

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA7358AP

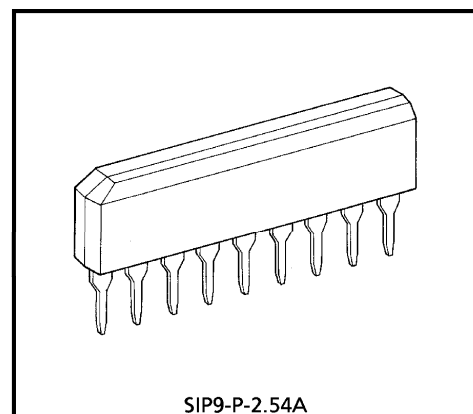
## FM FRONT-END

The TA7358AP is designed for a FM front-end application, which is suitable to a portable radio or a radio cassette.

Comparing with conventional types, supply voltage dependence, overload characteristics and spurious radiation characteristics are improved.

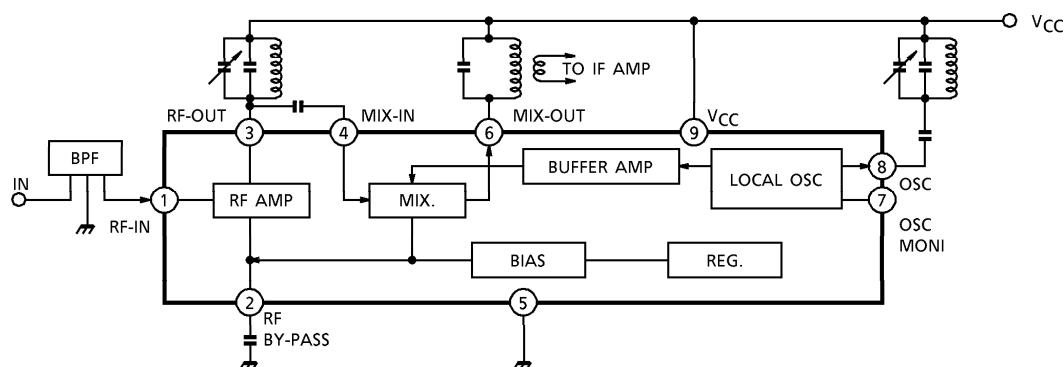
### FEATURES

- Wide supply voltage range :  $V_{CC} = 1.6 \sim 6.0V$
- Excellent supply voltage dependence of local oscillator : Oscillation stop  
 $V_{CC} = 0.9V$  (Typ.)
- Improved inter-modulation characteristics by double balanced type mixer circuit.
- Low spurious radiation.
- Built-in clamping diode for the local oscillator output.



Weight : 0.92g (Typ.)

### BLOCK DIAGRAM



961001EBA2

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**EXPLANATION OF TERMINALS** (Terminal voltage is DC voltage at  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5\text{V}$ , and no signal)

PIN No.	SYMBOL	INTERNAL	TERMINAL VOLTAGE (V)
1	FM-RF IN		0.8
2	BY PASS		1.5
3	FM-RF OUT		5.0
4	MIX IN		1.5
5	GND	—	0
6	MIX OUT	cf. pin ④	5.0
7	OSC MONITOR		4.3
8	OSC		5.0
9	$V_{CC}$	—	5.0

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

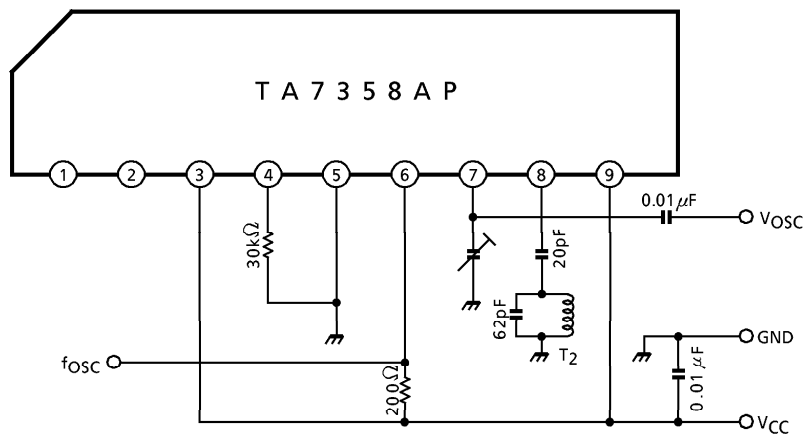
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	8	V
Power Dissipation	$P_D$ (Note)	500	mW
Operating Temperature	$T_{opr}$	$-25 \sim 75$	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$

(Note) Derated above  $25^\circ\text{C}$  in the proportion of  $4\text{mW}/^\circ\text{C}$ .

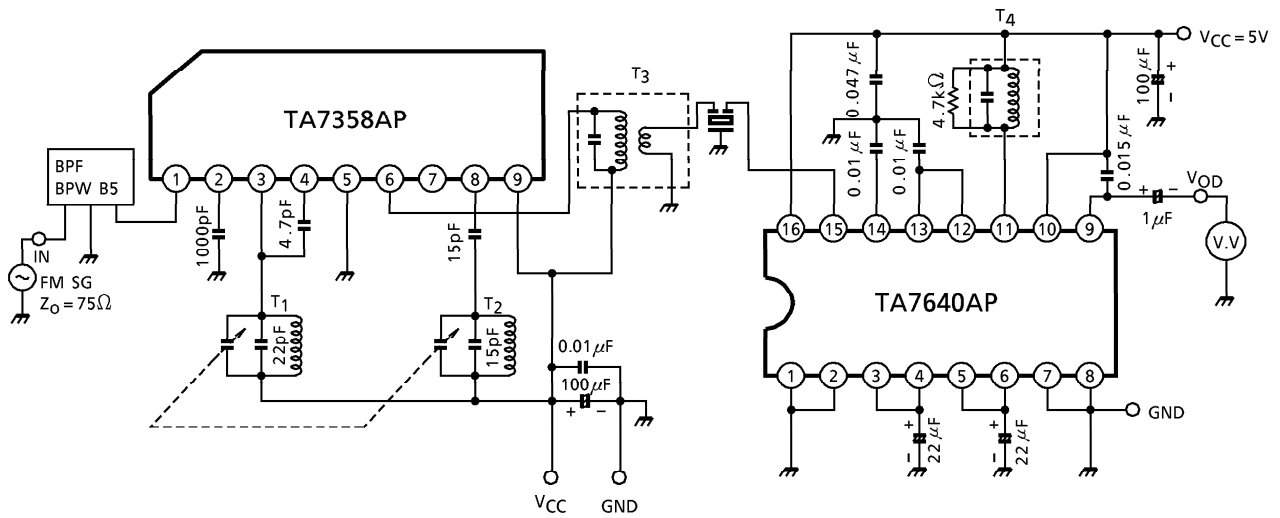
**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 3\text{V}$ ,  $f = 83\text{MHz}$ ,  $f_m = 1\text{kHz}$ ,  $\Delta f = \pm 22.5\text{kHz}$ ,  $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I <sub>CC</sub>	2	V <sub>in</sub> = 0	—	5.2	8.0	mA
– 3dB Limiting Sensitivity		V <sub>in</sub> (lim)	2	—	—	3.0	7.0	dB <sub>μ</sub> V EMF
Quiescent Sensitivity		Q <sub>S</sub>	2	—	—	11.0	—	dB <sub>μ</sub> V EMF
Conversion Gain		G <sub>C</sub>	—	—	—	31	—	dB
Local OSC Voltage		V <sub>OSC</sub>	1	f <sub>OSC</sub> = 60MHz	90	165	220	mV <sub>rms</sub>
Pin ① Impedance	Parallel Input Resistance	r <sub>ip1</sub>	3	f = 83MHz	—	57	—	Ω
Pin ③ Impedance	Parallel Output Resistance	r <sub>op3</sub>	3		—	25	—	kΩ
	Parallel Output Capacitance	c <sub>op3</sub>			—	2.0	—	pF
Pin ④ Impedance	Parallel Input Resistance	r <sub>ip4</sub>	3		—	2.7	—	kΩ
	Parallel Input Capacitance	c <sub>ip4</sub>			—	3.3	—	pF
Pin ⑥ Impedance	Parallel Output Resistance	r <sub>op6</sub>	3	f = 10.7MHz	—	100	—	kΩ
	Parallel Output Capacitance	c <sub>op6</sub>			—	4.8	—	pF
Local OSC Stop Voltage		V <sub>stop</sub>	1	—	—	0.9	1.3	V

**TEST CIRCUIT 1**



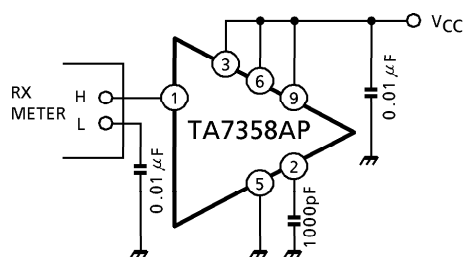
**TEST CIRCUIT 2**



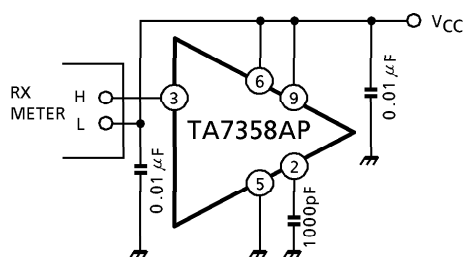
**TEST CIRCUIT 3**

Input output impedance

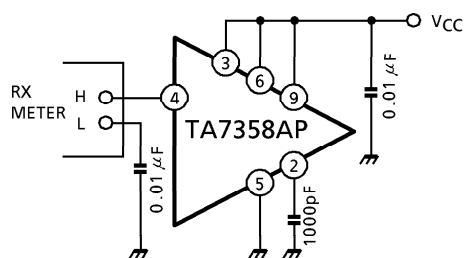
(1)  $r_{ip1}$ ,  $c_{ip1}$



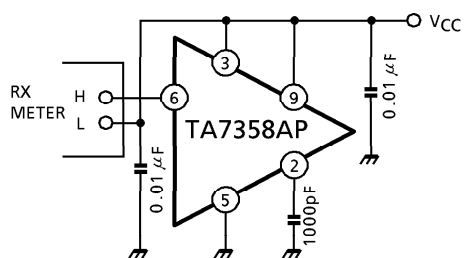
(2)  $r_{op3}$ ,  $c_{op3}$





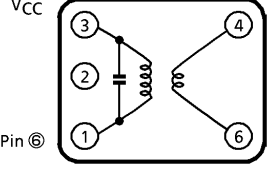
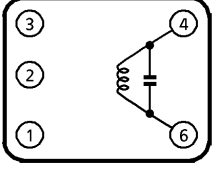
(3)  $r_{ip4}$ ,  $c_{ip4}$



(4)  $r_{op6}$ ,  $c_{op6}$



## TEST CIRCUIT COIL DATA (Japan band for 76.0MHz to 108.0MHz)

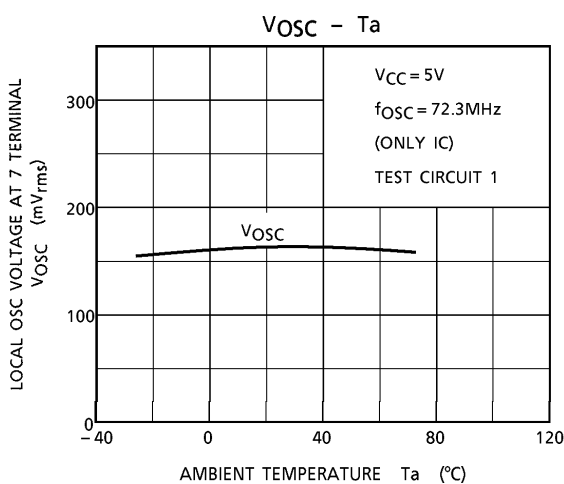
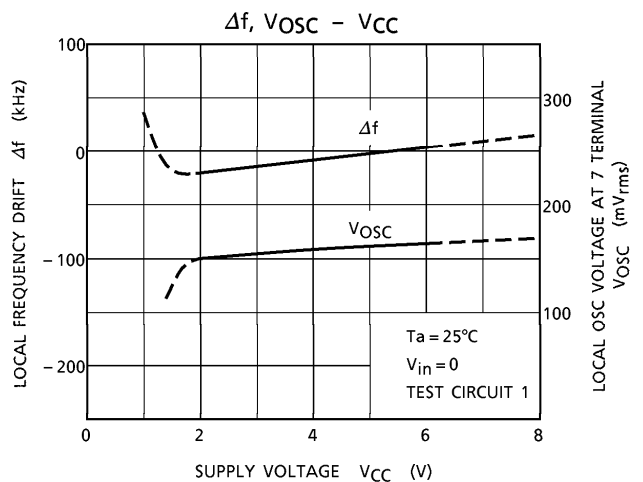
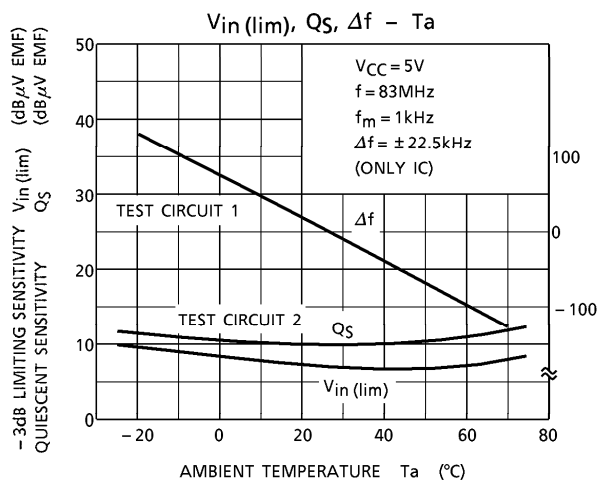
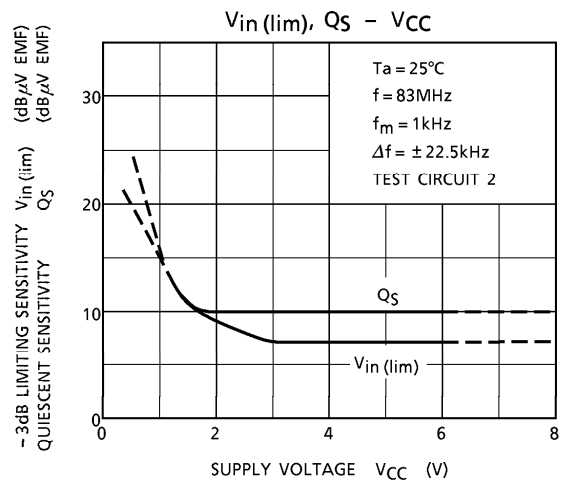
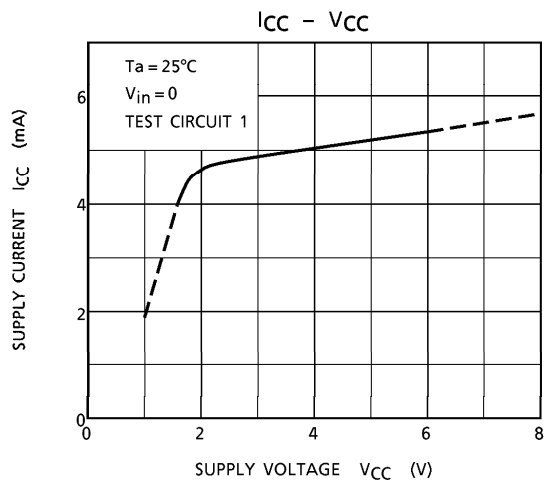
COIL	$f_o$	$Q_o$	TURNS	CAPACITANCE	
T <sub>1</sub> RF Coil	100MHz	100	0.5mm $\phi$ $2\frac{1}{4}$ T Center Tap (Japan Band)	15pF (External)	 FERRITE CORE
T <sub>2</sub> OSC Coil	100MHz	100	0.5mm $\phi$ $2\frac{1}{2}$ T (Japan Band)	15pF (External)	 FERRITE CORE
T <sub>3</sub> IFT Coil	10.7MHz	115	①-③ 12T ④-⑥ 1T Wire 0.12mm $\phi$ UEW SUMIDA ELECTRIC Co., LTD. 5764 or equivalent	75pF	 (BOTTOM VIEW)
T <sub>4</sub> Quad Coil	10.7MHz	150	④-⑥ 14T Wire 0.12mm $\phi$ UEW SUMIDA ELECTRIC Co., LTD. 44M-933A or equivalent	47pF	 (BOTTOM VIEW)

Band Pass Filter (BPF)

SOSHIN ELECTRIC Co., LTD. BPWB5

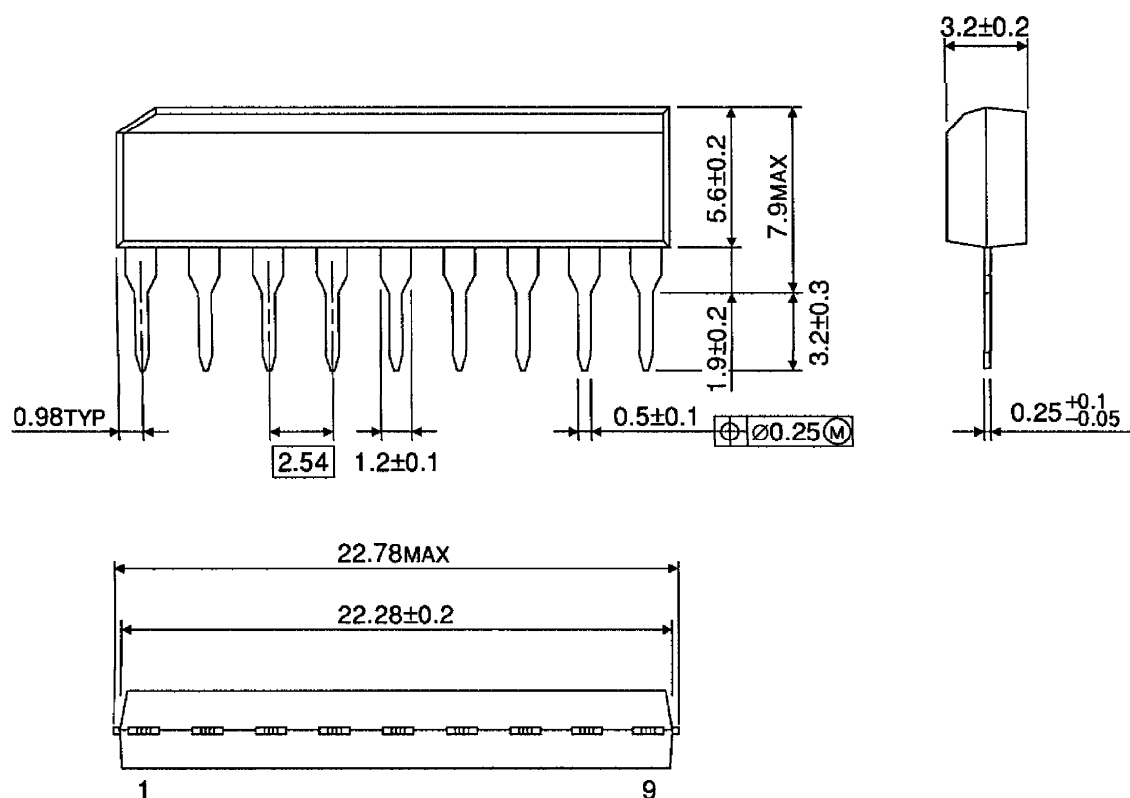
Tuning Capacitor

ALPS ELECTRIC Co., LTD. CB41EL933



## OUTLINE DRAWING SIP9-P-2.54A

Unit : mm



Weight : 0.92g (Typ.)