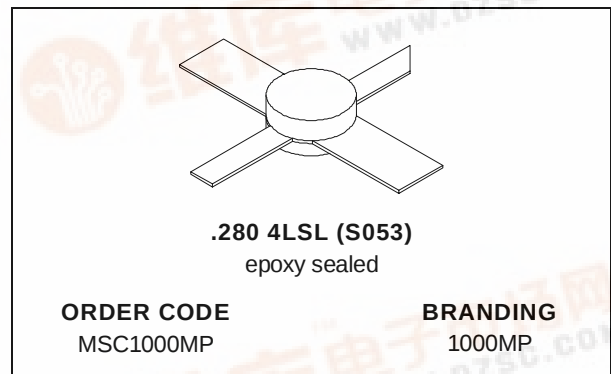




MSC1000MP

RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- RUGGEDIZED VSWR $\infty:1$
- INPUT MATCHING
- LOW THERMAL RESISTANCE
- CLASS A OPERATION
- $P_{OUT} = 0.6 \text{ W MIN. WITH } 10.8 \text{ dB GAIN}$

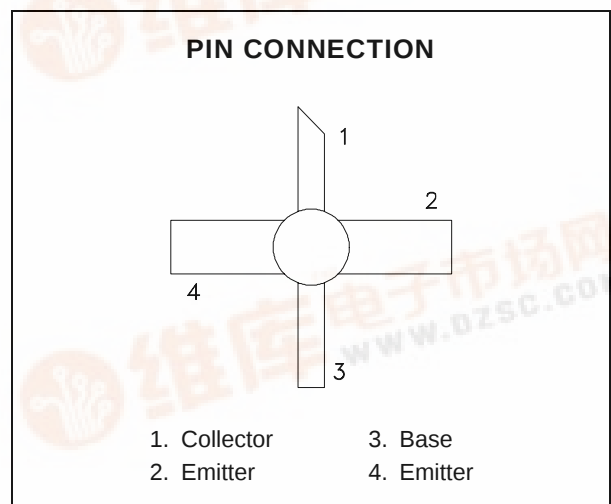


DESCRIPTION

The MSC1000MP is a Class A, common emitter transistor with an emitter ballasted Matrix geometry specifically designed for DME/IFF driver applications.

This device is capable of withstanding a $\infty:1$ load VSWR at any phase angle under full rated conditions. Low RF thermal resistance and semi-automatic wire bonding techniques ensure high reliability and product consistency.

The MSC1000MP is housed in the IMPAC™ package with internal input matching.



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}\text{C}$)

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* (See Safe Area)	—	W
I_C	Device Current*	300	mA
V_{CE}	Collector-Emitter Bias Voltage*	20	V
T_J	Junction Temperature (Pulsed RF Operation)	200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	35	$^{\circ}\text{C/W}$
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*Applies only to rated RF amplifier operation

MSC1000MP

ELECTRICAL SPECIFICATIONS ($T_{case} = 25^{\circ}C$)

STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 1mA$ $I_E = 0mA$	50	—	—	V
BV_{EBO}	$I_E = 1mA$ $I_C = 0mA$	3.5	—	—	V
BV_{CEO}	$I_C = 5mA$ $I_B = 0mA$	20	—	—	V
I_{CES}	$V_{CE} = 28V$	—	—	1.0	mA
h_{FE}	$V_{CE} = 5V$ $I_C = 100mA$	15	—	120	—

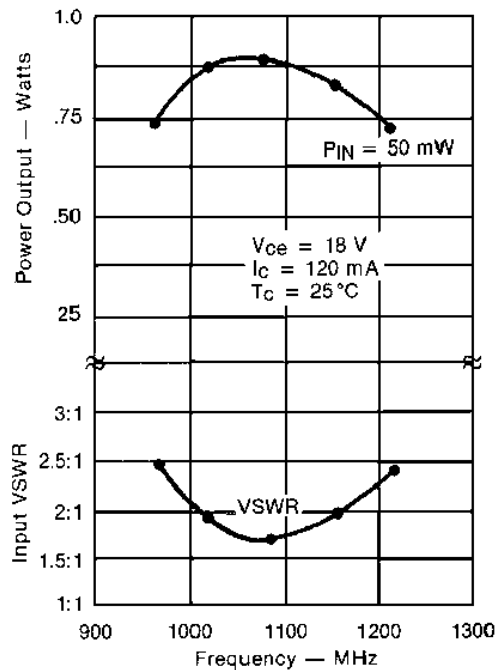
DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 1025 - 1150 \text{ MHz}$ $P_{IN} = 50 \text{ mW}$ $V_{CE} = 18 \text{ V}$	0.6	0.85	—	W
G_P	$f = 1025 - 1150 \text{ MHz}$ $P_{IN} = 50 \text{ mW}$ $V_{CE} = 18 \text{ V}$	10.8	12.3	—	dB

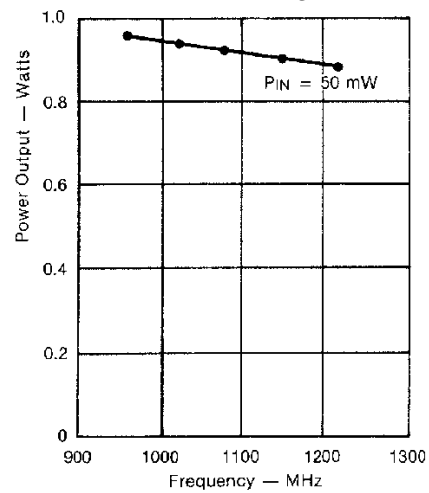
Note: Pulse Width = $10\mu\text{Sec}$ $I_C = 120mA$
Duty Cycle = 1%

TYPICAL PERFORMANCE

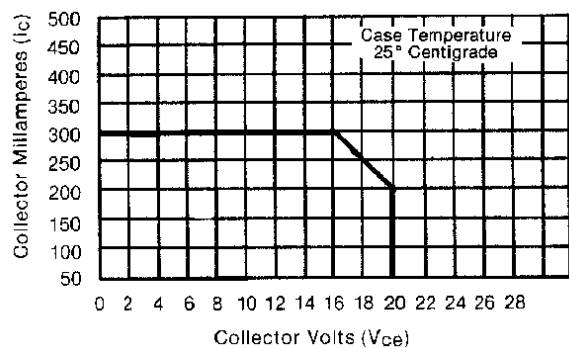
BROADBAND POWER AMPLIFIER



NARROWBAND POWER OUTPUT vs FREQUENCY

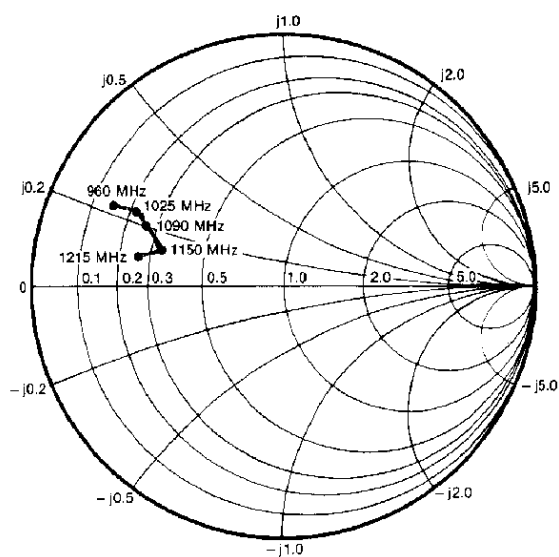


MAXIMUM OPERATING AREA for FORWARD BIAS OPERATION

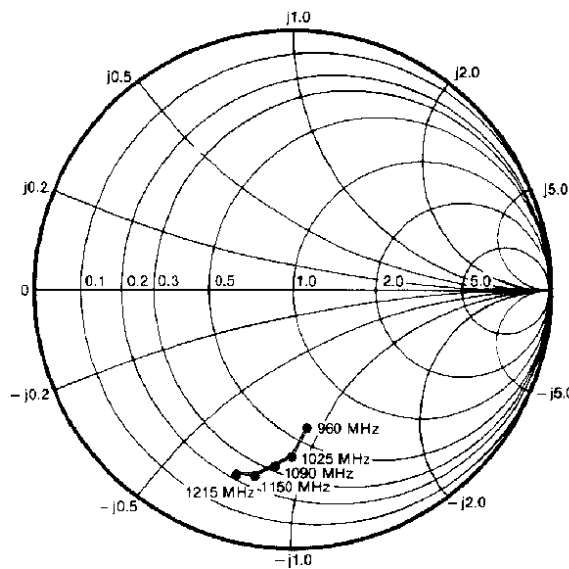


TYPICAL S-PARAMETERS

S11

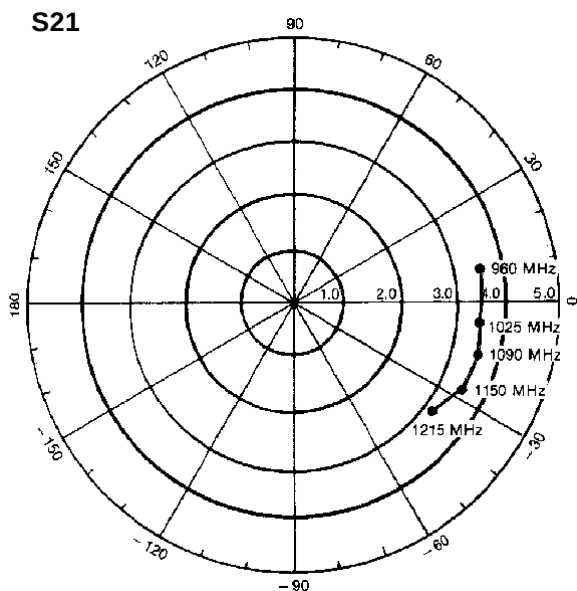


S22

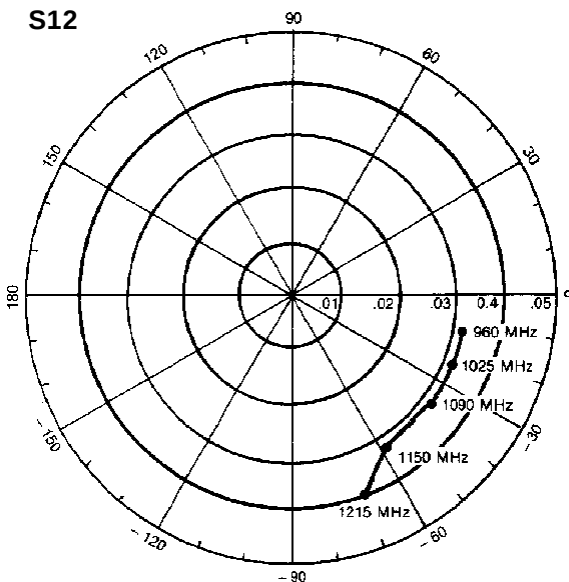


$V_{CE} = 18 \text{ V}$
 $I_C = 120 \text{ mA}$
 $Z_g = 50 \text{ ohms}$

S21



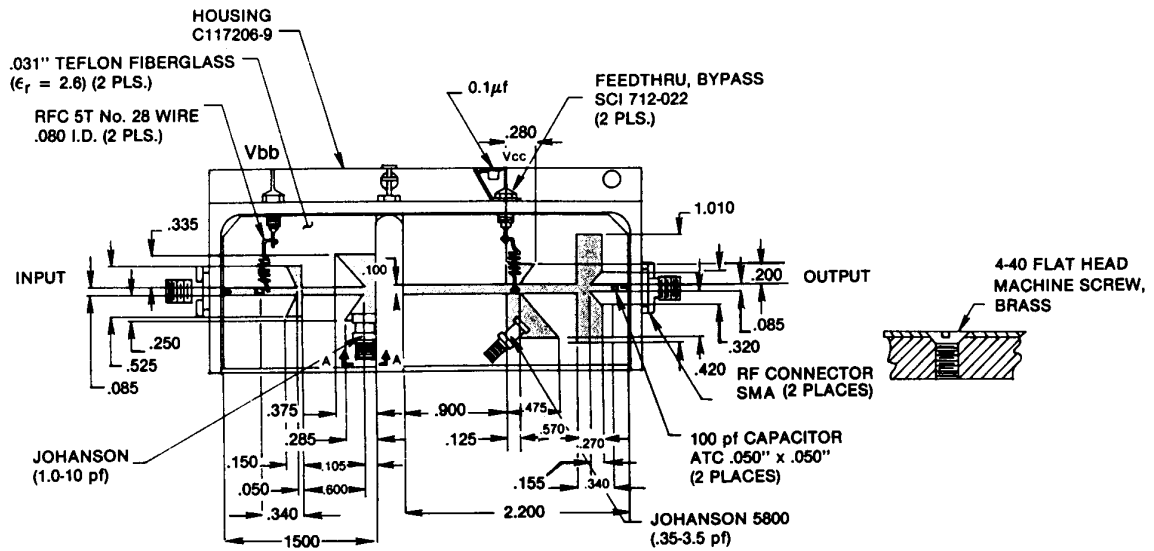
S12



MSC1000MP

TEST CIRCUIT

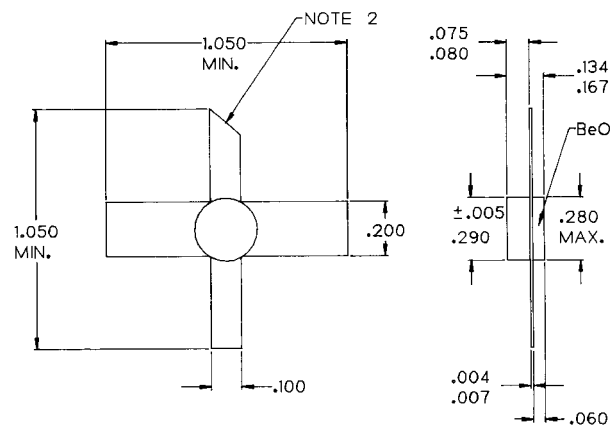
Ref.: Dwg. No. C127297



All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135032E



NOTES:

1. ALL TOLERANCE $\pm .010$ EXCEPT WHERE NOTED;
DIMENSIONS IN INCHES.
2. COLLECTOR LEAD SLANT CUT.

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