Microsemi
POWER PRODUCTS GROUP

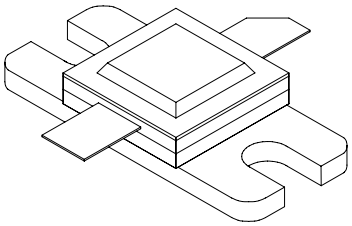
MDS150

150 Watts, 50 Volts, Pulsed
Avionics 1030 - 1090 MHz

GENERAL DESCRIPTION

The MDS150 is a high power COMMON BASE bipolar transistor. It is designed for MODE-S systems in the 1030 - 1090 MHz frequency band. The transistor includes input prematch for broadband performance. The device has gold thin-film metallization and diffused ballasting in a hermetically sealed package for proven highest MTTF.

CASE OUTLINE
55AW Style 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @25°C[1]	350 W

Maximum Voltage and Current

Collector to Emitter Voltage (BV_{ces})	60 V
Emitter to Base Voltage (BV_{ebo})	3.5 V
Peak Collector Current (I_c)	4 A

Maximum Temperatures

Storage Temperature	-65 to +150 °C
Operating Junction Temperature	+200 °C

ELECTRICAL CHARACTERISTICS @ 25°C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Out	F = 1030, 1090 MHz	150			W
P_{in}	Power Input	Vcc = 50 Volts			20	W
P_g	Power Gain	PW = Note 2	10			dB
η_c	Collector Efficiency	DF = Note 2		34		%
VSWR[1]	Load Mismatch Tolerance				3:1	
Pd[1]	Pulse Droop				0.5	dB
Trise[1]	Rise Time				100	nSec

FUNCTIONAL CHARACTERISTICS @ 25°C

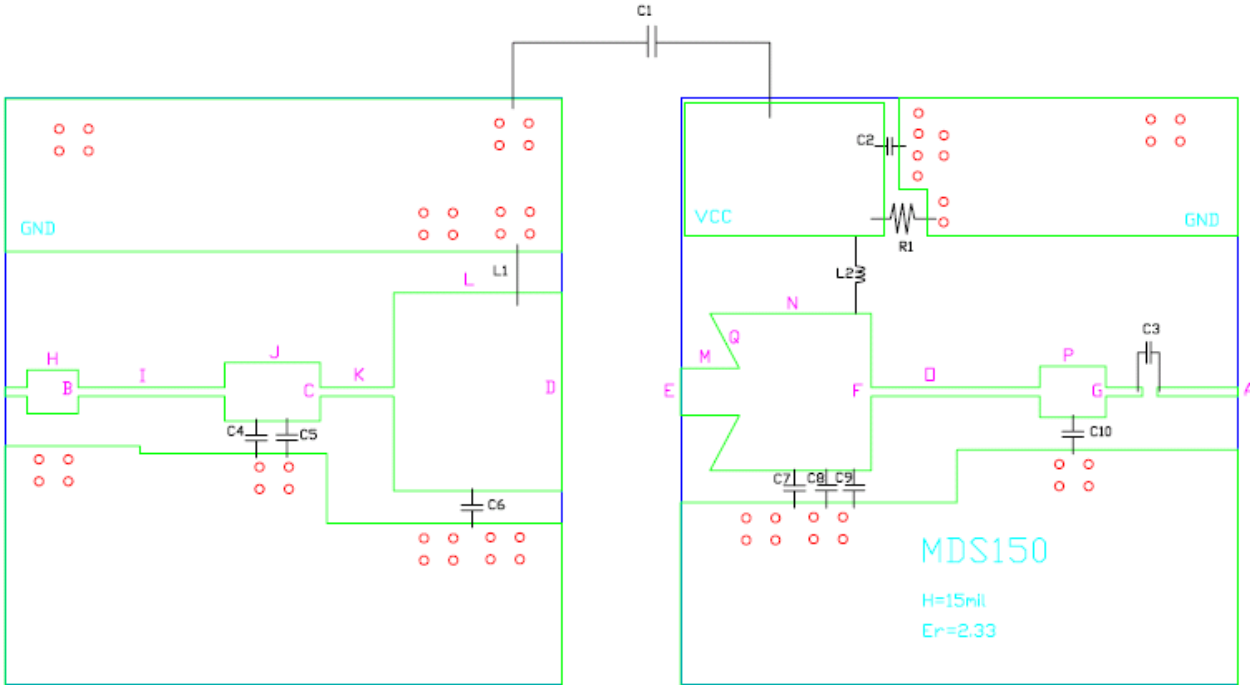
BV_{ebo}	Emitter to Base Breakdown	Ie = 5 mA	3.5			V
BV_{ces}	Collector to Emitter Breakdown	Ic = 25 mA	60			V
BV_{cbo}	Collector to Base Breakdown	Ic = 25 mA	60			V
h_{FE}	DC – Current Gain	Vce = 5V, Ic = 500 mA	20			
θjc[1]	Thermal Resistance				0.5	°C/W

NOTE 1: AT RATED OUTPUT POWER AND PULSE CONDITIONS
NOTE 2: Burst: 0.5uS ON, 0.5uS OFF x 120, repeated every 6.4mS

Initial Release - August 2007 Rev. A

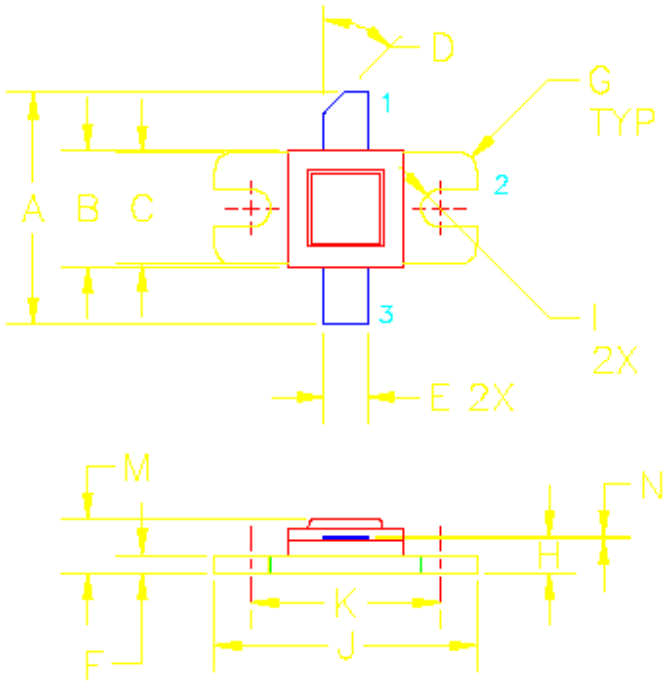
TEST FIXTURE LAYOUT AND SCHEMATIC

COMPONENTS
C1=220uF electrolytic cap, 63V
C2=100pF ATC Chip
C3=47pF ATC Chip
C4=1.3pF ATC Chip
C5=C7=C9=1pF ATC Chip
C6=3.6pF ATC Chip
C8=2.2pF ATC Chip
C10=1.5pF ATC Chip
L1=#21AWG, Length=1"
L2=#21AWG, 6 turn, I.D.=0.1"
R1=22kOhm



ZONE	REV	DESCRIPTION	DATE	APPROVED

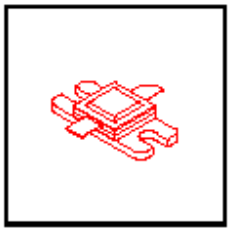
REVISIONS



DIM	MILLIMETER	±TOL	INCHES	±TOL
A	20.32	.76	.800	.050
B	10.16	.13	.400	.005
C	9.78	.13	.385	.005
D	45°	5°	45°	5°
E	3.81	.13	.150	.005
F	1.52	.13	.060	.005
G	1.52R	.13	.060R	.005
H	3.05	.13	.120	.005
I	3.30 DIA	.13	.130 DIA	.005
J	22.86	.13	.900	.005
K	16.51	.13	.650	.005
M	4.70	REF	.185	REF
N	0.13	.02	.005	.001

STYLE 1:
PIN1 = COLLECTOR
2 = BASE
3 = EMITTER

STYLE 2:
PIN1 = COLLECTOR
2 = EMITTER
3 = BASE



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CAGE	DWG NO.	REV
OPJR2	55AW	A
SCALE 2/1	SHEET	