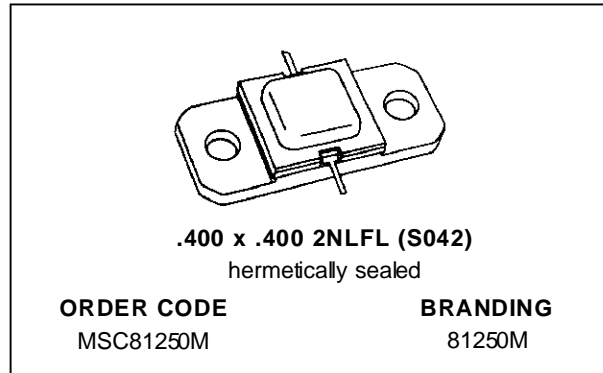


## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

- REFRACTORY GOLD METALLIZATION
- RUGGEDIZED VSWR 20:1
- INTERNAL INPUT/OUTPUT MATCHING
- LOW THERMAL RESISTANCE
- METAL/CERAMIC HERMETIC PACKAGE
- $P_{OUT} = 250$  W MIN. WITH 6.2 dB GAIN

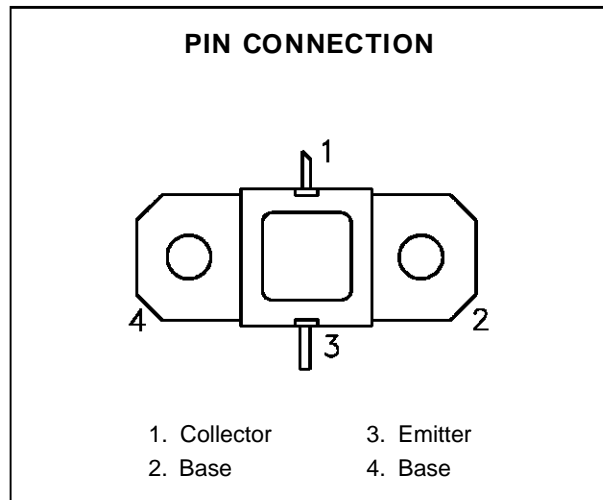


### DESCRIPTION

The MSC81250M device is a high power pulsed transistor specifically designed for DME/TACAN avionics applications.

This device is capable of withstanding a minimum 20:1 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 MSC81250M is housed in the unique AMPAC™ package with internal input/output matching structures.



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

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation* ( $T_c \leq 80^{\circ}C$ )	600	W
$I_c$	Device Current*	17.8	A
$V_{CC}$	Collector-Supply Voltage*	55	V
$T_J$	Junction Temperature (Pulsed RF Operation)	250	$^{\circ}C$
$T_{STG}$	Storage Temperature	- 65 to +200	$^{\circ}C$

### THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance*	0.20	$^{\circ}C/W$
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\*Applies only to rated RF amplifier operation

## MSC81250M

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

#### STATIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{\text{CBO}}$	$I_{\text{C}} = 10\text{mA}$ $I_{\text{E}} = 0\text{mA}$	65	—	—	V
$BV_{\text{EBO}}$	$I_{\text{E}} = 1\text{mA}$ $I_{\text{C}} = 0\text{mA}$	3.5	—	—	V
$BV_{\text{CER}}$	$I_{\text{C}} = 25\text{mA}$ $R_{\text{BE}} = 10\Omega$	65	—	—	V
$I_{\text{CES}}$	$V_{\text{CE}} = 50\text{V}$	—	—	25	mA
$h_{\text{FE}}$	$V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 1\text{A}$	15	—	120	—

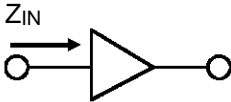
#### DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{\text{OUT}}$	$f = 1025 \text{ — } 1150 \text{ MHz}$ $P_{\text{IN}} = 60 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	250	270	—	W
$\eta_{\text{C}}$	$f = 1025 \text{ — } 1150 \text{ MHz}$ $P_{\text{IN}} = 60 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	40	38	—	%
$G_{\text{P}}$	$f = 1025 \text{ — } 1150 \text{ MHz}$ $P_{\text{IN}} = 60 \text{ W}$ $V_{\text{CC}} = 50 \text{ V}$	6.2	6.5	—	dB

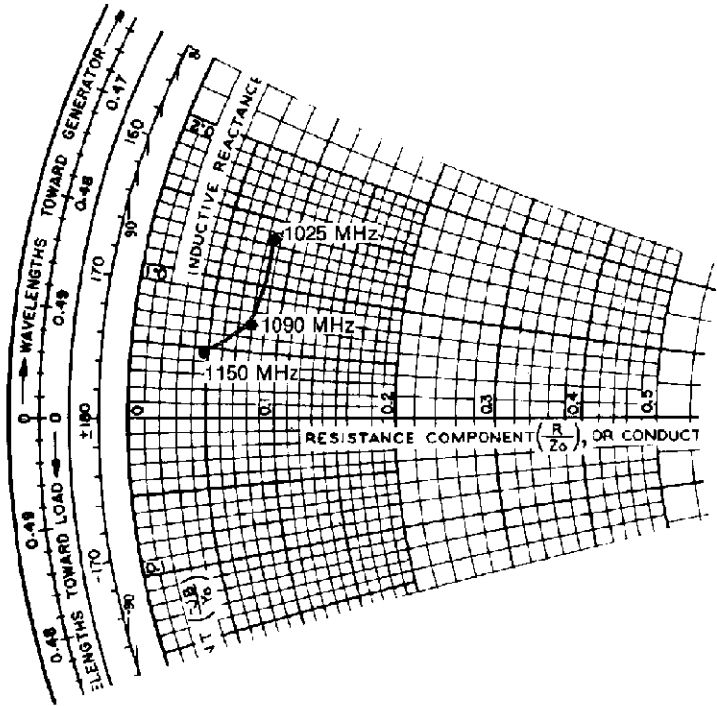
Note: Pulse Width =  $10\mu\text{Sec}$   
Duty Cycle = 1%

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE

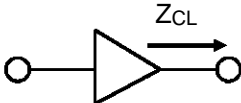


$P_{IN} = 60\text{ W}$   
 $V_{CC} = 50\text{ V}$   
 Normalized to 50 ohms

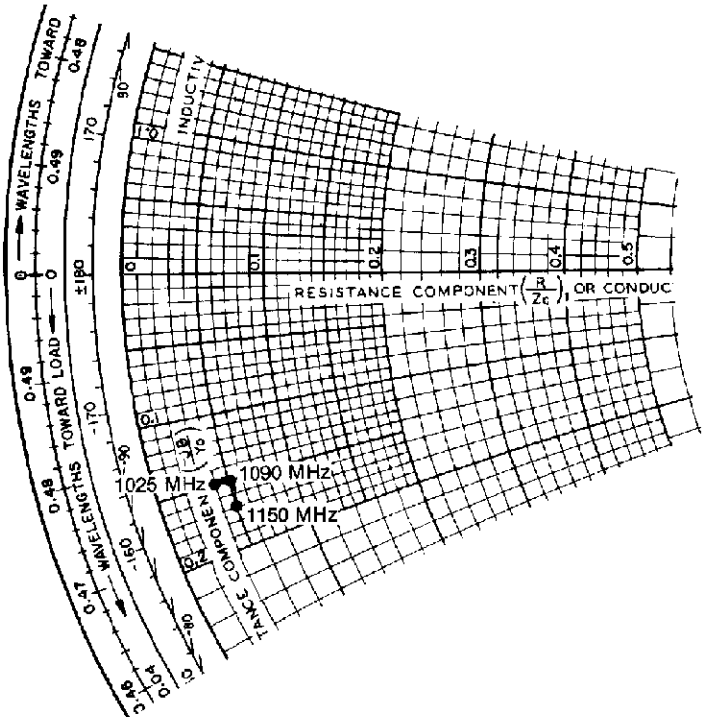


FREQ.	$Z_{IN} (\Omega)$	$Z_{CL} (\Omega)$
L = 1025 MHz	$4.2 + j 6.7$	$2.0 - j 7.5$
M = 1090 MHz	$4.0 + j 3.5$	$2.5 - j 7.5$
H = 1150 MHz	$2.3 + j 2.3$	$2.5 - j 8.5$

TYPICAL COLLECTOR LOAD IMPEDANCE

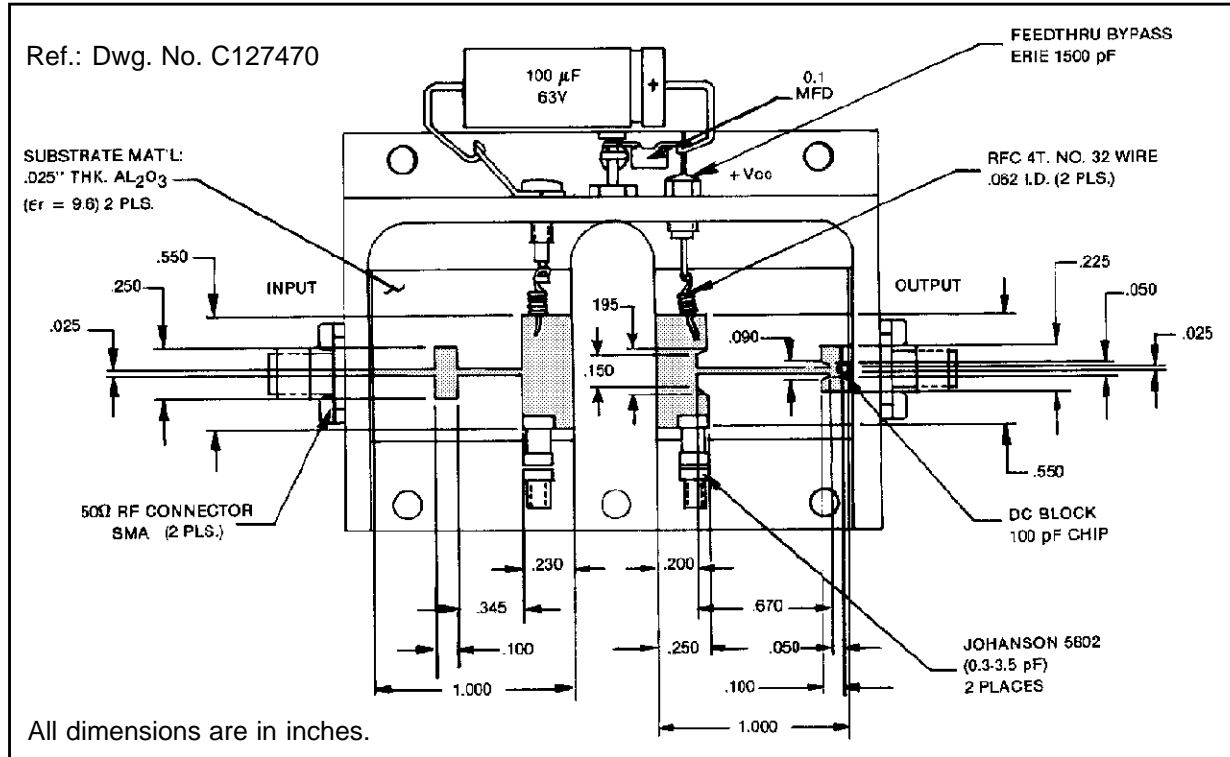


$P_{IN} = 60\text{ W}$   
 $V_{CC} = 50\text{ V}$   
 Normalized to 50 ohms

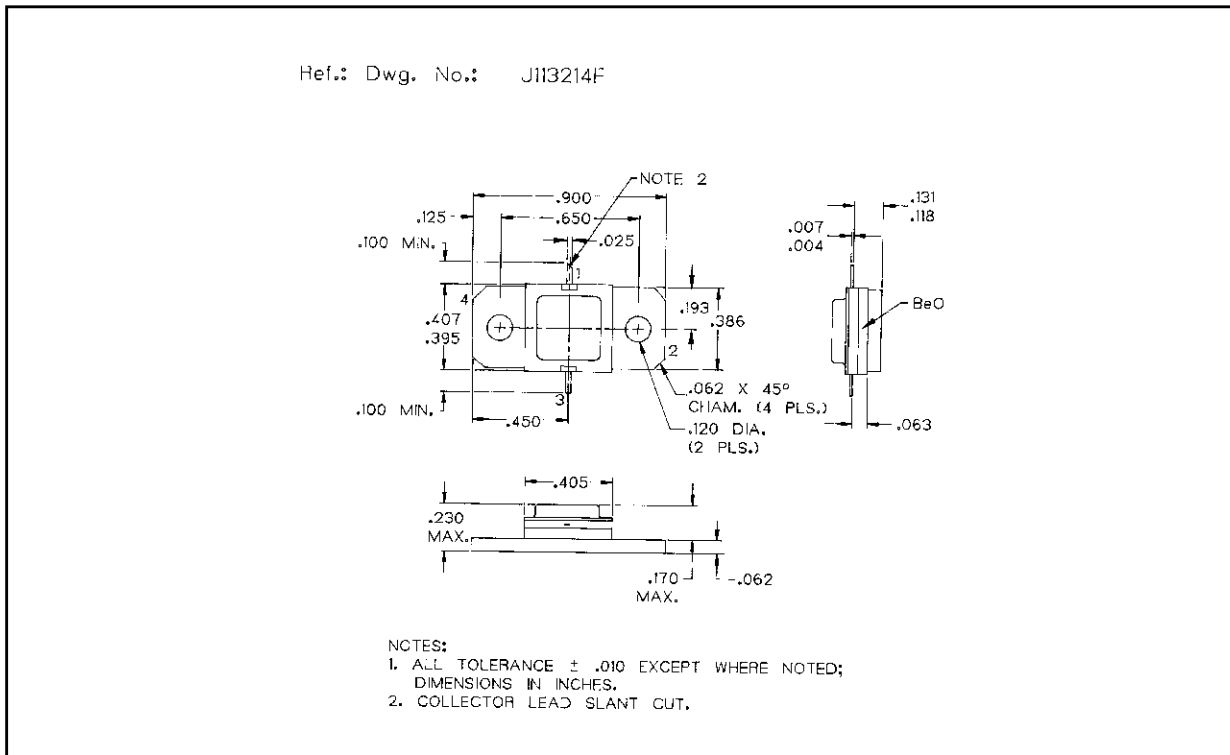


# MSC81250M

## TEST CIRCUIT



## PACKAGE MECHANICAL DATA



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