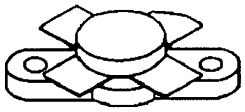
ADVANCED POWER TECHNOLOGY RF®

140 COMMERCE DRIVE
MONTGOMERYVILLE, PA
18936-1013
PHONE: (215) 631-9840
FAX: (215) 631-9855

MS1051

RF & MICROWAVE TRANSISTORS
HF SSB APLICATIONS

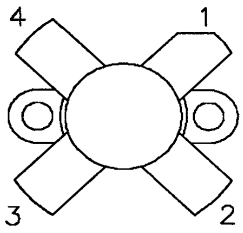


.500 4LFL (M174)
epoxy sealed

Features

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

PIN CONNECTION



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

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.

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

ADVANCED POWER TECHNOLOGY RF®

MS1051

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 100mA	I_E = 0mA	36	---	---	V
BV_{CES}	I_C = 100mA	V_{BE} = 0V	36	---	---	V
BV_{CEO}	I_C = 100mA	I_B = 0mA	18	---	---	V
BV_{EBO}	I_E = 20mA	I_C = 0mA	4.0	---	---	V
I_{CES}	V_{CE} = 15V	I_C = 0mA	---	---	20	mA
h_{FE}	V_{CE} = 5V	I_C = 5mA	10	---	200	---

DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P_{OUT}	f = 30 MHz	V_{CE} = 12.5 V	I_{CQ} = 150mA	100	---	---	W
G_P	f = 30 MHz	V_{CE} = 12.5 V	I_{CQ} = 150mA	11	13	---	dB
IMD_3*	P_{OUT} = 100 W PEP	V_{CE} = 12.5 V	I_{CQ} = 150mA	---	---	-30	dBc
C_{OB}	f = 1 MHz	V_{CB} = 12.5 V		---	400	---	pf

Conditions: f1 = 30.000MHz f2 = 30.001MHz

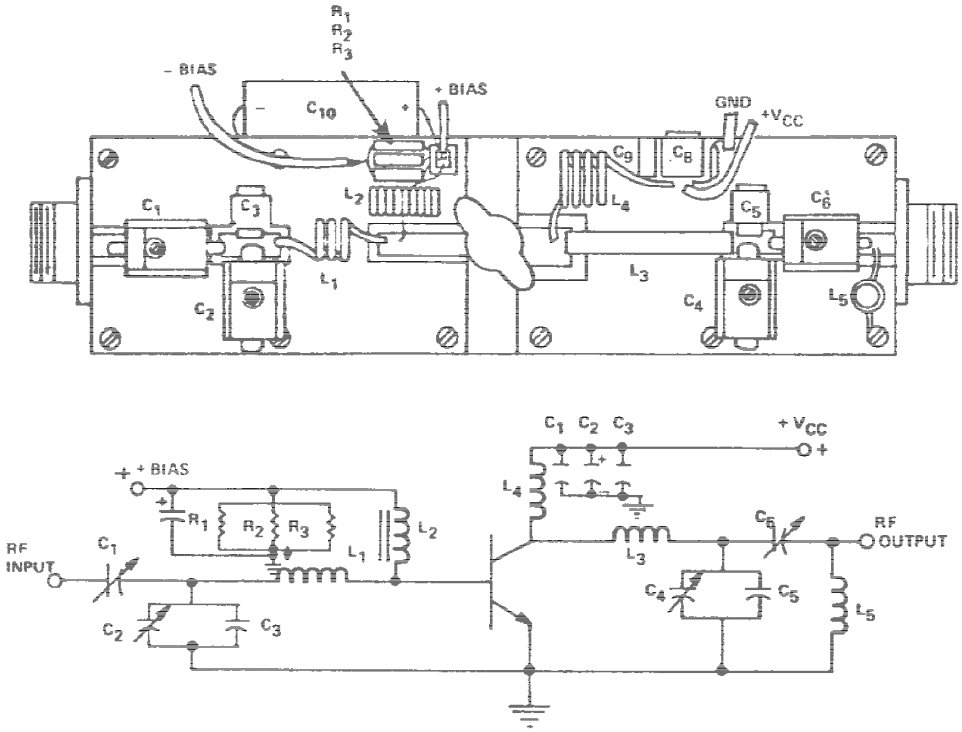
MS1051

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



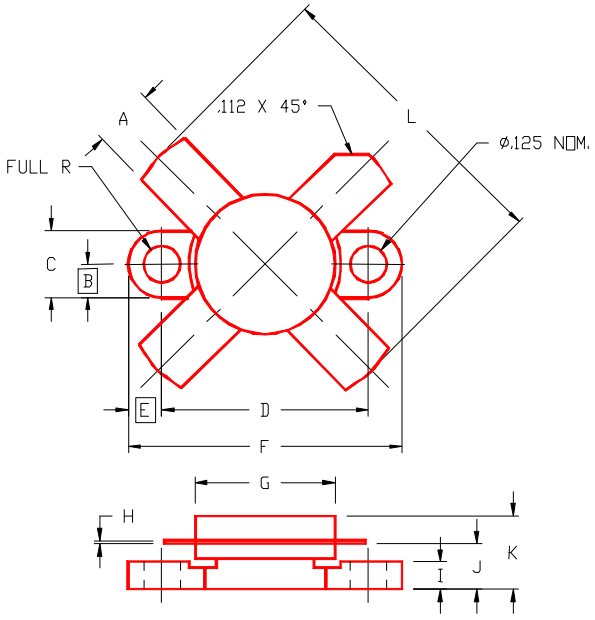
C1 : 9 - 180pF Arco 463
C2 : 5 - 380pF Arco 465
C3 : 200pF Arco 465
C4, C6 : 170pF Arco 469
C7 : 0.1µF Ceramic Disc
C5, C8 : 1000pF Unelco
C9 : 10µF Electrolytic, 35Vdc
C10 : 1000µF Electrolytic, 35Vdc

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

MS1051

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			