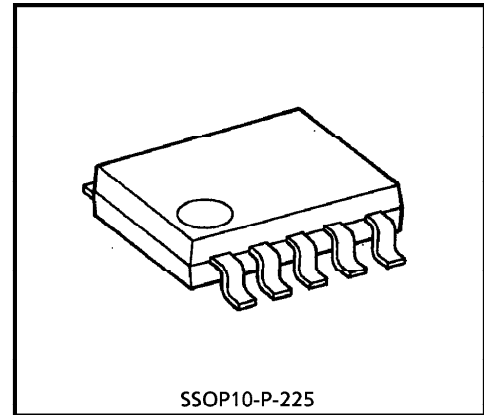


FM FRONT END IC

The TA8158F is low operation voltage FM FRONT END IC for the portable equipments which is suitable for the headphone stereo radios and radio cassette players.

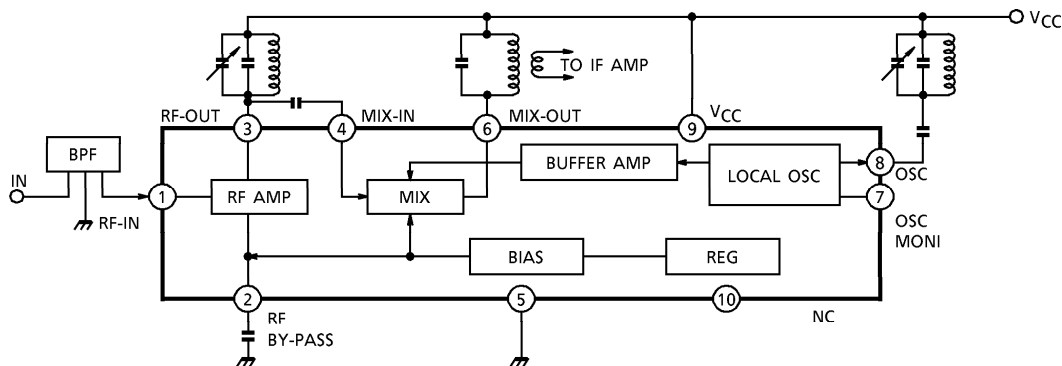
FEATURES

- Wide Supply Voltage Range : $V_{CC} = 1.6 \sim 6.0V$ ($T_a = 25^\circ C$)
- Excellent Supply Voltage Dependence of Local Oscillator : Oscillation Stop $V_{CC} = 0.9V$ (Typ.)
- Improved Inter-Modulation Characteristics by Double Balanced Type Mixer Circuit.
- Built-in Clamping Diode for the Local Oscillator Output.



Weight : 0.10g (Typ.)

BLOCK DIAGRAM



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EXPLANATION OF TERMINAL

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

PIN No.	SYMBOL	INTERNAL CIRCUIT	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, pin④	5.0
7	OSC MONITOR		4.3
8	OSC		5.0
9	V_{CC}	—	5.0
10	NC	—	—

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	8	V
Power Dissipation	P _D (Note)	400	mW
Operating Temperature	T _{opr}	- 25~75	°C
Storage Temperature	T _{stg}	- 55~150	°C

(Note) Derated above Ta=25°C in the proportion of 3.2mW/°C.

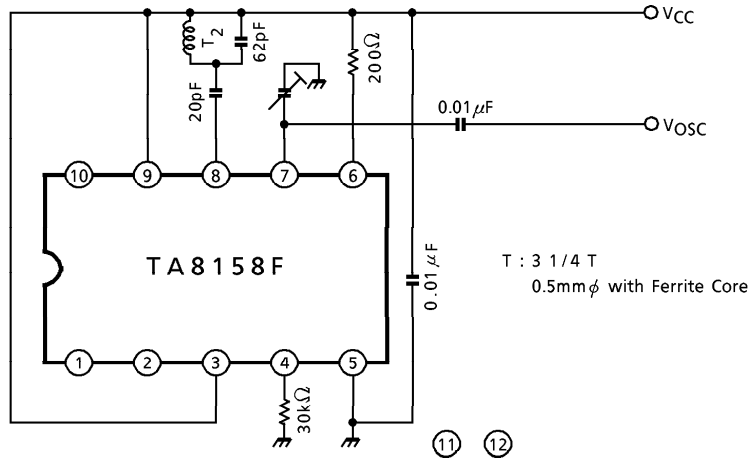
ELECTRICAL CHARACTERISTICS

Unless otherwise specified

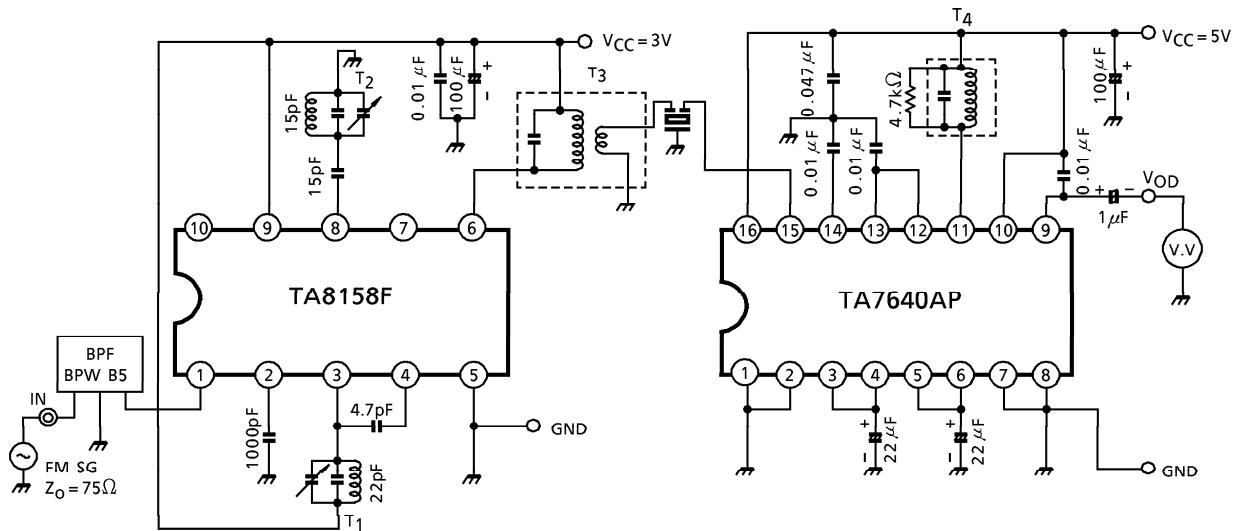
(V_{CC} = 3V, f = 83MHz, f_m = 1kHz, Δf = 22.5kHz dev, Ta = 25°C)

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 _{μV} EMF
Quiescent Sensitivity		Q _S	2	—	—	11.0	—	dB _{μV} EMF
Conversion Gain		G _C	—	—	—	31	—	dB
Local OSC Voltage		V _{OSC}	1	f _{OSC} = 60MHz	140	220	340	mV _{rms}
Pin① Impedance	Parallel Input Resistance	r _{ip1}	3	f = 83MHz	—	57	—	Ω
Pin③ Impedance	Parallel Output Resistance	r _{op3}	3		—	25	—	kΩ
	Parallel Output Capacitance	c _{op3}			—	2.0	—	pF
Pin④ Impedance	Parallel Input Resistance	r _{ip4}	3		—	2.7	—	kΩ
	Parallel Input Capacitance	c _{ip4}		—	3.3	—	pF	
Pin⑥ 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	—	V

TEST CIRCUIT 1

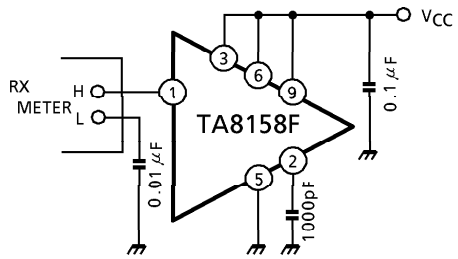


TEST CIRCUIT 2

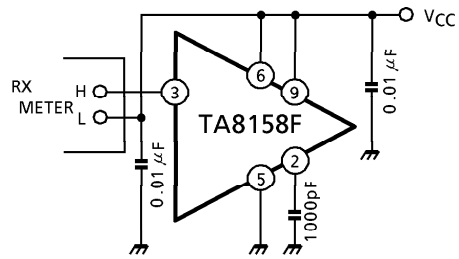


TEST CIRCUIT 3
Input, output impedance

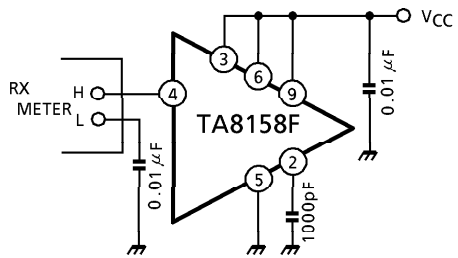
(1) r_{ip1}



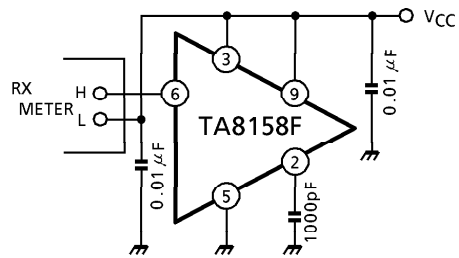
(2) r_{op3}, C_{op3}





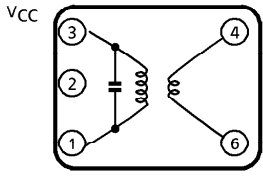
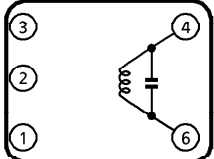
(3) r_{ip4}, C_{ip4}



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



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

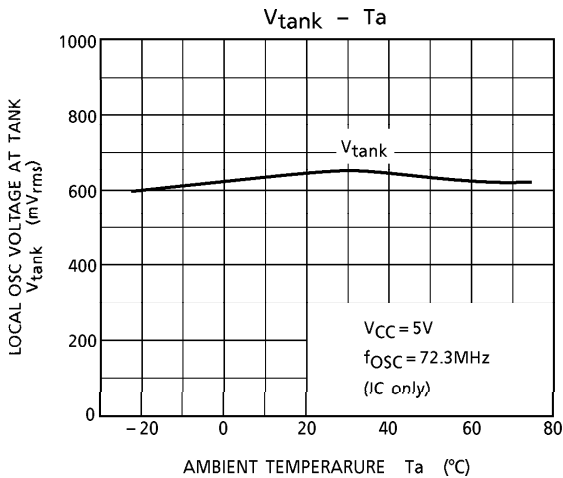
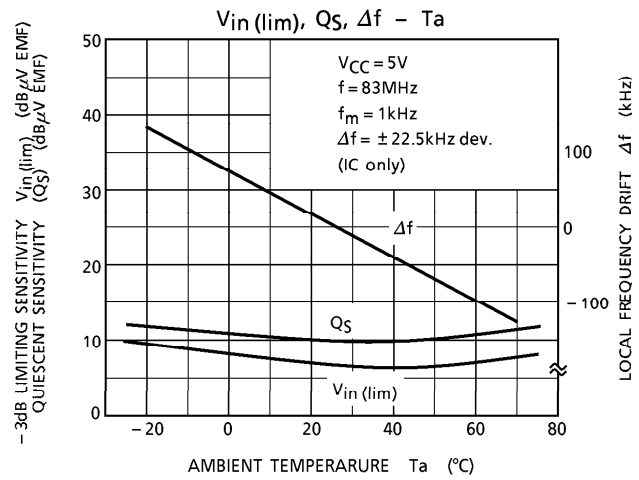
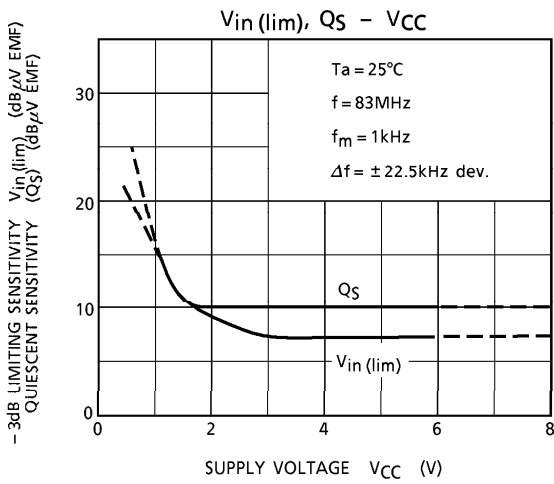
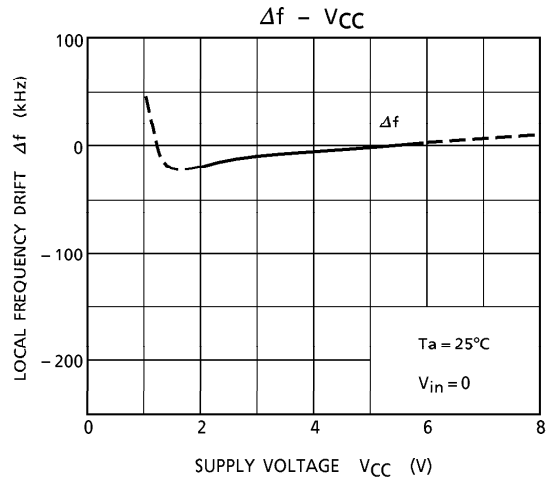
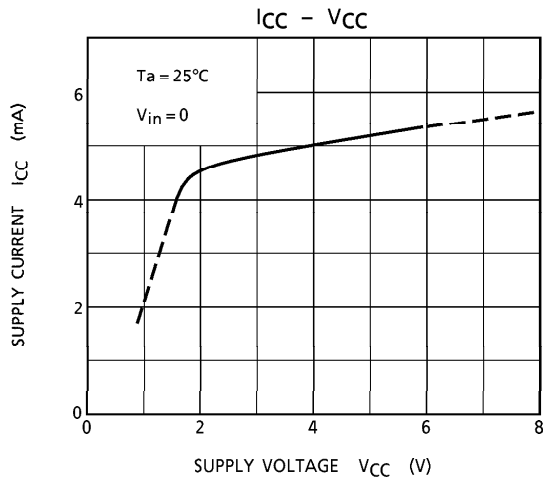
COIL	f_o	Q_o	TURNS	CAPACITANCE	
T ₁ RF Coil	100MHz	100	0.5mm ϕ 2 $\frac{1}{4}$ T Center Tap	15pF (External)	 FERRITE CORE
T ₂ OSC Coil	100MHz	100	0.5mm ϕ 2 $\frac{1}{2}$ T	15pF (External)	 FERRITE CORE
T ₃ IFT Coil	10.7MHz	115	①-③ 12T ④-⑥ 1T Wire 0.12mm ϕ UEW SUMIDA ELECTRIC Co., LTD. 5764 or Equivalent	75pF	 VCC PIN⑥ (BOTTOM VIEW)
T ₄ Quad Coil	10.7MHz	150	④-⑥ 14T Wire 0.12mm ϕ UEW SUMIDA ELECTRIC Co., LTD. 44M-933A or Equivalent	47pF	 (BOTTOM VIEW)

Band Pass Filter (BPF)

SOSHIN ELECTRIC Co., LTD. BPWB5

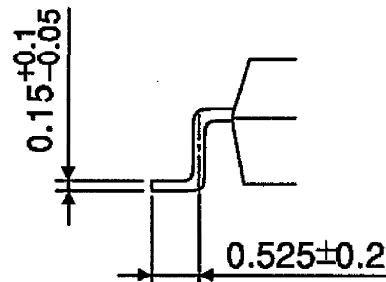
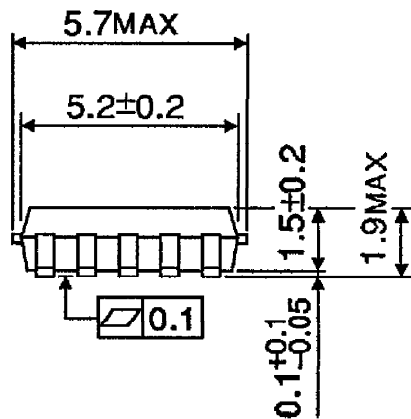
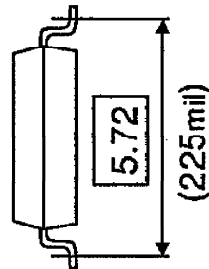
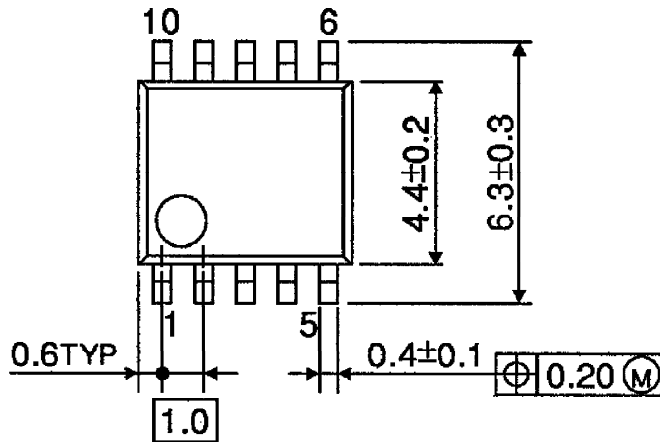
Tuning Capacitor

ALPS ELECTRIC Co., LTD. CB41EL933



OUTLINE DRAWING
SSOP10-P-225

Unit : mm



Weight : 0.10g (Typ.)