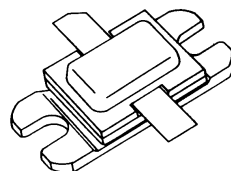


RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- REFRACTORY\GOLD METALLIZATION
- RUGGEDIZED VSWR 25:1
- INTERNAL INPUT/OUTPUT MATCHING
- LOW THERMAL RESISTANCE
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 400\text{ W MIN. WITH } 6.5\text{ dB GAIN}$



.400 x .500 2LFL (S038)
hermetically sealed

ORDER CODE
MSC81400M

BRANDING
81400M

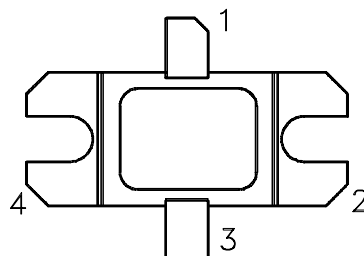
DESCRIPTION

The MSC81400M "Super Power" transistor is a high peak pulse power device specifically designed for DME/TACAN avionics applications.

This device is capable of withstanding a minimum 25:1 load mismatch condition at any phase angle under full rated conditions.

The MSC81400M is housed in the unique BIG-PAC™ hermetic metal/ceramic package with internal input/output matching structures.

PIN CONNECTION



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

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

Symbol	Parameter	Value	Unit
P_{DISS}	Power Dissipation* ($T_C \leq 80^{\circ}\text{C}$)	1000	W
I_C	Device Current*	28	A
V_{CC}	Collector-Supply Voltage*	55	V
T_J	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +200	$^{\circ}\text{C}$

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.12	$^{\circ}\text{C/W}$
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*Applies only to rated RF amplifier operation

MSC81400M

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

STATIC

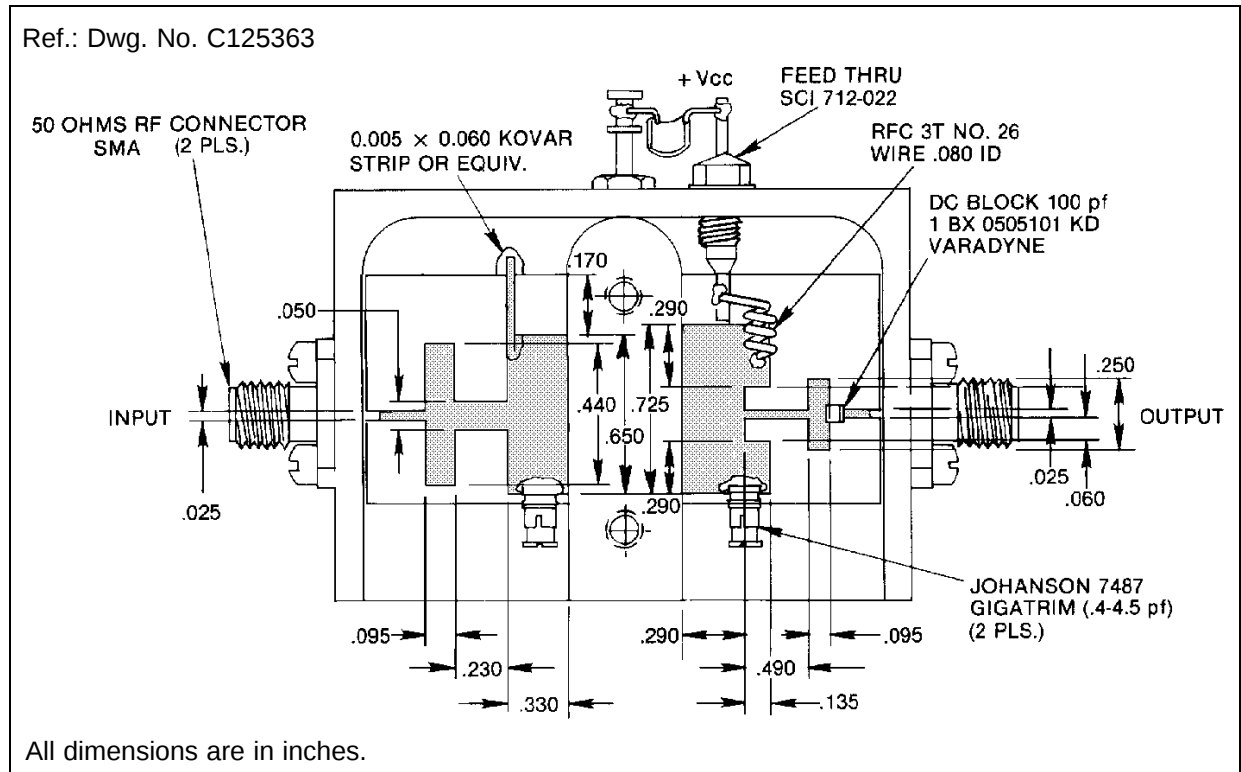
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 15mA$ $I_E = 0mA$	65	—	—	V
BV_{EBO}	$I_E = 1mA$ $I_C = 0mA$	3.5	—	—	V
BV_{CER}	$I_C = 50mA$ $R_{BE} = 10\Omega$	65	—	—	V
I_{CES}	$V_{CE} = 50V$	—	—	35	mA
h_{FE}	$V_{CE} = 5V$ $I_C = 1A$	15	—	120	—

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 1025 - 1150 \text{ MHz}$ $P_{IN} = 90 \text{ W}$ $V_{CC} = 50 \text{ V}$	400	450	—	W
η_c	$f = 1025 - 1150 \text{ MHz}$ $P_{IN} = 90 \text{ W}$ $V_{CC} = 50 \text{ V}$	40	—	—	%
G_P	$f = 1025 - 1150 \text{ MHz}$ $P_{IN} = 90 \text{ W}$ $V_{CC} = 50 \text{ V}$	6.5	—	—	dB

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

TEST CIRCUIT



Technical drawing of a BeO component. The drawing includes a top view, a side view, and a cross-sectional view. Dimensions are given in inches.

Top View Dimensions:

- Overall width: .900
- Inner width: .700
- Width of central feature: .500
- Radius of central feature: .120
- Radius of side features: .193
- Distance from center to side feature: .386
- Distance from center to side feature (bottom): .4
- Distance from center to side feature (right): .110
- Distance from center to side feature (right, bottom): .050 MIN.
- Distance from center to side feature (right, bottom): .407
- Distance from center to side feature (right, bottom): .395
- Distance from center to side feature (right, bottom): .110
- Distance from center to side feature (right, bottom): .140
- Distance from center to side feature (right, bottom): .110

Side View Dimensions:

- Overall height: .170 MAX.
- Height of central feature: .230 MAX.
- Height of side feature: .062
- Height of side feature: .063
- Height of side feature: .131
- Height of side feature: .118
- Height of side feature: .006
- Height of side feature: .003

Callouts:

- NOTE 2
- 1
- 2
- 3
- BeO
- .062 X 45° CHAM. (4 PLS.)

NOTES:
1. ALL TOLERANCE $\pm .010$ EXCEPT WHERE NOTED;
DIMENSIONS IN INCHES.
2. COLLECTOR LEAD CHAMFER 45° NOM. X $.040$ NOM.

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