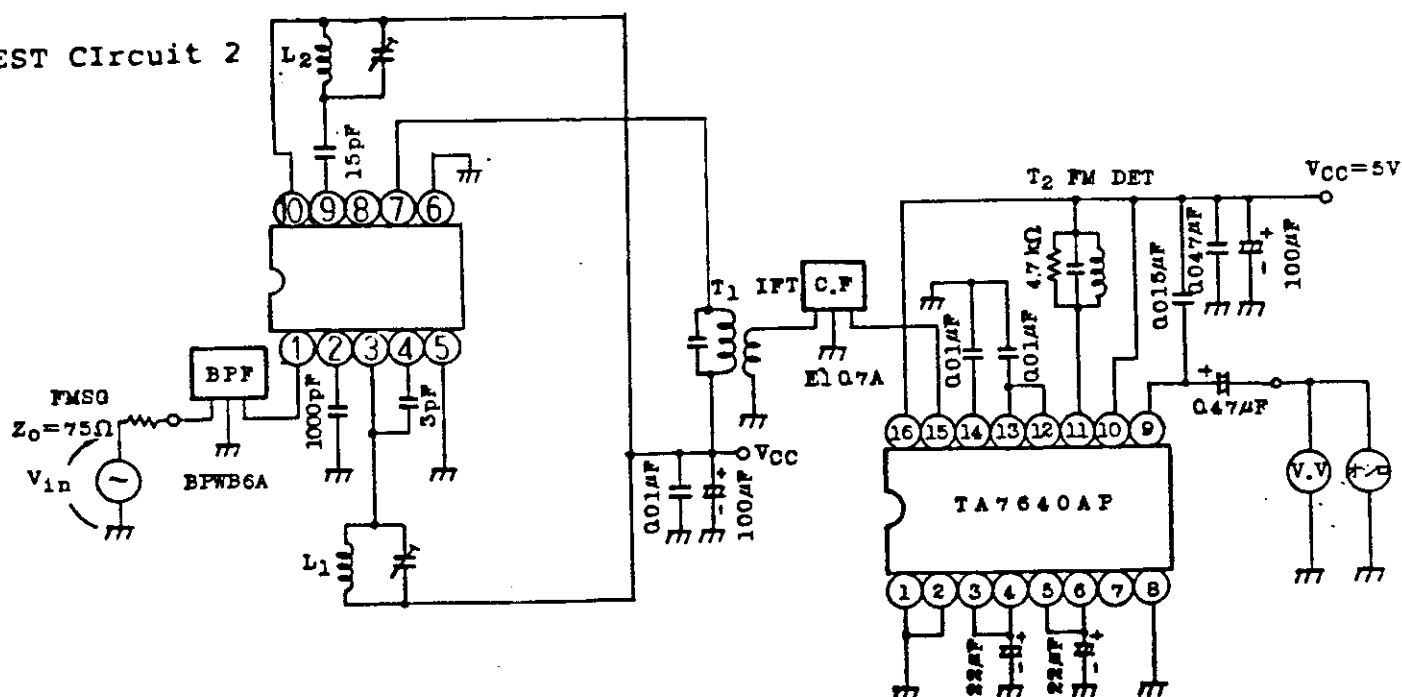
DC CHARACTERISTICS ($V_{CC}=5V$, $T_a=25^{\circ}C$, Terminal Voltage at No Signal)

ITEM	SYMBOL	TYPICAL VALUE	UNIT
1 PIN (RF IN)	V_1	0.8	V
2 PIN (BY PASS)	V_2	1.5	V
3 PIN (RF OUT)	V_3	5.0	V
4 PIN (MIX IN)	V_4	1.5	V
5 PIN (RF GND)	V_5	0	V
6 PIN (OSC GND AFC DIODE ANODE)	V_6	0	V
7 PIN (MIX OUT)	V_7	5.0	V
8 PIN (AFC DIODE CATHODE)	V_8	—	V
9 PIN (OSC)	V_9	5.0	V
10 PIN (V_{CC})	V_9	5.0	V

TEST CIRCUIT 1:Vosc

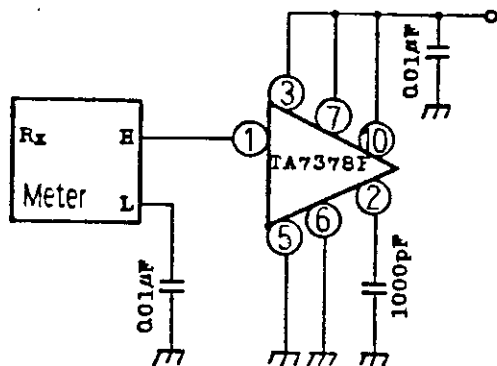


TEST Circuit 2

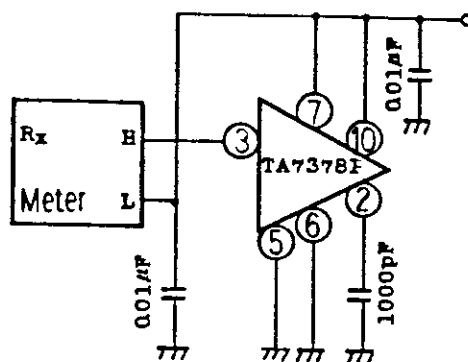


Test Circuit 3

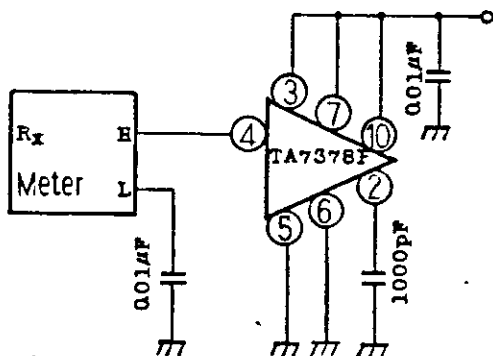
①pin INPUT r_{ip1} , c_{ip1}



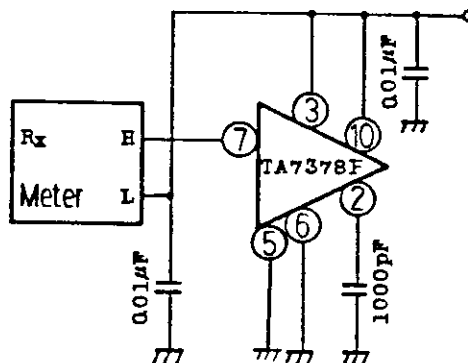
③pin OUTPUT r_{op3} , c_{op3}



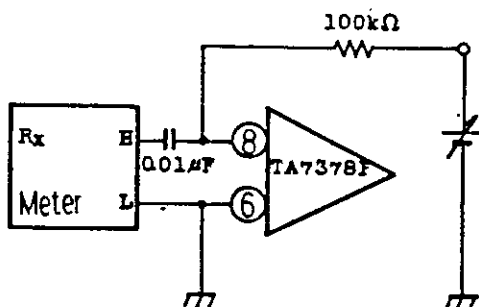
④pin INPUT r_{ip4} , c_{ip4}



⑥pin OUTPUT r_{op6} , c_{op6}



AFC DIODE c_{AFC}



COIL DATA FOR TEST CURCUIT :

COIL No.	TEST FREQUENCY	L (μ H)	C ₀ (pF)	Q ₀	TURN				NOTE
					1-2	2-3	1-3	4-6	
L ₁ FM RF	100MHz			100			(2 $\frac{1}{4}$)		JAPAN BAND
L ₂ FM OSC	100MHz			100			(2 $\frac{1}{2}$)		JAPAN BAND
T ₁ FM IFT	10.7MHz		75	115			12	1	⑤ 0133-309-048
T ₂ FM DET	10.7MHz		47	150				14	⑤ 44M-037-933A

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