

## MS2267

### RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

#### Features

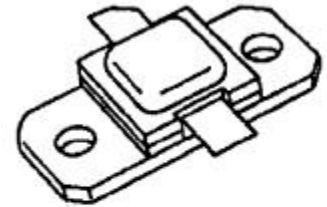
- 960 – 1215MHz
- 50 VOLTS
- 5:1 VSWR CAPABILITY @ RATED CONDITIONS
- INPUT/OUTPUT MATCHING
- $P_{OUT} = 250$  WATTS
- $G_P = 8.0$  dB MINIMUM
- COMMON BASE CONFIGURATION

#### DESCRIPTION:

The MS2267 is a high power Class C NPN transistor specifically designed for TACAN/DME applications.

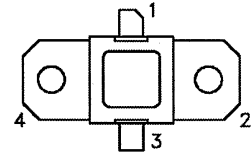
This device is capable of operation under moderate pulse width and duty cycles. Low thermal resistance and computerized automatic wire bonding techniques ensure high reliability and product consistency.

The MS2267 utilizes an emitter ballasted die geometry capable of operating into a 5:1 VSWR @ 1.0 dB overdrive.



.400 x .400 2L flanged (M214)  
hermetically sealed

#### PIN CONNECTION



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

#### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation* (T <sub>C</sub> ≤ 90°C)	575	W
$I_C$	Device Current*	20	A
V <sub>CC</sub>	Collector-Supply Voltage*	50	V
T <sub>J</sub>	Junction Temperature (Pulsed RF Operation)	250	°C
T <sub>STG</sub>	Storage Temperature	-65 to +200	°C

#### Thermal Data

R <sub>TH(J-C)</sub>	Junction-case Thermal Resistance* <sup>(1)</sup>	0.28	°C/W
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\* Applies only to rated RF amplifier operation

<sup>(1)</sup> Infra-red scan of hot spot junction temperature at rated RF operating conditions

**MS2267**

## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
<b>BV<sub>CBO</sub></b>	<b>I<sub>C</sub> = 35mA</b>	<b>I<sub>E</sub> = 0 mA</b>	<b>65</b>	---	---	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 15mA</b>	<b>I<sub>C</sub> = 0 mA</b>	<b>4.0</b>	---	---	<b>V</b>
<b>BV<sub>CES</sub></b>	<b>I<sub>C</sub> = 25mA</b>	<b>I<sub>B</sub> = 0 mA</b>	<b>60</b>	---	---	<b>V</b>
<b>I<sub>CES</sub></b>	<b>V<sub>BE</sub> = 0 V</b>	<b>V<sub>CE</sub> = 50V</b>	---	---	<b>20</b>	<b>mA</b>
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5V</b>	<b>I<sub>C</sub> = 1A</b>	<b>10</b>	---	---	---

### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 960 - 1215MHz</b>	<b>P<sub>IN</sub> = 40W</b>	<b>V<sub>CC</sub> = 50V</b>	<b>250</b>	<b>295</b>	---	<b>W</b>
<b>η<sub>c</sub></b>	<b>f = 960 - 1215MHz</b>	<b>P<sub>IN</sub> = 40W</b>	<b>V<sub>CC</sub> = 50V</b>	<b>38</b>	<b>44</b>	---	<b>%</b>
<b>G<sub>p</sub></b>	<b>f = 960 - 1215MHz</b>	<b>P<sub>IN</sub> = 40W</b>	<b>V<sub>CC</sub> = 50V</b>	<b>8.0</b>	<b>8.7</b>	---	<b>dB</b>

Conditions: Pulse width = 20 μS Duty Cycle = 5% T<sub>C</sub> = 25°C

### IMPEDANCE DATA

FREQ	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
<b>960 MHz</b>	<b>1.0 + j3.5</b>	<b>1.9 - j1.8</b>
<b>1090MHz</b>	<b>4.0 + j3.5</b>	<b>1.6 - j0.9</b>
<b>1215MHz</b>	<b>2.2 + j2.2</b>	<b>1.4 - j1.1</b>

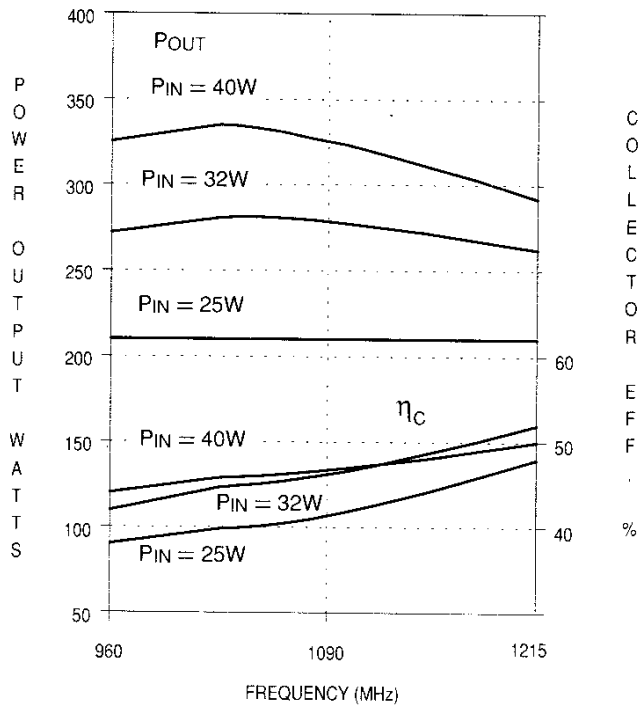
**P<sub>IN</sub> = 40W**

**V<sub>CC</sub> = 50V**

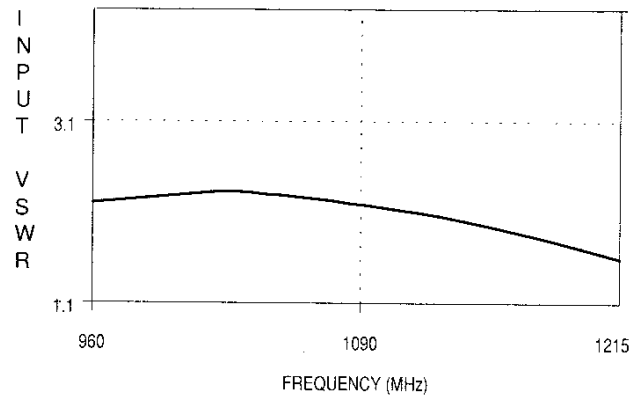
**MS2267**

**TYPICAL PERFORMANCE**

**TYPICAL BROADBAND POWER AMPLIFIER**

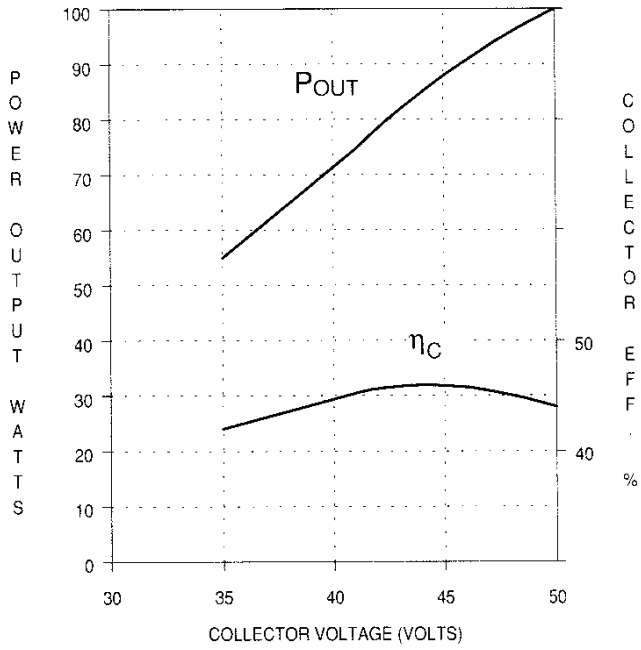


**INPUT VSWR vs FREQUENCY**

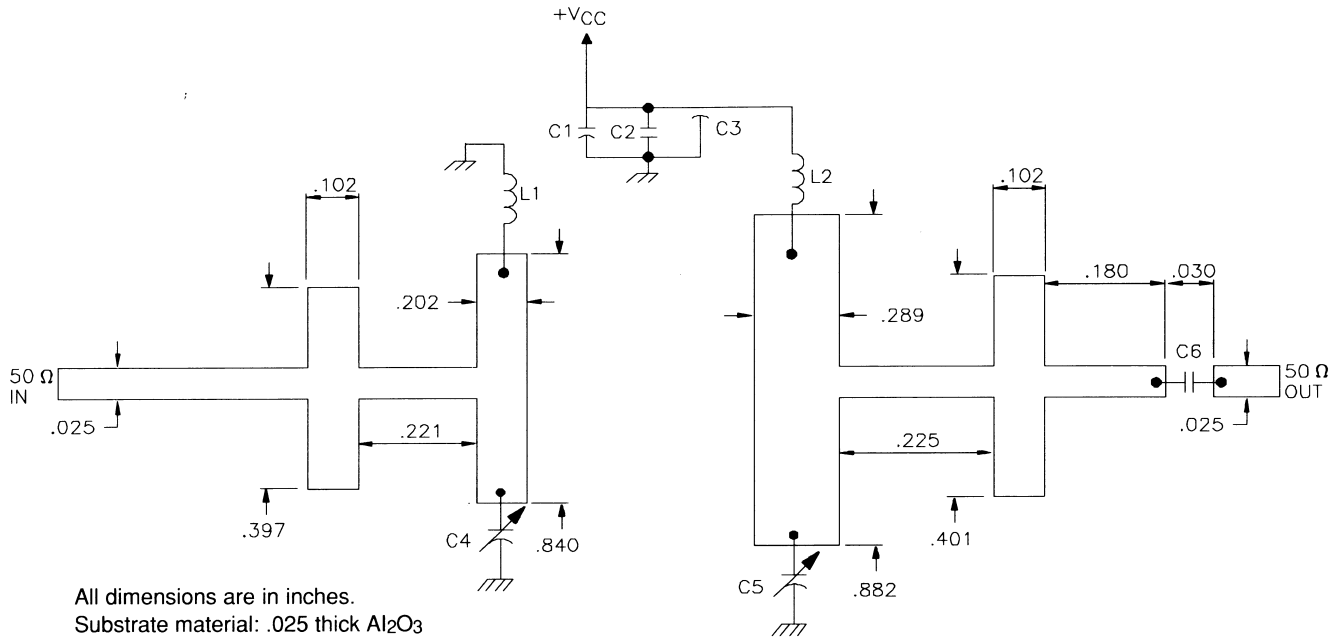


**TYPICAL PERFORMANCE (CONTINUED)**

**TYPICAL POWER OUTPUT &  
COLLECTOR EFFICIENCY vs  
COLLECTOR VOLTAGE**



**TEST CIRCUIT**



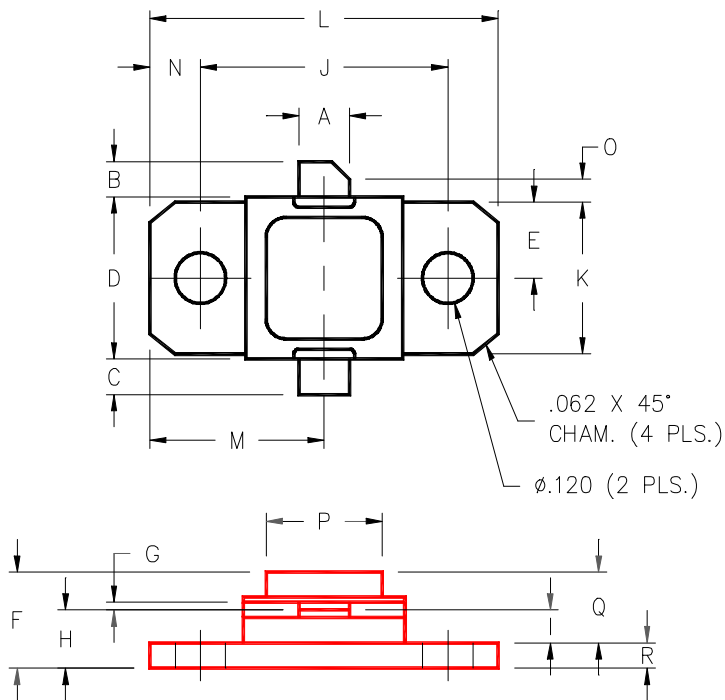
All dimensions are in inches.  
Substrate material: .025 thick Al<sub>2</sub>O<sub>3</sub>

- C1 : 100  $\mu$ F Electrolytic Capacitor, 63V
- C2 : .1  $\mu$ F Ceramic Capacitor
- C3 : Feedthru Bypass SCI 712-022
- C4 : Johanson 7475 Gigatrim .6 — 4.5 pF

- C5 : Johanson 7475 Gigatrim .6 — 4.5 pF
- C6 : D.C. Block 100 pF
- L1 : #26 Wire, 4 Turn .062 I.D.
- L2 : #26 Wire, 4 Turn .062 I.D.

**PACKAGE MECHANICAL DATA**

**PACKAGE STYLE M214**



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.140/3,56		J	.650/16,51	
B	.110/2,80		K	.386/9,80	
C	.110/2,80		L	.900/22,86	
D	.395/10,03	.407/10,34	M	.450/11,43	
E	.193/4,90		N	.125/3,18	
F		.230/5,84	O	.050/1,27	
G	.003/0,08	.006/0,15	P	.405/10,29	
H	.118/3,00	.131/3,33	Q	.170/4,32	
I	.063/1,60		R	.062/1,58	