

## MS1051

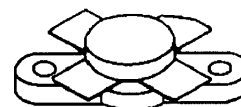
### RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

#### Features

- 30 MHz
- 12.5 VOLTS
- $P_{OUT} = 100$  WATTS
- $G_{PE} = 12.0$  dB MINIMUM
- $IMD = -30$  dBc
- GOLD METALLIZATION
- COMMON EMITTER CONFIGURATION

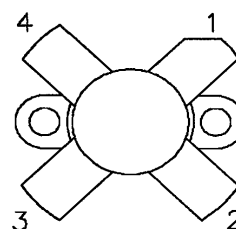
#### DESCRIPTION:

The MS1051 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for HF communications. This device utilizes state-of-the-art diffused emitter ballasting to achieve extreme ruggedness under severe operating conditions.



.500 4LFL (M174)  
epoxy sealed

#### PIN CONNECTION



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

#### ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	36	V
$V_{CEO}$	Collector-Emitter Voltage	18	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	20	A
$P_{DISS}$	Power Dissipation	290	W
$T_J$	Junction Temperature	+200	°C
$T_{STG}$	Storage Temperature	-65 to +150	°C

#### THERMAL DATA

$R_{TH(J-C)}$	Thermal Resistance Junction-case	0.6	°C/W
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Revision B, January 2010

**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> = 100mA    I<sub>E</sub> = 0mA</b>	<b>36</b>	---	---	<b>V</b>
<b>BV<sub>CES</sub></b>	<b>I<sub>C</sub> = 100mA    V<sub>BE</sub> = 0V</b>	<b>36</b>	---	---	<b>V</b>
<b>BV<sub>CEO</sub></b>	<b>I<sub>C</sub> = 100mA    I<sub>B</sub> = 0mA</b>	<b>18</b>	---	---	<b>V</b>
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 20mA    I<sub>C</sub> = 0mA</b>	<b>4.0</b>	---	---	<b>V</b>
<b>I<sub>CES</sub></b>	<b>V<sub>CE</sub> = 15V    I<sub>C</sub> = 0mA</b>	---	---	<b>20</b>	<b>mA</b>
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5V    I<sub>C</sub> = 5mA</b>	<b>10</b>	---	<b>200</b>	---

**DYNAMIC**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 30 MHz    V<sub>CE</sub> = 12.5 V    I<sub>CQ</sub> = 150mA</b>	<b>100</b>	---	---	<b>W</b>
<b>G<sub>P</sub></b>	<b>f = 30 MHz    V<sub>CE</sub> = 12.5 V    I<sub>CQ</sub> = 150mA</b>	<b>11</b>	<b>13</b>	---	<b>dB</b>
<b>IMD<sub>3</sub>*</b>	<b>P<sub>OUT</sub> = 100 W PEP    V<sub>CE</sub> = 12.5 V    I<sub>CQ</sub> = 150mA</b>	---	---	<b>-30</b>	<b>dBc</b>
<b>C<sub>OB</sub></b>	<b>f = 1 MHz    V<sub>CB</sub> = 12.5 V</b>	---	<b>400</b>	---	<b>pf</b>

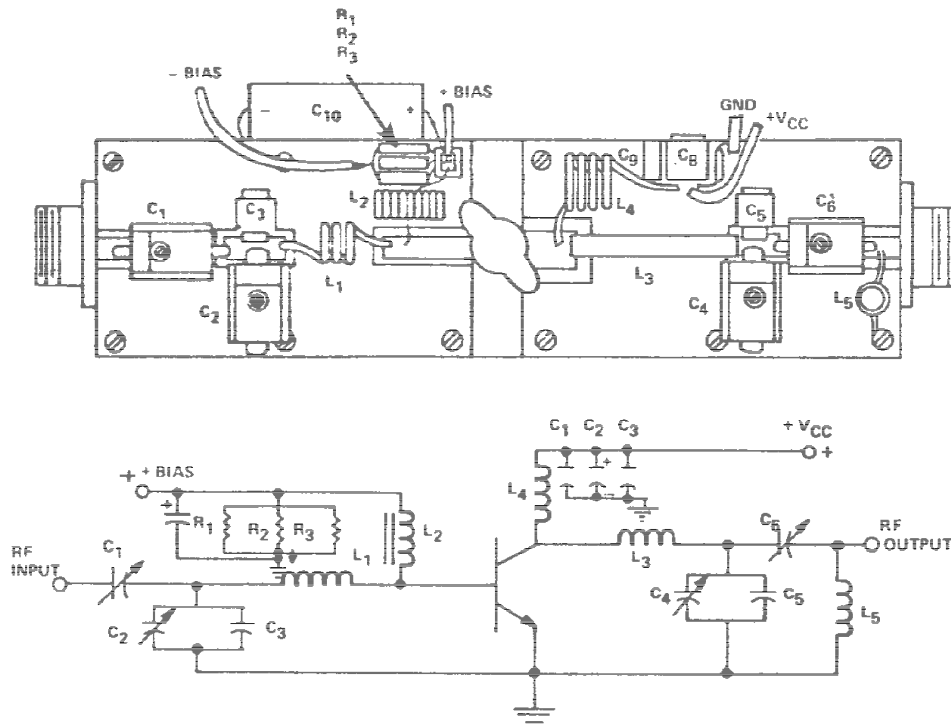
Conditions: f1 = 30.000MHz    f2 = 30.001MHz

## IMPEDANCE DATA

FREQ	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
30 MHz	$0.57 + j 0.78$	$0.80 + j 0.43$

$P_{OUT} = 100$  WPEP,  $V_{CE} = 12.5$  V

## TEST CIRCUIT

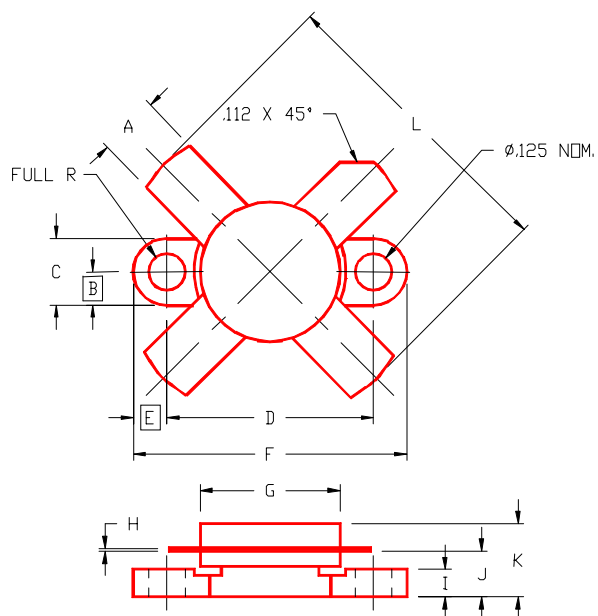


C1 : 9 - 180pF Arco 463  
 C2 : 5 - 380pF Arco 465  
 C3 : 200pF Arco 465  
 C4, C6 : 170pF Arco 469  
 C7 : 0.1 $\mu$ F Ceramic Disc  
 C5, C8 : 1000pF Unelco  
 C9 : 10 $\mu$ F Electrolytic, 35Vdc  
 C10 : 1000 $\mu$ F Electrolytic, 35Vdc

L1 : 2 1/2 Turns, #14 AWG, I.D. Loose Wound  
 L2 : 16 Turns, #16 AWG, Enameled Wire on Micrometals Torroid #T-94

L3 : Copper Strap 1/4" Widht, Length 1 1/2, Height 1/2"  
 L4 : 4 Turns, #16 AWG, Enameled Wire 3/8" I.D.  
 L5 : 5 Turns, #18 AWG on 1/4" I.D. Coil Form Length 1/2", Ferrite Slug

R1, R2, R3 : 1.5 Ohm, 1 Watt Carbon

**PACKAGE MECHANICAL DATA**

**PACKAGE STYLE M174**

	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.220/5,59	.230/5,84	I	.090/2,29	.110/2,79
B	.125/3,18		J	.160/4,06	.175/4,45
C	.245/6,22	.255/6,48	K		.280/7,11
D	.720/18,28	.730/18,54	L		1.050/26,67
E	.125/3,18				
F	.970/24,64	.980/24,89			
G	.495/12,57	.505/12,83			
H	.003/0,08	.007/0,18			