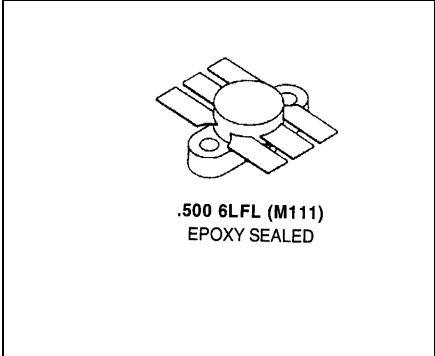


MS1503

**RF & MICROWAVE TRANSISTORS  
WIDE BAND VHF/UHF APPLICATIONS**

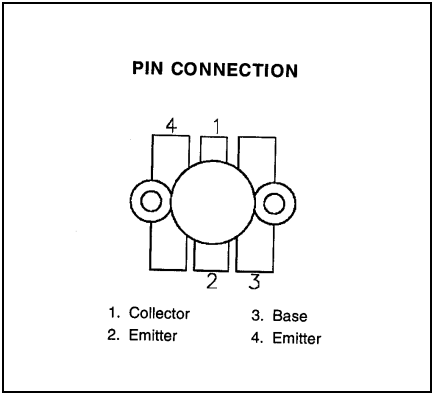
**Features**

- 400 MHz
- 28 VOLTS
- GOLD METALIZATION
- $P_{OUT} = 100$  WATTS
- $G_P = 7.0$  dB GAIN MINIMUM
- COMMON EMITTER CONFIGURATION



**DESCRIPTION:**

The MS1503 is a 28V Class C epitaxial silicon NPN planar transistor designed primarily for UHF communications. The device utilizes diffused emitter resistors to achieve infinite VSWR capability under operating conditions. Internal impedance matching produces optimum power gain and efficiency over the 225-400MHz band.



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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	33	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	4.0	A
$P_{DISS}$	Power Dissipation	250	W
$T_J$	Junction Temperature	+200	°C
$T_{STG}$	Storage Temperature	-65 +150	°C

**Thermal Data**

$R_{TH(J-C)}$	Thermal Resistance Junction-case	0.7	°C/W
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**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> = 100 mA</b>	<b>I<sub>E</sub> = 0 V</b>	<b>60</b>	---	---	<b>V</b>
<b>BV<sub>CEO</sub></b>	<b>I<sub>C</sub> = 50 mA</b>	<b>I<sub>B</sub> = 0 mA</b>	<b>33</b>	---	---	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 20 mA</b>	<b>I<sub>C</sub> = 0 mA</b>	<b>4.0</b>	---	---	<b>V</b>
<b>I<sub>CES</sub></b>	<b>V<sub>CB</sub> = 28 V</b>	<b>I<sub>E</sub> = 0 mA</b>	---	---	<b>25</b>	<b>mA</b>
<b>HFE</b>	<b>V<sub>CE</sub> = 5 V</b>	<b>I<sub>C</sub> = 1 A</b>	<b>20</b>	---	<b>200</b>	---

**DYNAMIC**

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 400 MHz</b>	<b>P<sub>IN</sub> = 20W</b>	<b>V<sub>CE</sub> = 28V</b>	<b>100</b>	---	---	<b>W</b>
<b>G<sub>P</sub></b>	<b>f = 400 MHz</b>	<b>P<sub>IN</sub> = 20W</b>	<b>V<sub>CE</sub> = 28V</b>	<b>7.0</b>	---	---	<b>dB</b>
<b>η<sub>C</sub></b>	<b>f = 400 MHz</b>	<b>P<sub>IN</sub> = 20W</b>	<b>V<sub>CE</sub> = 28V</b>	<b>50</b>	---	---	<b>%</b>
<b>Cob</b>	<b>f = 1 MHz</b>	<b>V<sub>CB</sub> = 28V</b>		---	---	<b>105</b>	<b>pf</b>

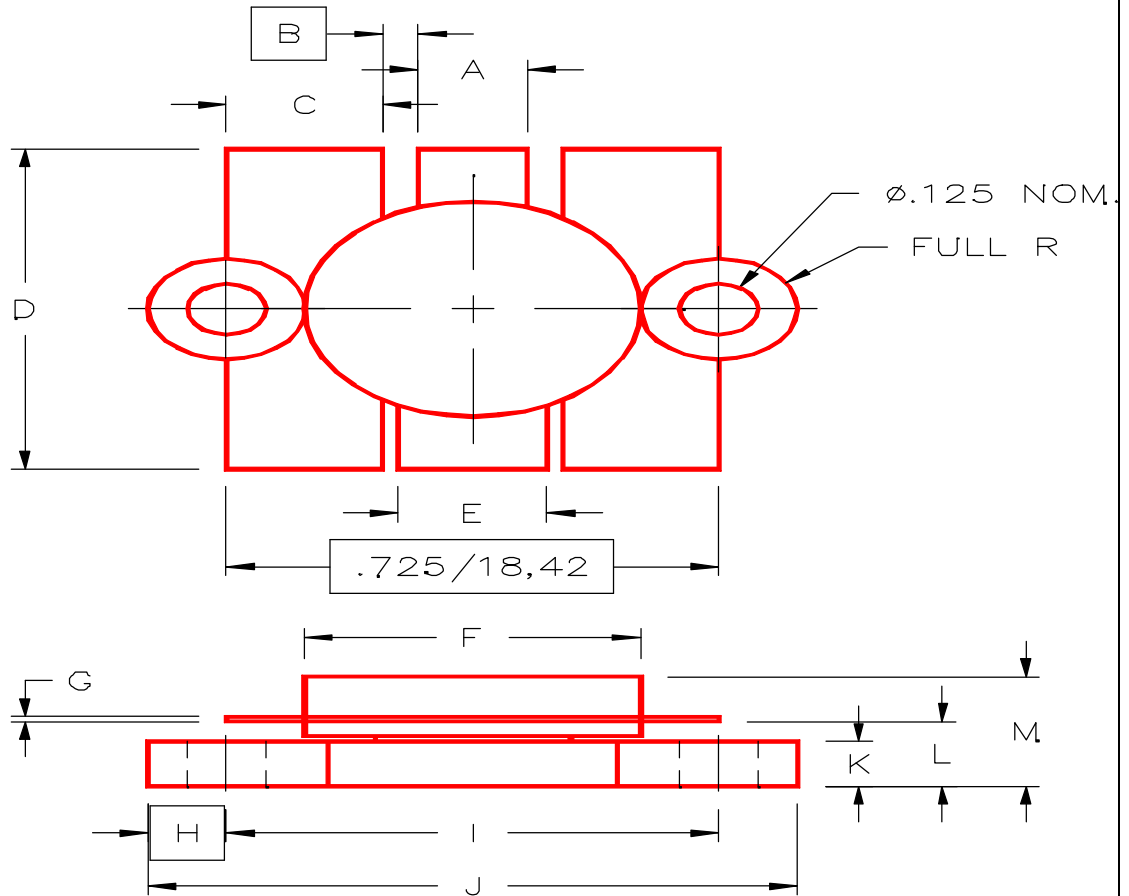
**IMPEDANCE DATA**

FREQ	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
<b>225 MHz</b>	<b>1.3 + j1.8</b>	<b>5.4 – j0.5</b>
<b>300 MHz</b>	<b>1.1 + j2.4</b>	<b>3.9 – j0.7</b>
<b>350 MHz</b>	<b>0.8 + j3.0</b>	<b>2.6 – j1.0</b>
<b>375 MHz</b>	<b>0.75 + j3.5</b>	<b>2.2 – j1.4</b>
<b>400 MHz</b>	<b>0.70 + j3.6</b>	<b>1.8 – j1.9</b>

**P<sub>IN</sub> = 20 W**
**V<sub>CE</sub> = 28 V**

**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M111



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.150/3,43	.160/4,06	I	.720/18,29	.730/18,54
B	.045/1,14		J	.970/24,64	.980/24,89
C	.210/5,33	.220/5,59	K	.095/2,41	.105/2,67
D	.835/21,21	.865/21,97	L	.150/3,81	.170/4,32
E	.200/5,08	.210/5,33	M		.280/7,11
F	.490/12,45	.510/12,95			
G	.003/0,08	.007/0,18			
H	.125/3,18				