

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7358AP

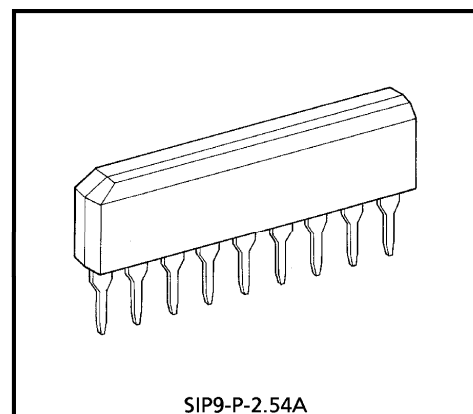
FM FRONT-END

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.

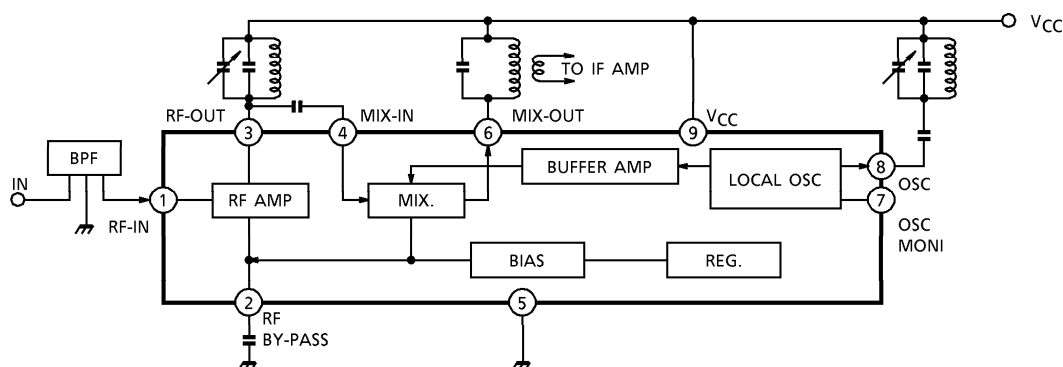
FEATURES

- 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 ($T_a = 25^\circ\text{C}$)

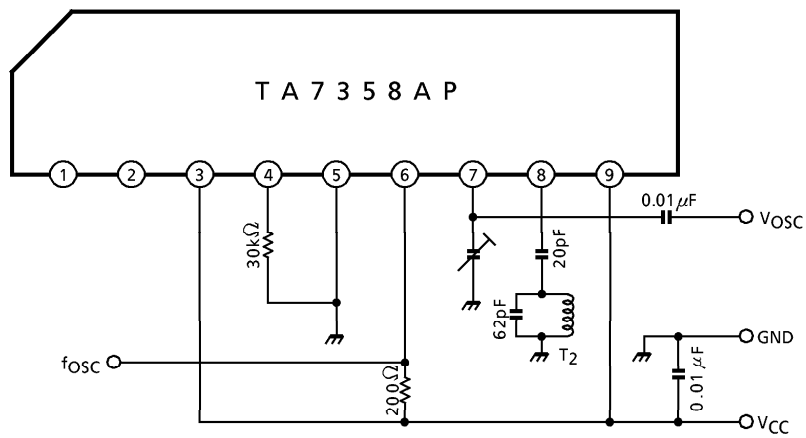
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	8	V
Power Dissipation	P_D (Note)	500	mW
Operating Temperature	T_{opr}	$-25 \sim 75$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-55 \sim 150$	$^\circ\text{C}$

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

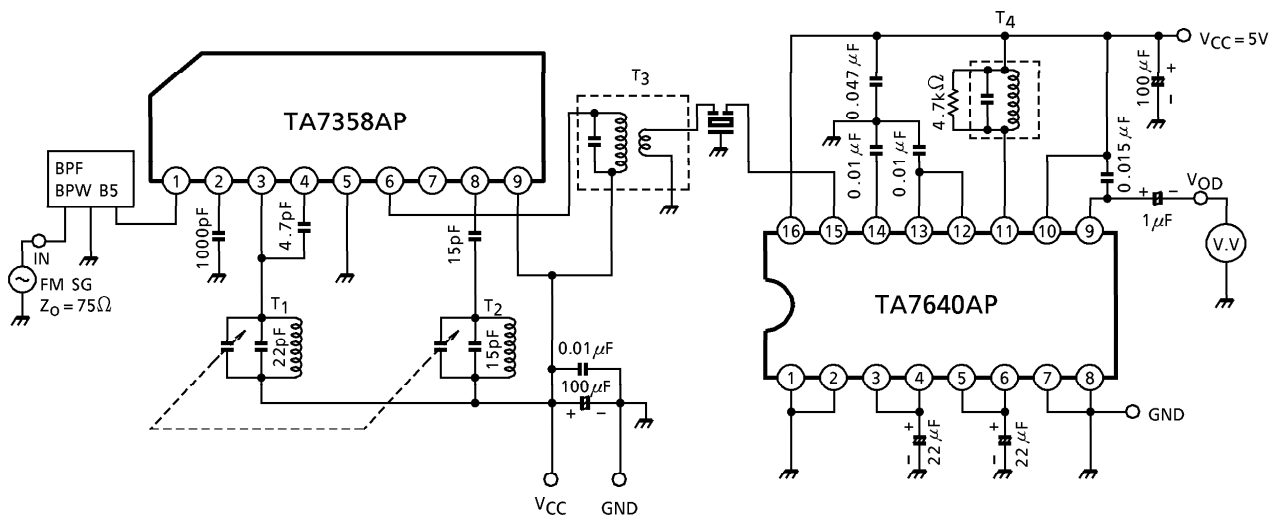
ELECTRICAL CHARACTERISTICS ($V_{CC} = 3\text{V}$, $f = 83\text{MHz}$, $f_m = 1\text{kHz}$, $\Delta f = \pm 22.5\text{kHz}$, $T_a = 25^\circ\text{C}$)

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

TEST CIRCUIT 1



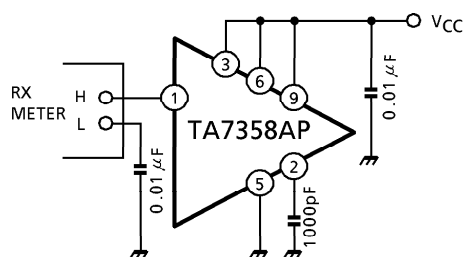
TEST CIRCUIT 2



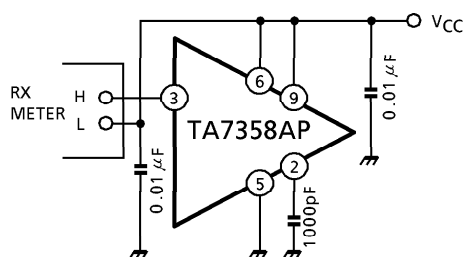
TEST CIRCUIT 3

Input output impedance

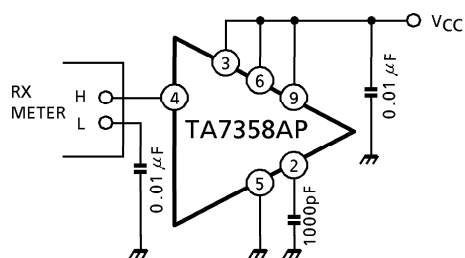
(1) r_{ip1} , c_{ip1}



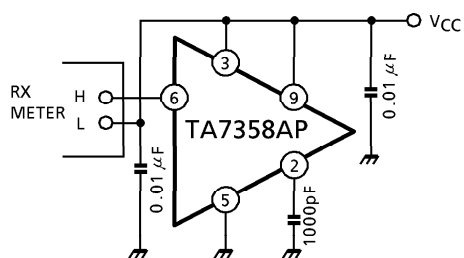
(2) r_{op3} , c_{op3}




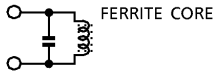
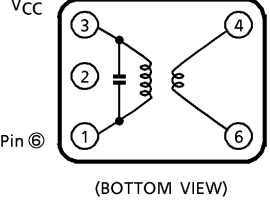
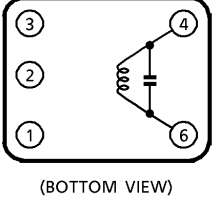
(3) r_{ip4} , c_{ip4}



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



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

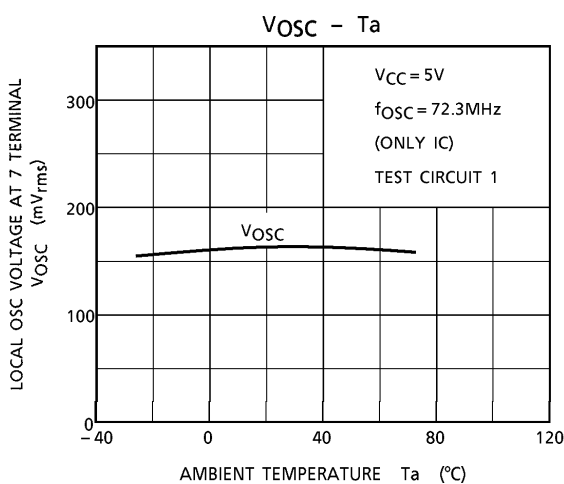
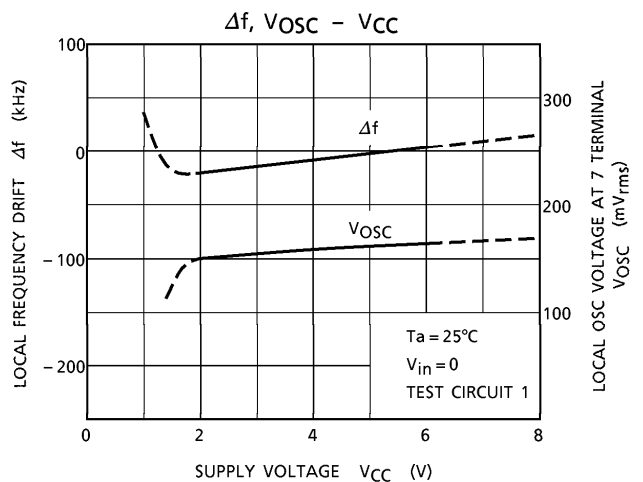
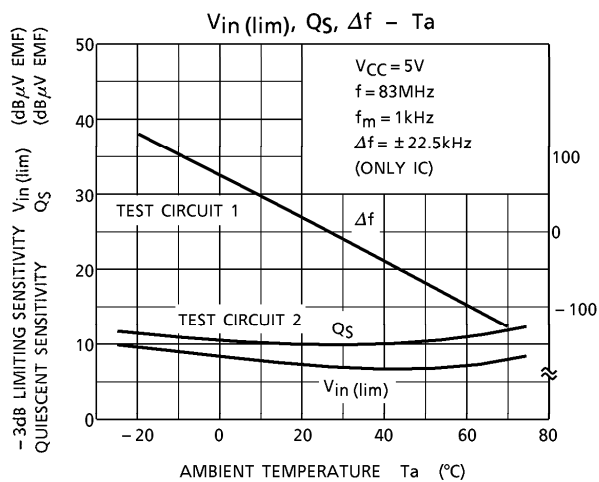
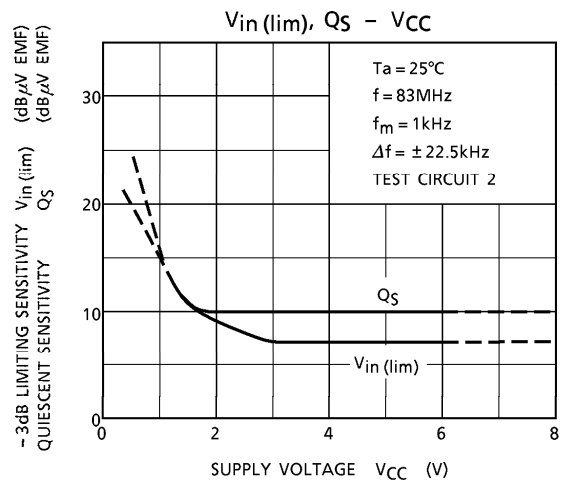
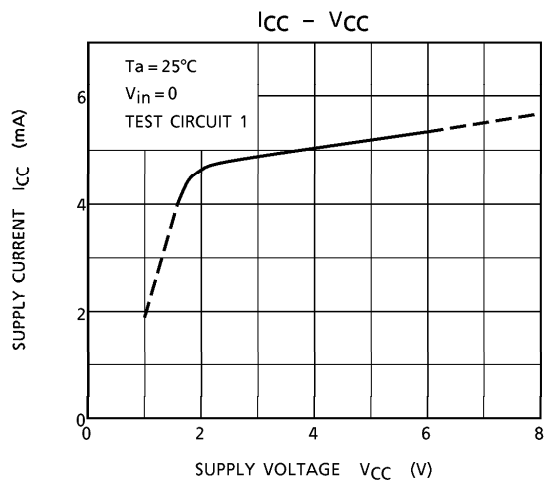
COIL	f_o	Q_o	TURNS	CAPACITANCE	
T ₁ RF Coil	100MHz	100	0.5mm ϕ $2\frac{1}{4}$ T Center Tap (Japan Band)	15pF (External)	
T ₂ OSC Coil	100MHz	100	0.5mm ϕ $2\frac{1}{2}$ T (Japan Band)	15pF (External)	
T ₃ IFT Coil	10.7MHz	115	①-③ 12T ④-⑥ 1T Wire 0.12mm ϕ UEW SUMIDA ELECTRIC Co., LTD. 5764 or equivalent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

Band Pass Filter (BPF)

SOSHIN ELECTRIC Co., LTD. BPWB5

Tuning Capacitor

ALPS ELECTRIC Co., LTD. CB41EL933



Unit : mm

