ADVANCED POWER TECHNOLOGY RF®

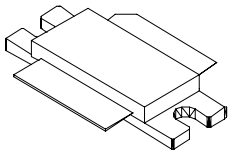
MDS1100

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

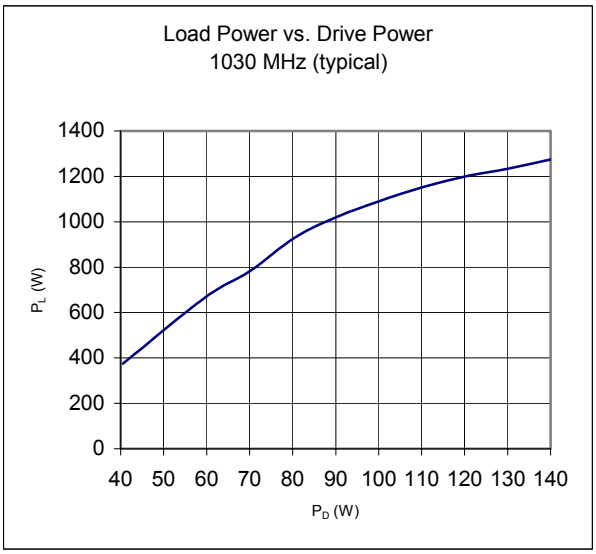
SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
P_{out}	Power Out	Note 2	1100			W
P_g	Power Gain		9.8			dB
P_{out}	Power Out	Note 3	1000			W
P_g	Power Gain		9.4			dB
η_c	Collector Efficiency	F = 1030 MHz, V_{cc} = 50 Volts	45			%
R_L	Return Loss		-10			dB
Tr	Rise Time				85	ns
Pd	Pulse Droop				0.7	dB
VSWR	Load Mismatch Tolerance[1]		4.0:1			

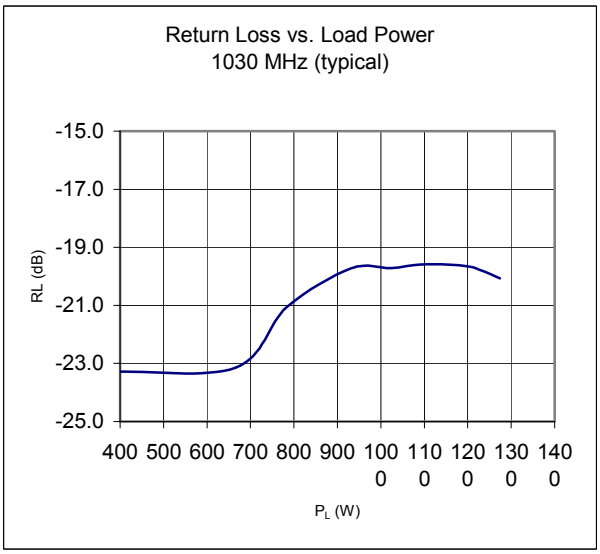
FUNCTIONAL CHARACTERISTICS @ 25°C

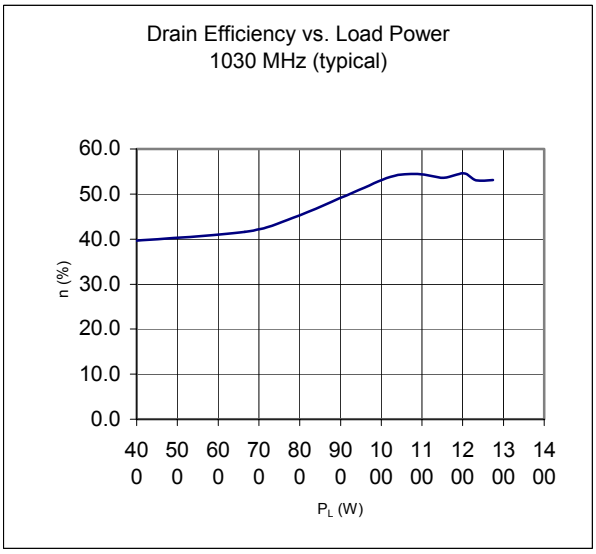
BV_{ebo}	Emitter to Base Breakdown	Ie = 50 mA	3.5			V
BV_{ces}	Collector to Emitter Breakdown	Ic = 100 mA	65			V
h_{FE}	DC – Current Gain	Vce = 5V, Ic = 5A	20			
θjc[1]	Thermal Resistance				0.02	°C/W

NOTES: 1. At rated output power and pulse conditions
2. 74 µs burst, 0.5 µs on, 1.5 µs off, 7.4 ms period, Pin = 125 Watts
3. 128 µs burst, 0.5 µs on/0.5 µs off, 6.4 ms period, Pin = 115 Watts

Rev – Nov 2003

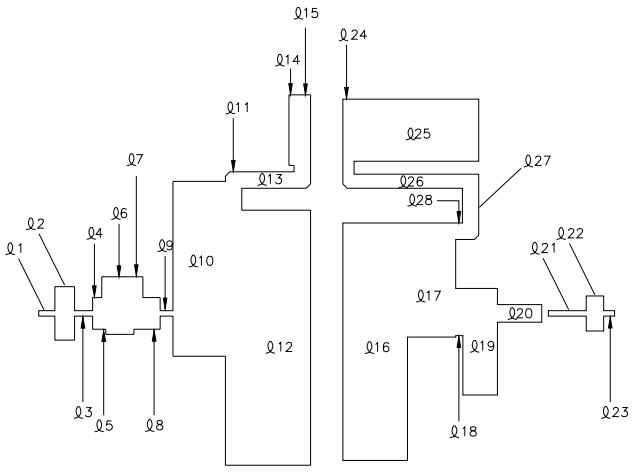


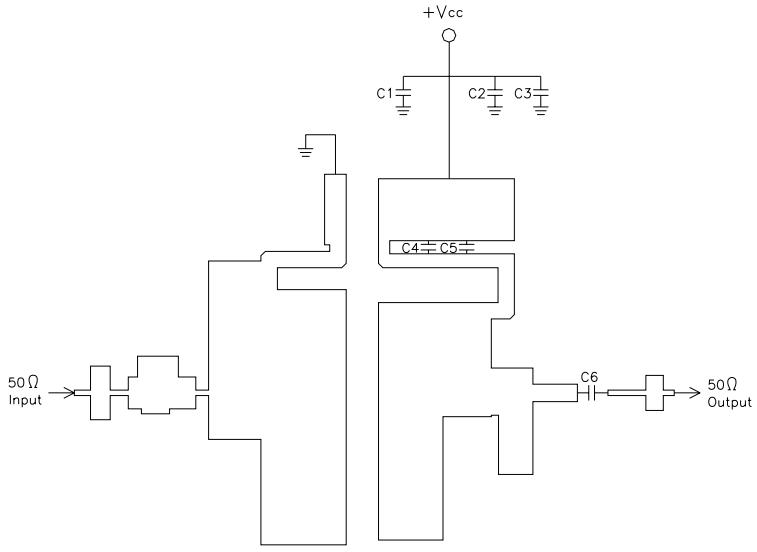




REVISIONS				
ZONE	REV	DESCRIPTION	DATE: 9/23/02	APPROVED

Q NO.	L	W
1	0.074	0.025
2	0.090	0.245
3	0.083	0.025
4	0.421	0.145
5	0.018	0.240
6	0.129	0.263
7	0.041	0.240
8	0.079	0.145
9	0.059	0.025
10	0.240	0.800
11	0.075	1.342
12	0.315	1.167
13	0.240	0.075
14	0.017	0.324
15	0.075	0.428
16	0.296	1.086
17	0.221	0.522
18	0.033	0.216
19	0.158	0.487
20	0.203	0.080
21	0.174	0.025
22	0.080	0.160
23	0.050	0.025
24	0.051	0.408
25	0.571	0.284
26	0.466	0.064
27	0.075	0.298
28	0.031	0.075

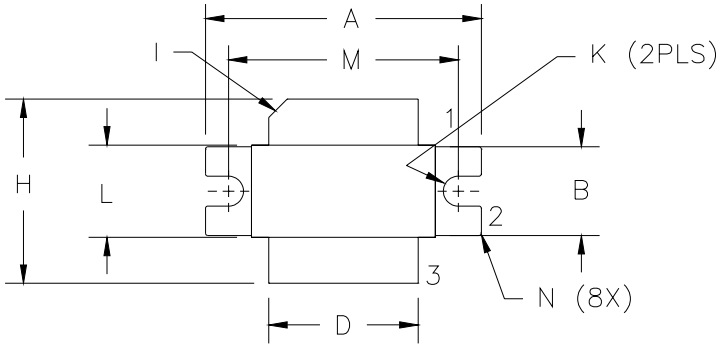


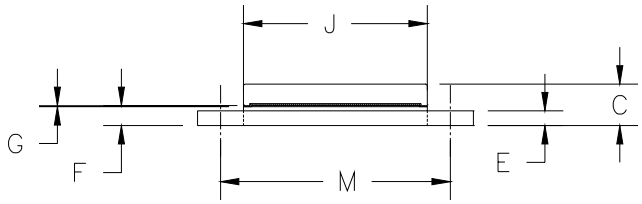


Item	Value	Type
C1	2200uF	Cap. electrlolytic 63v, Sprague
C2	470uF	Cap. electrlolytic 63v, Sprague
C3	100uF	Cap. electrlolytic 63v, Sprague
C4	2.0pF	Cap. Chip, ATC 100B
C5	1.8pf	Cap. Chip, ATC 100B
C6	91pF	Cap. Chip, ATC 100A
Board: Rogers Duroid 6010		
Er=10.2, H=25mils, Cladding=1oz		

CAGE	DWG NO.	REV
0PJR2	MDS1100	
	SCALE 1:1	SHEET

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

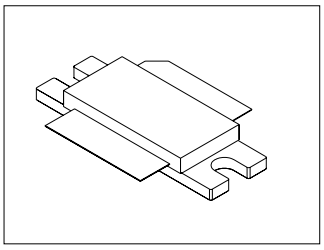




DIM	MILLIMETER	±TOL	INCHES	±TOL
A	30.48	±0.25	1.200	±.010
B	9.78	±0.25	.385	±.010
C	4.58	±0.17	.180	±.007
D	16.51	±0.25	.650	±.010
E	1.64	±0.13	.064	±.005
F	2.20	±0.13	.085	±.005
G	.114	±0.03	.0045	±.0015
H	20.57	±0.51	.810	±.020
I	45°X2.5	.0080°	45°X0.10	.0015°
J	20.32	±0.25	.800	±.010
K	3.30 DIA	±0.13	.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

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

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



GHz TECHNOLOGY	CAGE 0PJR2	DWG NO. 55TU	REV B
		SCALE 1/1	SHEET 1 OF 1