

# MSC1175M

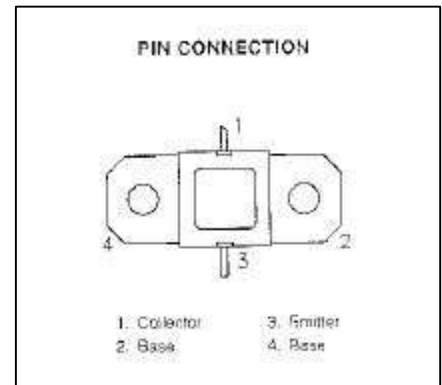
## RF & MICROWAVE TRANSISTORS AVIONICS APPLICATIONS

### Features

- 1025 – 1150 MHz
- 50 VOLTS
- INTERNAL INPUT/OUTPUT MATCHING
- $P_{OUT} = 175$  WATTS
- $G_P = 7.7$  dB MINIMUM
- COMMON BASE CONFIGURATION

### DESCRIPTION:

The MSC1175M is a NPN bipolar transistor specifically designed for high peak pulse power applications such as DME/TACAN. This device is capable of withstanding a minimum 20:1 load VSWR at any phase angle under full rated conditions. Internal impedance matching provides consistent broadband performance.



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

Symbol	Parameter	Value	Unit
$P_{DISS}$	Power Dissipation	400	W
$I_C$	Device Current	12	A
$V_{CC}$	Collector-Supply Voltage*	55	V
$T_J$	Junction Temperature	250	°C
$T_{STG}$	Storage Temperature	-65 to +200	°C

### Thermal Data

$R_{TH(J-C)}$	Thermal Resistance Junction-case	0.3	°C/W
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**MSC1175M**
**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> = 10 mA</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> = 1 mA</b>	<b>I<sub>C</sub> = 0 mA</b>	<b>3.5</b>	---	---	<b>V</b>	
<b>BV<sub>CER</sub></b>	<b>I<sub>C</sub> = 15 mA</b>	<b>R<sub>BE</sub> = 10 Ω</b>	<b>65</b>	---	---	<b>V</b>	
<b>I<sub>CES</sub></b>	<b>V<sub>CE</sub> = 50 V</b>			---	---	<b>12.5</b>	<b>mA</b>
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5 V</b>	<b>I<sub>C</sub> = 1 A</b>	<b>15</b>	---	<b>120</b>	---	

**DYNAMIC**

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 1025 - 1150 MHz</b>	<b>P<sub>IN</sub> = 30 W</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>175</b>	<b>190</b>	---	<b>W</b>
<b>η<sub>C</sub></b>	<b>f = 1025 - 1150 MHz</b>	<b>P<sub>IN</sub> = 30 W</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>40</b>	<b>42</b>	---	<b>%</b>
<b>G<sub>P</sub></b>	<b>f = 1025 - 1150 MHz</b>	<b>P<sub>IN</sub> = 30 W</b>	<b>V<sub>CC</sub> = 50 V</b>	<b>7.7</b>	<b>8.0</b>	---	<b>dB</b>
<b>Conditions</b>	<b>Pulse Width = 10μS    Duty Cycle = 1%</b>						

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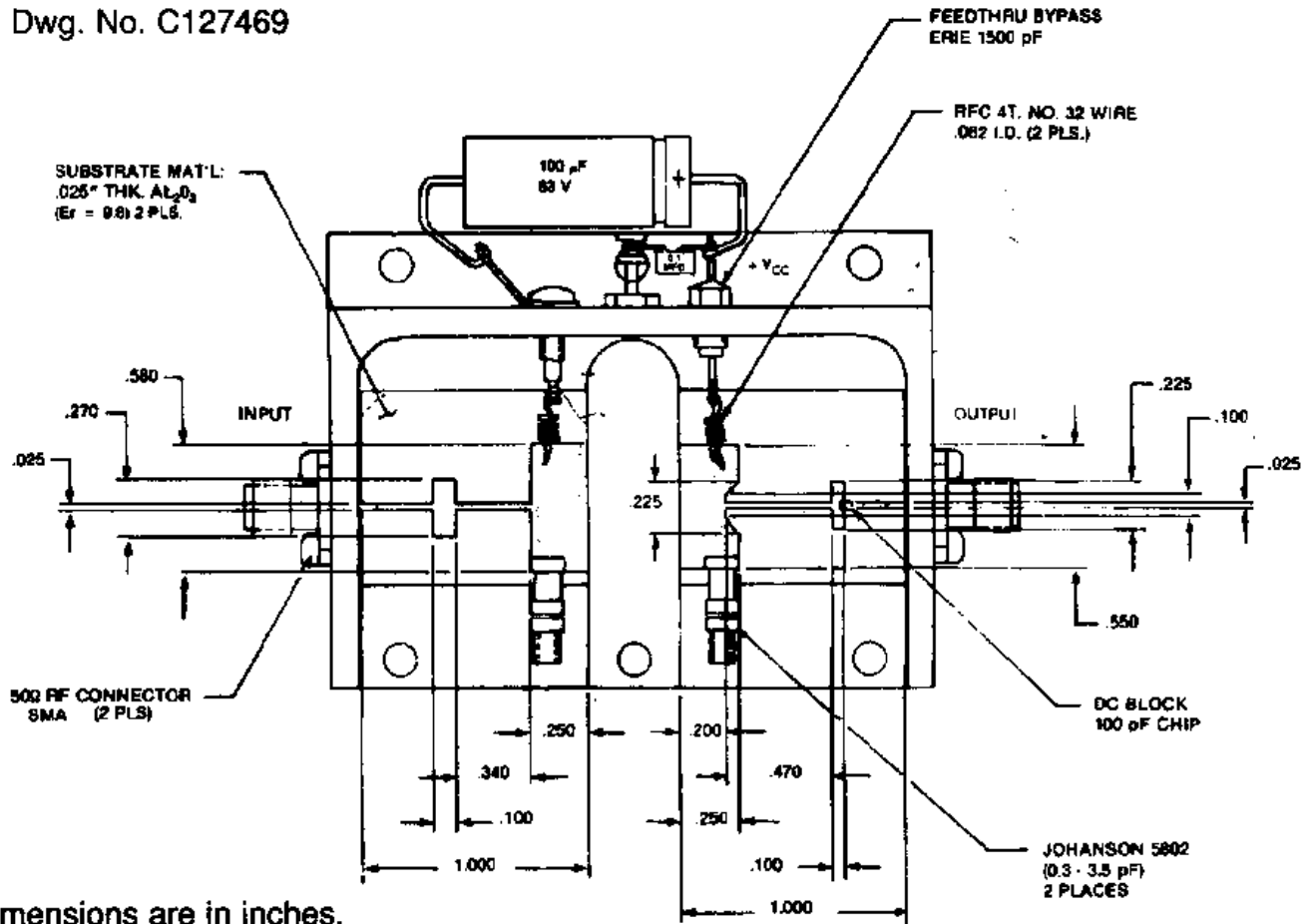
**IMPEDANCE DATA**

FREQ	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
1025 MHz	2.3 + j5.1	2.4 - j4.2
1090 MHz	2.0 + j4.5	2.0 - j3.5
1150 MHz	2.2 + j3.3	2.5 - j2.5

V<sub>CC</sub> = 50V  
P<sub>IN</sub> = 30W  
Normalized to 50Ω

**TEST CIRCUIT**

Ref.: Dwg. No. C127469



All dimensions are in inches.

**PACKAGE MECHANICAL DATA**

