Microsemi
POWER PRODUCTS GROUP

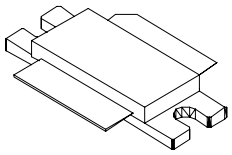
MDS1100

1100 Watts, 50 Volts
Pulsed Avionics at 1030 MHz

GENERAL DESCRIPTION

The MDS1100 is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems at 1030 MHz, with the pulse width and duty required for MODE-S applications. The device has gold thin-film metalization and emitter ballasting for proven highest MTTF. The transistor includes input and output prematch for broadband capability. Low thermal resistance package reduces junction temperature, extends life.

CASE OUTLINE
55TU-1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation

Device Dissipation @ 25°C[1]	8750	W

Maximum Voltage and Current

Collector to Base Voltage (BV_{ces})	65	V
Emitter to Base Voltage (BV_{ebo})	4.5	V
Collector Current (I_c)	100	A

Maximum Temperatures

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

ELECTRICAL CHARACTERISTICS @ 25°C

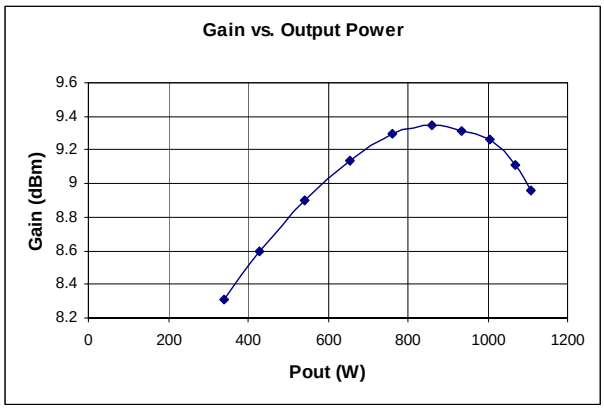
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Out	F = 1030 MHz, V_{cc} = 50 Volts	1000			W
P_g	Power Gain	Note 2	8.9			dB
η_c	Collector Efficiency	F = 1030 MHz, V_{cc} = 50 Volts Note 2	45			%
R_L	Return Loss		11			dB
Tr	Rise Time				100	nS
Pd	Pulse Droop				0.7	dB
VSWR	Load Mismatch Tolerance[1]		4.0:1			

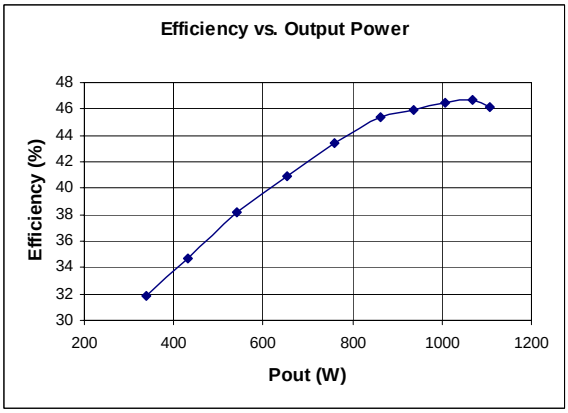
FUNCTIONAL CHARACTERISTICS @ 25°C

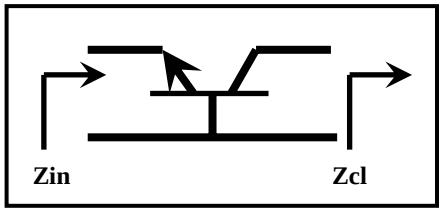
BV_{ebo}	Emitter to Base Breakdown	Ie = 50 mA	3.5			V
BV_{ces}	Collector to Emitter Breakdown	Ic = 100 mA	65			V
h_{FE}	DC – Current Gain	Vce = 5V, Ic = 5A	20			
θjc[1]	Thermal Resistance				0.02	°C/W

NOTES: 1. At rated output power and pulse conditions
2. 128 µs burst, 0.5 µs on/0.5 µs off, 6.4 ms period, Pin = 130 Watts

Rev B, September 2005







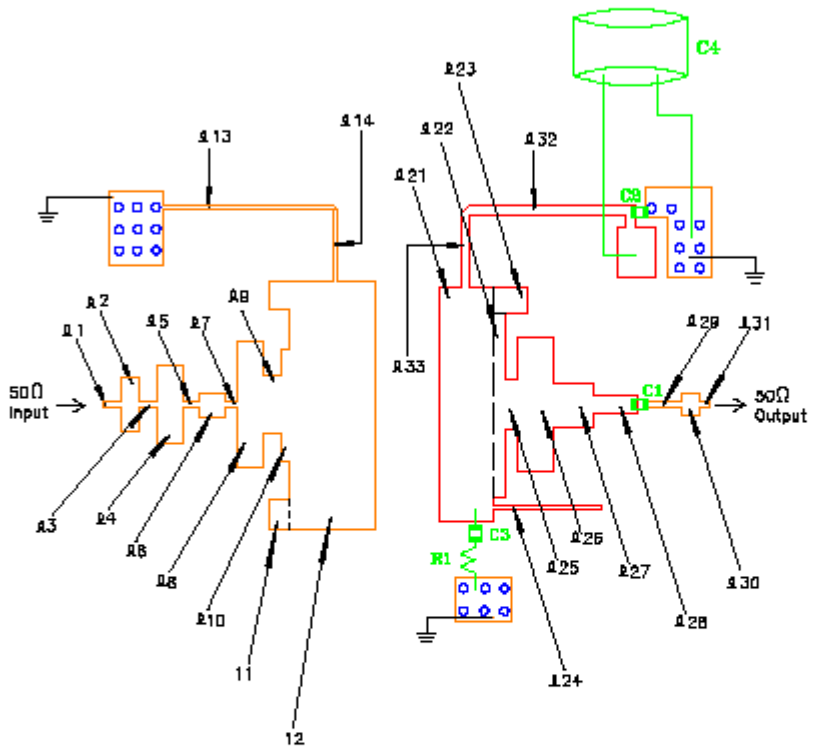
	R (ohms)	jX (ohms)
Zin	1.75	+j2.37
Zcl	0.60	-j1.62

Frequency = 1030 MHz, Vcc = 50V, Pin = 130W

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

# NO.	L(inch)	W(inch)
1	0.074	0.025
2	0.090	0.246
3	0.083	0.025
4	0.1200	0.363
5	0.069	0.025
6	0.1200	0.1100
7	0.058	0.025
8	0.1199	0.584
9	0.079	0.268
10	0.041	0.520
11	0.0974	0.1336
12	0.3900	1.144
13	0.785	0.015
14	0.330	0.015
21	0.246	1.074
22	0.05	0.85
23	0.1573	0.1122
24	0.50	0.015
25	0.053	0.232
26	0.158	0.819
27	0.190	0.204
28	0.203	0.080
29	0.174	0.025
30	0.08	0.086
31	0.05	0.025
32	0.762	0.04
33	0.335	0.04



Item	Value	Type
C1	56 pF	Cap. Chip, ATC 100A
C2	82 pF	Cap. Chip, ATC 100A
C3	0.1 uF	Cap. Chip, ATC 100 B
C4	6800 uF	Cap. electrolytic 63v
R1	1 Ω	Resistor

Board: RT/duroid 6010
Er=10.2, H=25mils

DATE	DWG NO.	REV
0PJR2	MDS1100	A
	SCALE 1:1	SHEET

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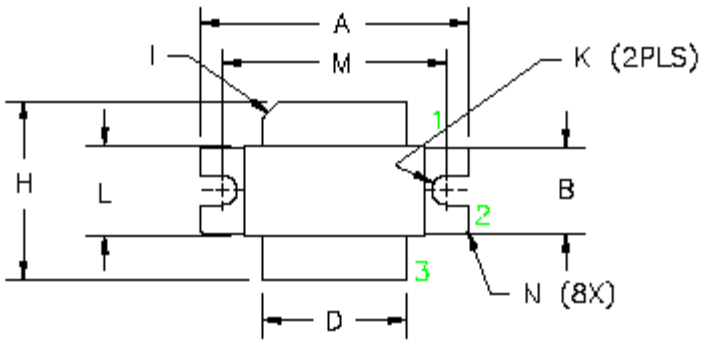
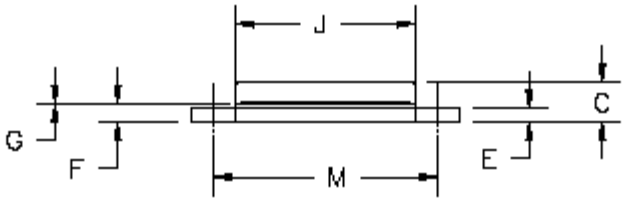
REVISIONS				
ZONE	REV	DESCRIPTION	DATE: 8/20/01	APPROVED

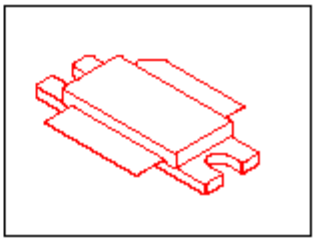




STYLE 1:
PIN 1 = COLLECTOR
2 = BASE
3 = EMITTER

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

DIM	MILLIMETER	±TOL	INCHES	±TOL
A	30.48	±0.25	1.200	±.010
B	9.78	±0.25	.385	±.010
C	4.58	±0.17	.180	±.007
D	16.51	±0.25	.650	±.010
E	1.64	±0.13	.064	±.005
F	2.20	±0.13	.085	±.005
G	.11	±0.03	.004	±.001
H	20.57	±0.51	.810	±.020
I	45°X2.5	.0080"	45°X0.10	.0015"
J	20.32	±0.25	.800	±.010
K	3.30 DIA	±0.13	.130 DIA	±.005
L	10.16	±0.13	.400	±.005
M	25.40	±0.25	1.000	±.010
N	1.52	±0.13	0.060	±.005



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CAGE	DWG NO.	REV
OPJR2	55TU	B
	SCALE 1/1	SHEET 1 OF 1