ADVANCED POWER TECHNOLOGY RF®

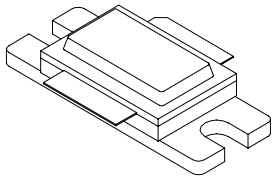
# *MDS800*

## 800 Watts, 50 Volts
## Pulsed Avionics at 1090 MHz

## GENERAL DESCRIPTION

The MDS800 is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems at 1090 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
**55ST-1**
**(Common Base)**



## ABSOLUTE MAXIMUM RATINGS

**Maximum Power Dissipation**

| | | |
|---|---|---|
| Device Dissipation @ 25°C[1] | 1458 | W |

**Maximum Voltage and Current**

| | | |
|---|---|---|
| Collector to Base Voltage ($BV_{ces}$) | 60 | V |
| Emitter to Base Voltage ($BV_{ebo}$) | 3.5 | V |
| Collector Current ($I_c$) | 60 | 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 Output | F = 1090 MHz | 800 | | | W |
| $P_{in}$ | Power Input | $V_{cc}$ = 50 Volts | | | 110 | |
| $P_g$ | Power Gain | Burst width = 128µs | 8.6 | | | dB |
| $\eta_c$ | Collector Efficiency | LTDF = 2% | 40 | | | % |
| $R_L$ | Return Loss | | | | -12 | dB |
| $P_d$ | Power Droop | | | 0.5 | | dB |
| VSWR | Load Mismatch Tolerance[1] | F = 1090 MHz | | | 4.0:1 | |

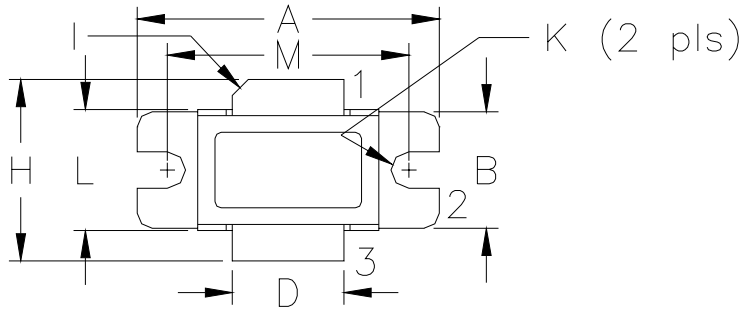
## FUNCTIONAL CHARACTERISTICS @ 25°C

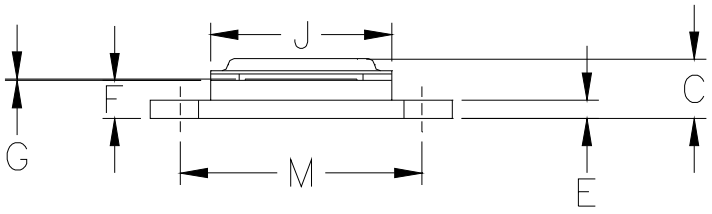
| | | | | | | |
|---|---|---|---|---|---|---|
| $BV_{ebo}$ | Emitter to Base Breakdown | Ie = 30 mA | 3.5 | | | V |
| $BV_{ces}$ | Collector to Emitter Breakdown | Ic = 50 mA | 65 | | | V |
| $h_{FE}$ | DC – Current Gain | Vce = 5V, Ic = 1A | 20 | | | |
| $\theta jc$[1] | Thermal Resistance | | | | 0.12 | °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

Rev. B– Dec 2005

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | REV | DESCRIPTION | DATE | APPROVED |

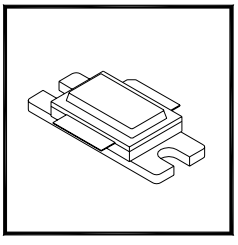



| DIM | MILLIMETER | ±TOL | INCHES | ±TOL |
|---|---|---|---|---|
| A | 25.40 | .25 | 1.000 | .010 |
| B | 9.78 | .25 | .385 | .010 |
| C | 4.00 | .19 | .142 | .007 |
| D | 9.40 | .13 | .370 | .005 |
| E | 1.53 | .13 | .060 | .005 |
| F | 3.18 | .13 | .125 | .005 |
| G | 0.08 | +05/−.00 | .003 | +.002/ −.000 |
| H | 19.05 | 0.51 | .750 | .020 |
| I | 45° | 5° | 45° | 5° |
| J | 15.24 | .25 | .600 | .010 |
| K | 3.05 DIA | .13 | .120 DIA | .005 |
| L | 10.15 | .13 | .400 | .005 |
| M | 20.32 | .25 | .800 | .010 |

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

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



GHz TECHNOLOGY
RF – MICROWAVE SILICON POWER TRANSISTORS

DWG NO. 55ST