

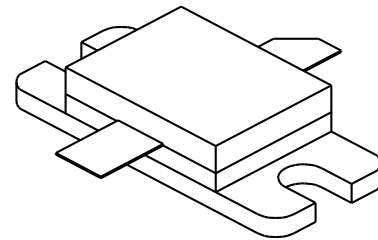
MDS170L

170 Watts, 36 Volts, Pulsed
Avionics 1030/1090 MHz

GENERAL DESCRIPTION

The MDS170L is a high power COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 1030 - 1090 MHz. The transistor includes input and output prematch for broadband performance. The device has gold thin-film metallization and diffused ballasting for proven highest MTTF. Low thermal resistance Solder Sealed Package reduces junction temperature, extends life.

CASE OUTLINE 55KT, STYLE 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C² 350 Watts

Maximum Voltage and Current

BVces Collector to Base Voltage 50 Volts
BVebo Emitter to Base Voltage 3.5 Volts
Ic Collector Current 15 Amps

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 |
|--------|-------------------------|---------------------|-----|-----|------|-------|
| Pout | Power Out | F = 1030 - 1090 MHz | 170 | | | Watts |
| Pin | Power Input | Vcc = 36 Volts | | | 34 | Watts |
| Pg | Power Gain | PW = Note 1 | 7 | | | dB |
| ηc | Collector Efficiency | DF = Note 1 | | 40 | | % |
| VSWR | Load Mismatch Tolerance | F = 1030 MHz | | | 10:1 | |

| | | | | | | |
|------------------|--------------------------------|-----------------------|----|--|-----|-------|
| BVebo | Emitter to Base Breakdown | Ie = 20 mA | | | | Volts |
| BVces | Collector to Emitter Breakdown | Ic = 20 mA | | | | Volts |
| hFE | DC - Current Gain | Ic = 20 mA, Vce = 5 V | 20 | | | |
| θjc ² | Thermal Resistance | | | | 0.5 | °C/W |

Note 1: MODE- S Pulse Burst, 120 μs at 50% Duty, Long term duty = 5%.

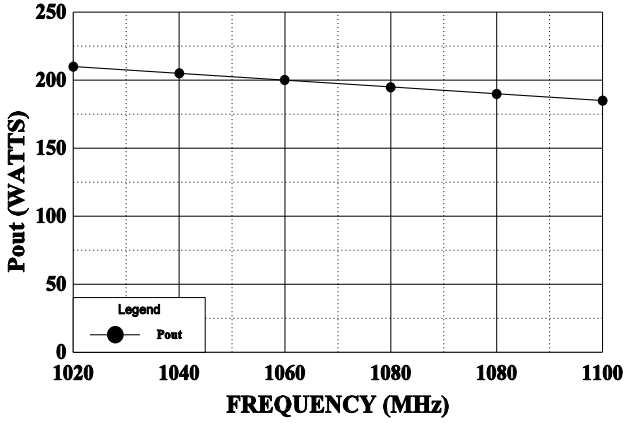
2: At rated pulse conditions

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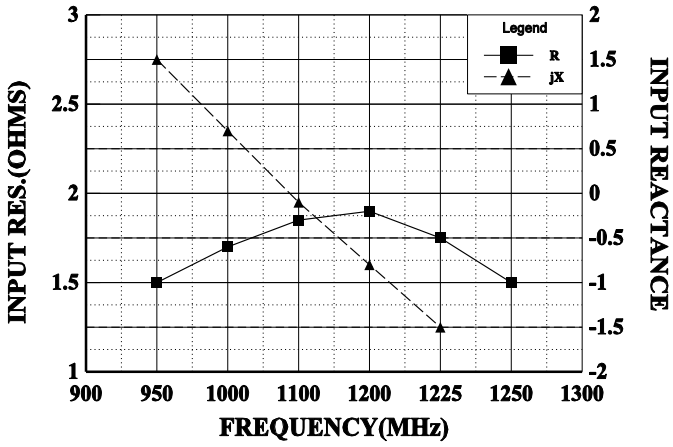
POWER OUTPUT vs FREQUENCY

Vcc = 36 V, Pin = 34 W



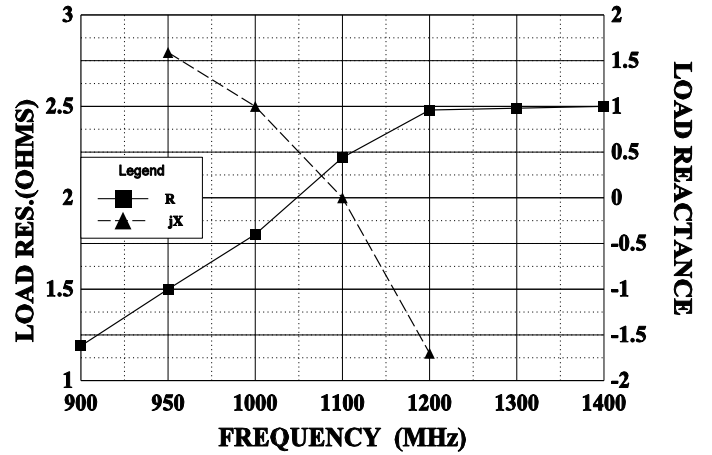
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 36 V, Po = 145 W



SERIES LOAD IMPEDANCE vs FREQUENCY

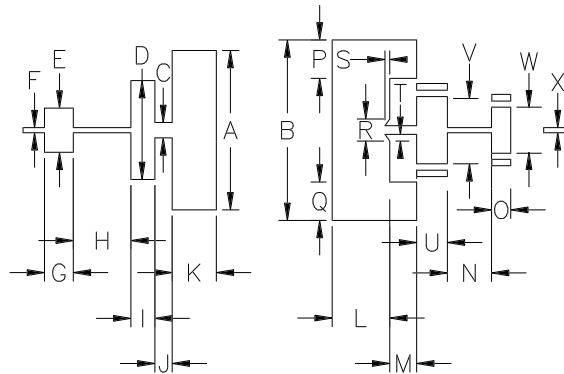
Vcc = 36 V, Po = 145 W



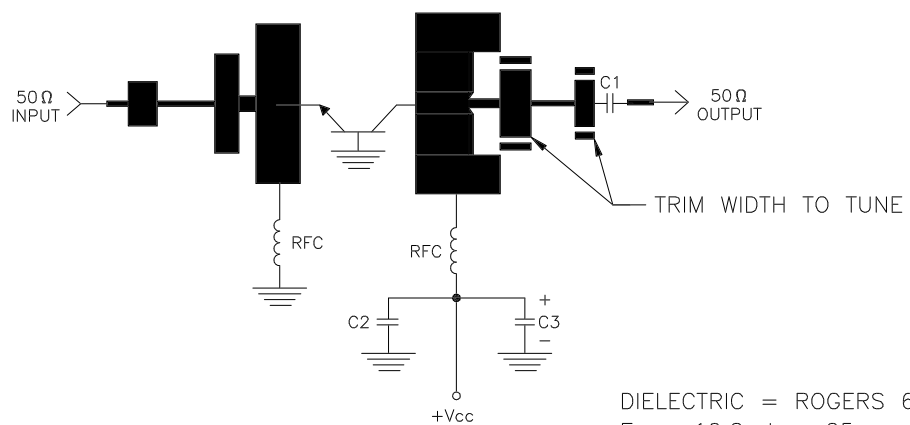
REVISIONS

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

| DIM | INCHES |
|-----|--------|
| A | .830 |
| B | .940 |
| C | .080 |
| D | .515 |
| E | .230 |
| F | .026 |
| G | .150 |
| H | .300 |
| I | .125 |
| J | .090 |
| K | .230 |
| L | .300 |
| M | .140 |
| N | .230 |
| O | .100 |
| P | .200 |
| Q | .200 |
| R | .115 |
| S | .025 |
| T | .035 |
| U | .160 |
| V | .350 |
| W | .240 |
| X | .026 |



MDS170L TEST CIRCUIT



DIELECTRIC = ROGERS 6010
 Er = 10.2, t = 25
 C1, C2 = 82pF CHIP ATC "A"
 C3 = 1000 MFD @ 50V
 RFC = 5 turns #22 wire 1/16" I.D.



| | | | | |
|-------|---------|----------|-------|---|
| CAGE | DWG NO. | MDS 170L | REV | A |
| OPJR2 | SCALE | 1/1 | SHEET | |