ANTENNA SWITCH

MI808

PIN DIODE
RF POWER SWITCHING

DESCRIPTION

The MI808 PIN diode is designed for solid state antenna switching applications in mobile radios. The construction of MI808 is employing a ALUMINA-FLAT-PACKAGE which is suitable for reflow assembly on surface mounting.

FEATURES

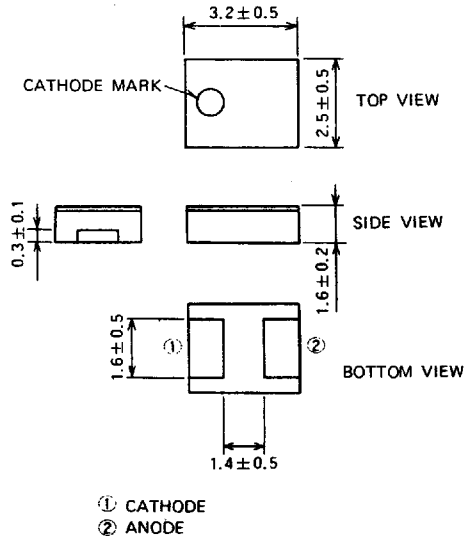
- High power handling
- High zero bias resistance
- Low forward bias resistance
- Low insertion loss, High isolation
- Low distortion (TX: sprious < −80dBc, RX: inter-modulation −73dBc @ 90dBμ)
- Surface mounting type (for reflow assembly)

APPLICATION

High power antenna switch (10W output two-way radio)

OUTLINE DRAWING

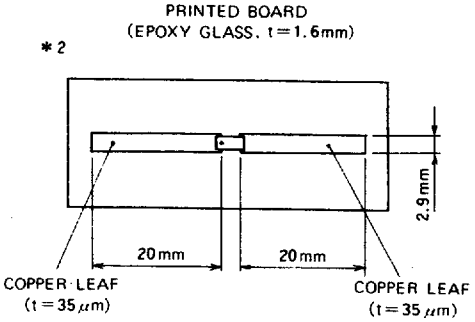
Dimension: mm



ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{RM}	Repetitive peak reverse voltage	50	V
V_R	Reverse voltage	50	V
I_{FSM} *1	Forward surge current	2	A
P *2	Power dissipation	1	W
T_j	Junction temperature	175	°C
Tstg	Storage temperature	−55 ~ +175	°C

*1 : t=5sec



ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{R1}	Reverse current	V_R=50V			10	μA
I_{R2}	Reverse current	V_R=45V			0.5	μA
I_F	Forward current	V_F=1.8V 0	100			mA
r_{fs}	Forward series resistance	I_F=50mA, f=470MHz		0.5	0.7	Ω
Ct	Diode capacitance	V_R=0V, f=100MHz			1.2	pF
R_P	Parallel resistance	V_R=0V, f=100MHz	1.0	3.0		kΩ

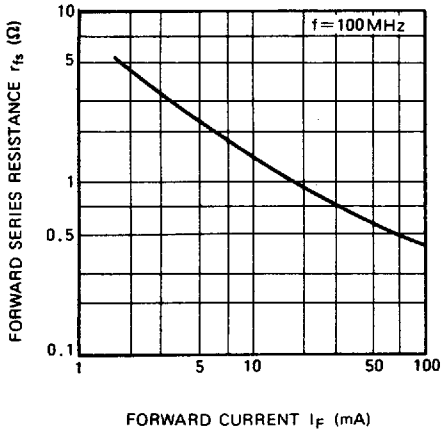
ANTENNA SWITCH

MI808

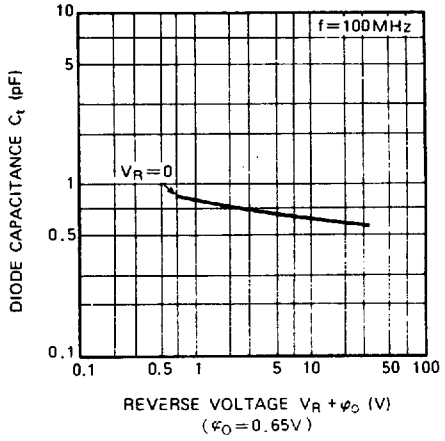
PIN DIODE
RF POWER SWITCHING

TYPICAL PERFORMANCE DATA

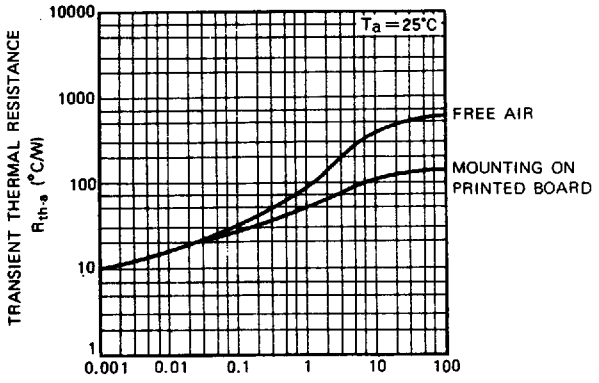
FORWARD SERIES RESISTANCE VS. FORWARD CURRENT CHARACTERISTICS

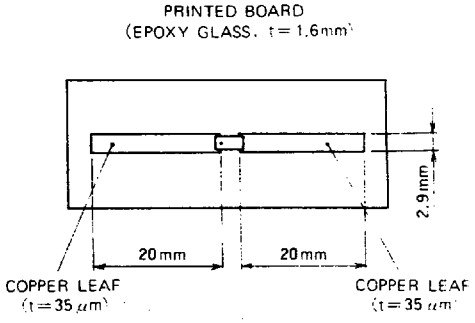


DIODE CAPACITANCE VS. REVERSE VOLTAGE CHARACTERISTICS

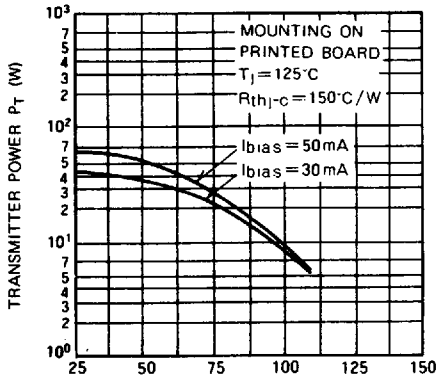


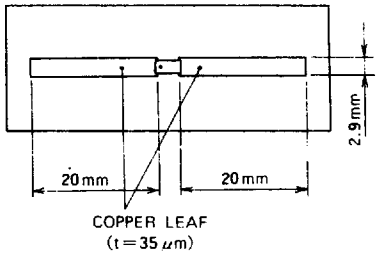
TRANSIENT THERMAL RESISTANCE VS. TIME CHARACTERISTICS





TRANSMITTER POWER VS. AMBIENT TEMPERATURE CHARACTERISTICS





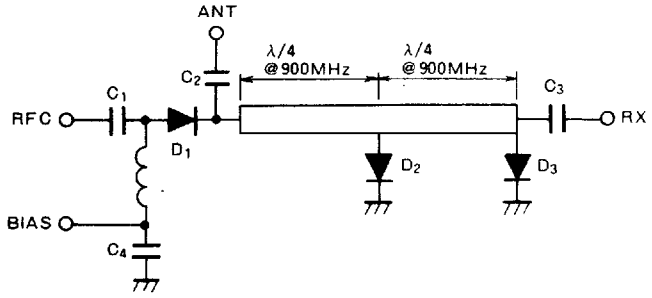
ANTENNA SWITCH

MI808

PIN DIODE
RF POWER SWITCHING

APPLICATION

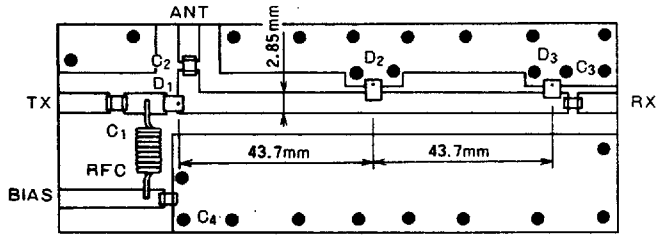
◎ 800MHz BAND ANTENNA SWITCH (800MHz ~ 940MHz, HANDLING POWER 15W)



CIRCUIT DIAGRAM

PARTS LIST

• C_1, C_2, C_3, C_4	1000pF CHIP CAPACITOR
• D_1, D_2, D_3	MI808
• RFC	9 TURN φ4 1.6 DIA. ENAMEL WIRE
• SUBSTRATE	EPOXY GLASS $\epsilon = 4.7$, t = 1.6mm BOTH SIDES COPPER (t = 35μm)

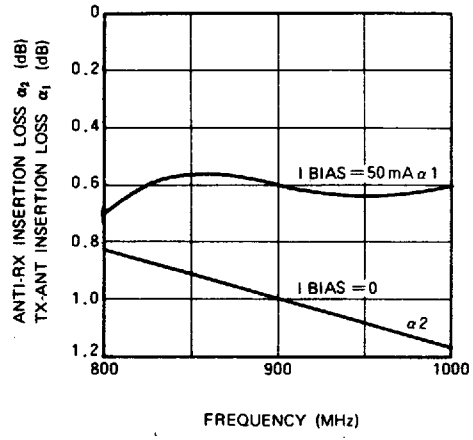


SUBSTRATE DRAWING

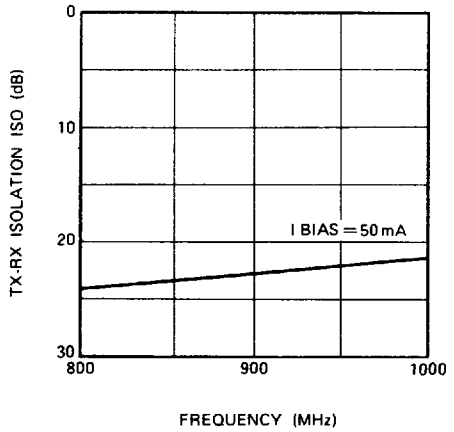
EACH ● POINTS SHOULD BE TREATED CONNECTIONS BETWEEN BOTH SIDES GROUNDS ON THROUGH HOLE.

CHARACTERISTICS

TX-ANT INSERTION LOSS
ANT-RX INSERTION LOSS



TX-RX ISOLATION CHARACTERISTICS



ASSEMBLY METHOD

◎ Solder and flux recommendation

Solder: Sn-Pb type solder containing 2 ~ 5% Ag.
Flux: Rosin type.

◎ Soldering

MI808 is designed for reflow assembly.

Fig. 1 show recommendable reflow method.

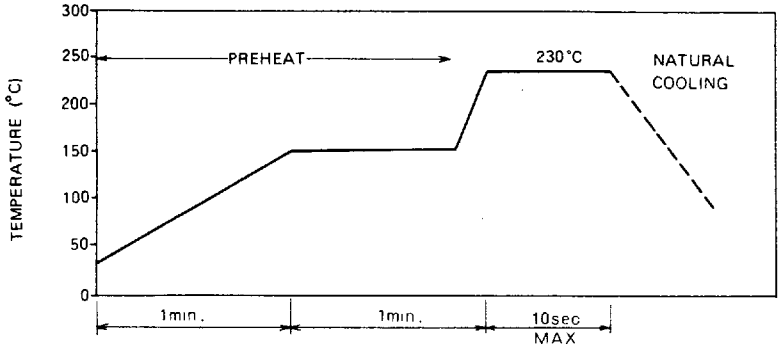
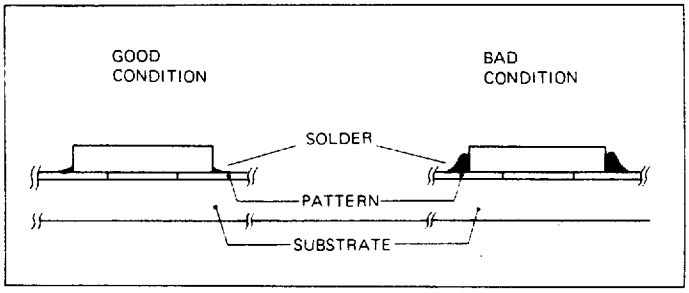


Fig. 2 show conditions of solder finishing.



◎ Recommendation for cleaning

Cleaning material: Diflon, Iso-propyl alcohol, Aceton.