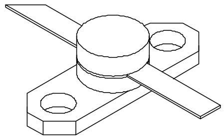
MSC1000M

RF & MICROWAVE TRANSISTORS
AVIONICS APPLICATIONS

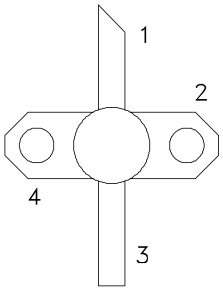
- RUGGEDIZED VSWR ∞:1
- INPUT MATCHING
- LOW THERMAL RESISTANCE
- CLASS A OPERATION
- P_{OUT} = 0.6 W MIN. WITH 10.8 dB GAIN



.280 2LFL (S058)
epoxy sealed

ORDER CODE	**BRANDING**
MSC1000M	1000M

PIN CONNECTION



1. Collector
2. Emitter
3. Base
4. Emitter

DESCRIPTION

The MSC1000M 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 ∞: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 MSC1000M is housed in the IMPAC™ package with internal input matching.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°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	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	35	°C/W

*Applies only to rated RF amplifier operation

ELECTRICAL SPECIFICATIONS (T_{case} = 25°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}	IC = 5mA	I_B = 0mA	20	—	—	V
I_{CES}	V_{CE} = 28V		—	—	1.0	mA
h_{FE}	V_{CE} = 5V	I_C = 100mA	15	—	120	—

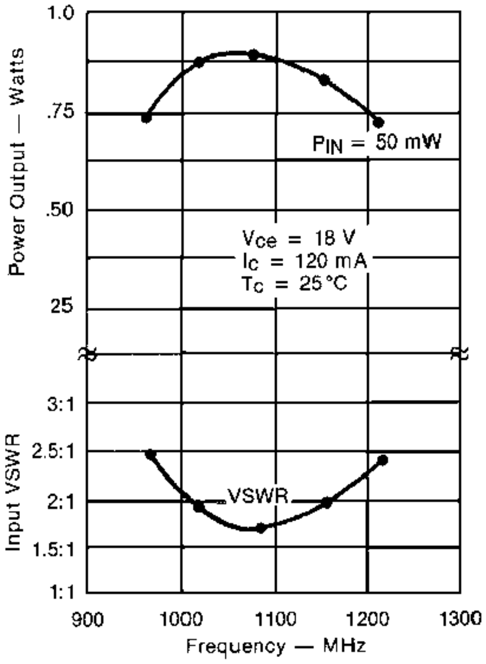
DYNAMIC

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

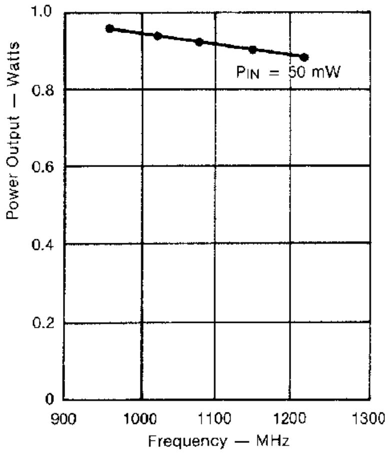
Note: Pulse Width = 10μSec I_C = 120mA
Duty Cycle = 1%

TYPICAL PERFORMANCE

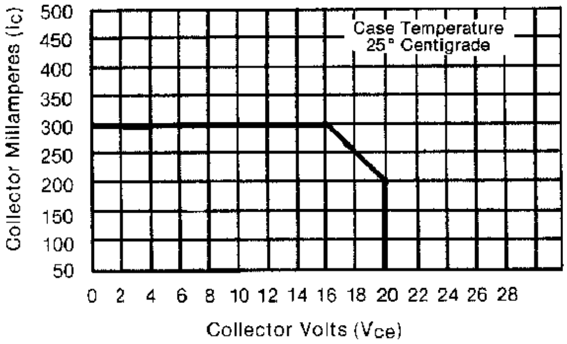
BROADBAND POWER AMPLIFIER



NARROWBAND POWER OUTPUT vs FREQUENCY

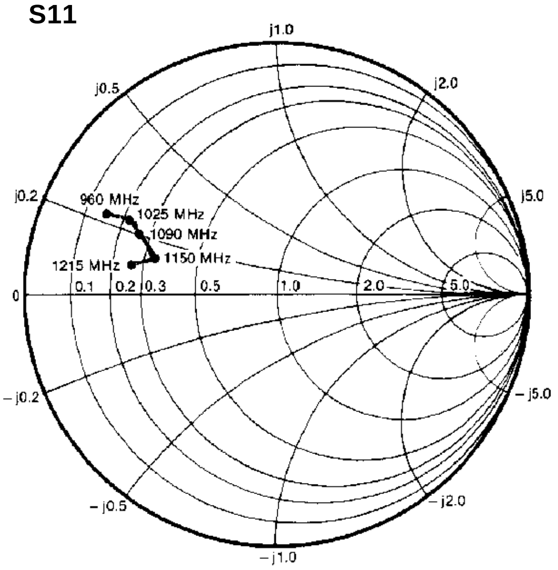


MAXIMUM OPERATING AREA for FORWARD BIAS OPERATION

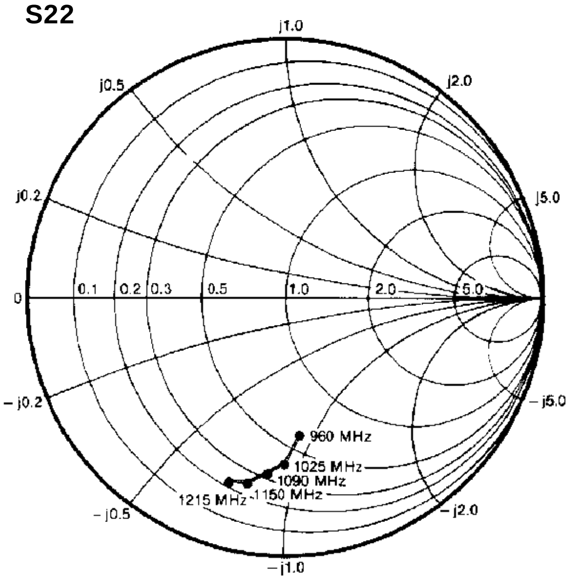


TYPICAL S–PARAMETERS

S11

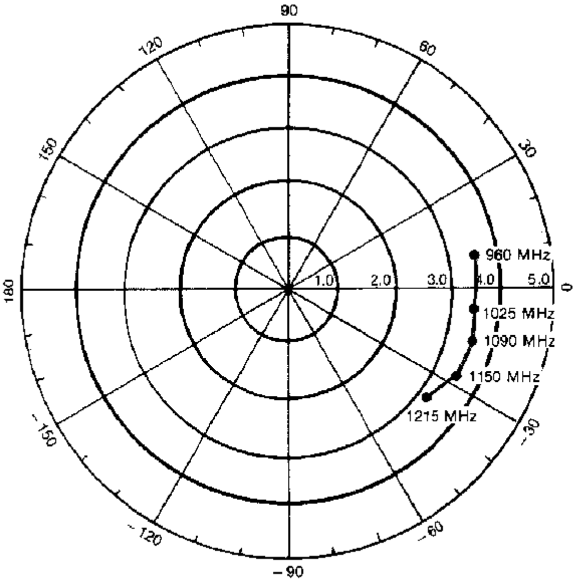


S22

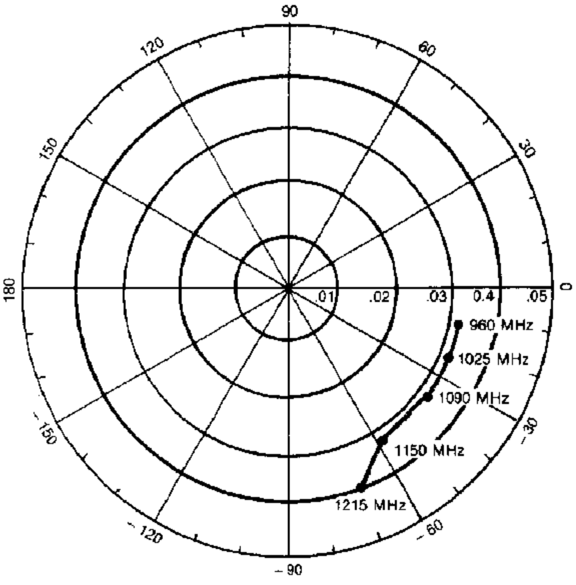


V_{CE} = 18 V
I_C = 120 mA
Zg = 50 ohms

S21

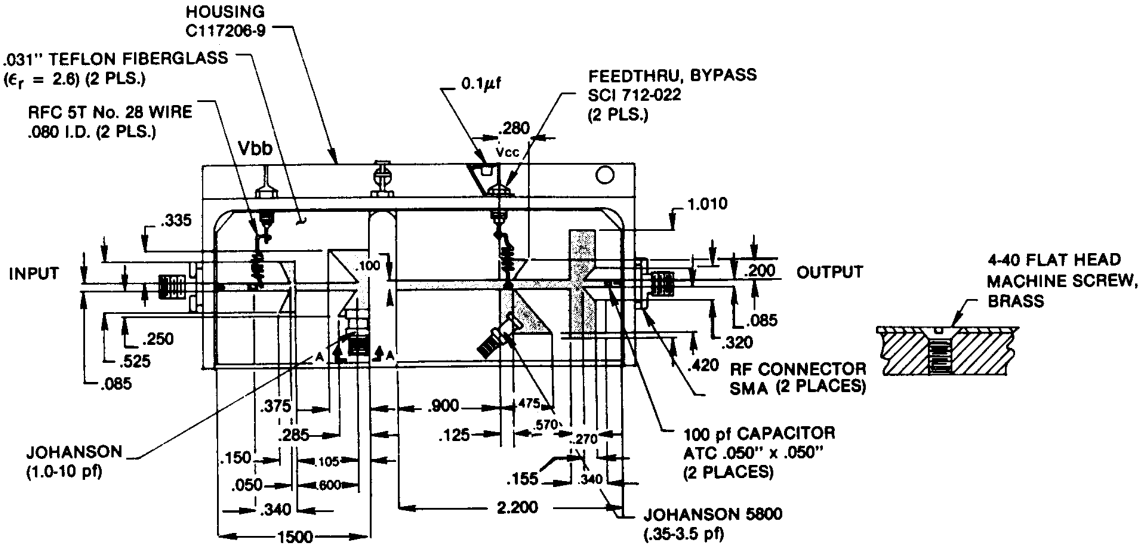


S12



TEST CIRCUIT

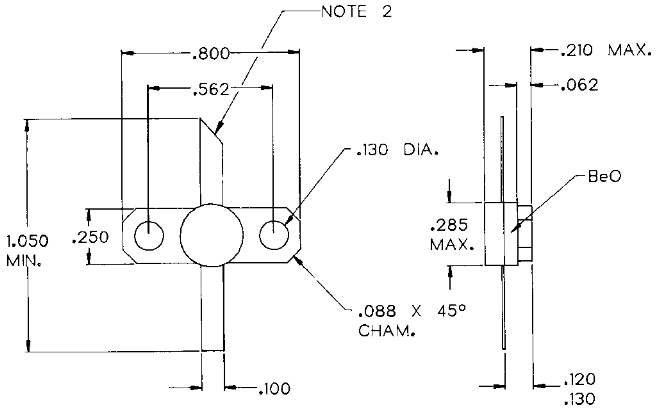
Ref.: Dwg No. C127297



All dimensions are in inches.

PACKAGE MECHANICAL DATA

Ref.: Dwg. No.: J135039B



NOTES:
1. ALL TOLERANCE ± .010 EXCEPT WHERE NOTED;
   DIMENSIONS IN INCHES.
2. COLLECTOR LEAD SLANT CUT.

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