

**GENERAL DESCRIPTION**

The 0510-10 is a common emitter silicon power transistor providing 10 watts of CW power across a 500-1000 frequency band. Gold metallization and emitter ballasting provide for high reliability and ruggedness. The 0510-10 can be operated Class C, AB or at the 2 watt level of Class A.

**0510-10**  
**10 WATTS - 28 VOLTS**  
**500-1000 MHz**

**UHF COMMUNICATIONS**

**ABSOLUTE MAXIMUM RATINGS**

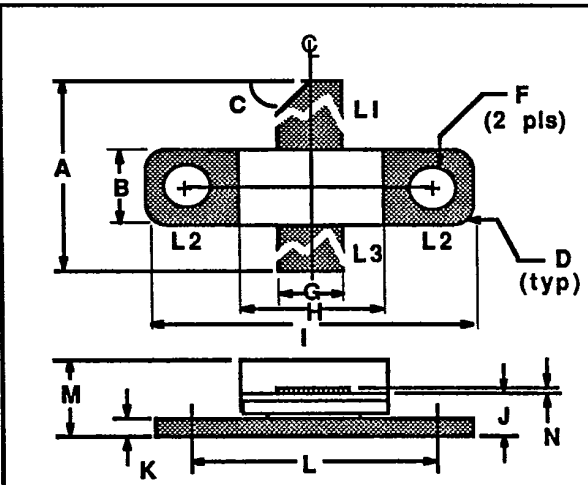
Maximum Power Dissipation @ 25 C Case Temperature **30 W**

**Maximum Voltage and Current**

BVces Collector to Emitter Voltage **50 V**  
 BVebo Emitter to Base Voltage **4.0 V**  
 Ic Collector Current **1.0 A**

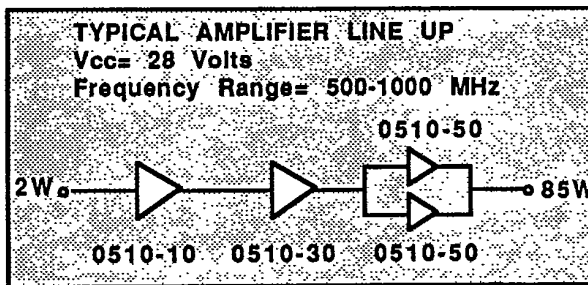
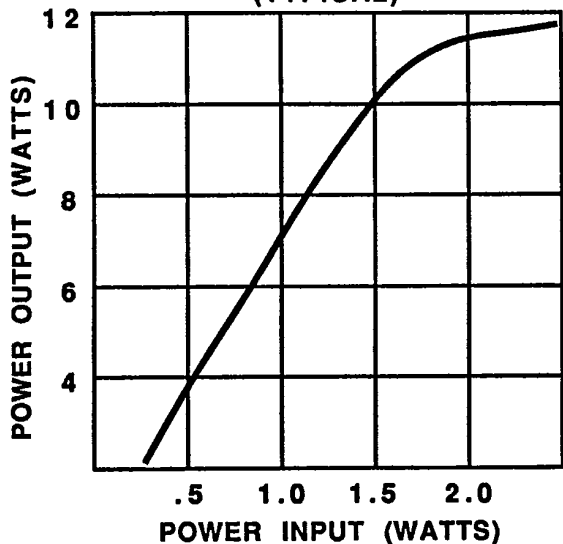
**Maximum Temperatures**

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



| DIM    | Millimeter | TOL      | Inches | TOL      |      |
|--------|------------|----------|--------|----------|------|
| L1 : G | A          | 17.78    | .76    | .70      | .03  |
| L2 : S | B          | 5.84     | .13    | .230     | .005 |
| L3 : D | C          | 45°      | 5°     | 45°      | 5°   |
|        | D          | 0.63R    | .13    | .025R    | .005 |
|        | E          | 0.13     | .02    | .005     | .001 |
|        | F          | 3.30 DIA | .13    | .130 DIA | .005 |
|        | G          | 5.46     | .13    | .215     | .005 |
|        | H          | 9.14     | .13    | .360     | .005 |
|        | I          | 20.32    | .13    | .800     | .005 |
|        | J          | 3.17     | .13    | .125     | .005 |
|        | K          | 1.14     | .13    | .045     | .010 |
|        | L          | 14.22    | .13    | .560     | .005 |
|        | M          | 5.46     | REF    | .215     | REF  |

**POWER OUTPUT VS POWER INPUT (TYPICAL)**

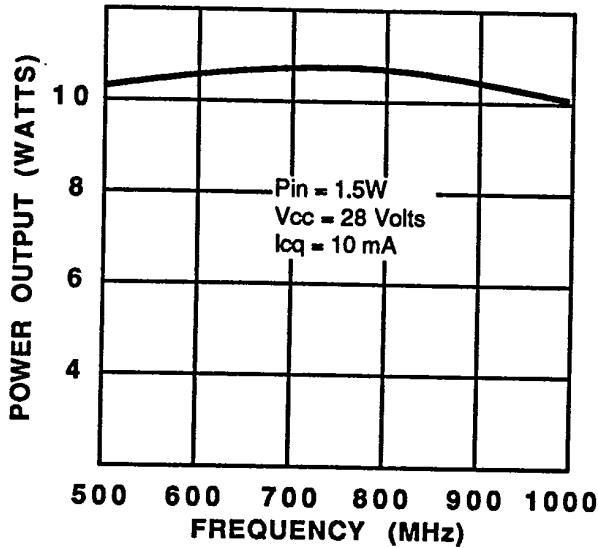


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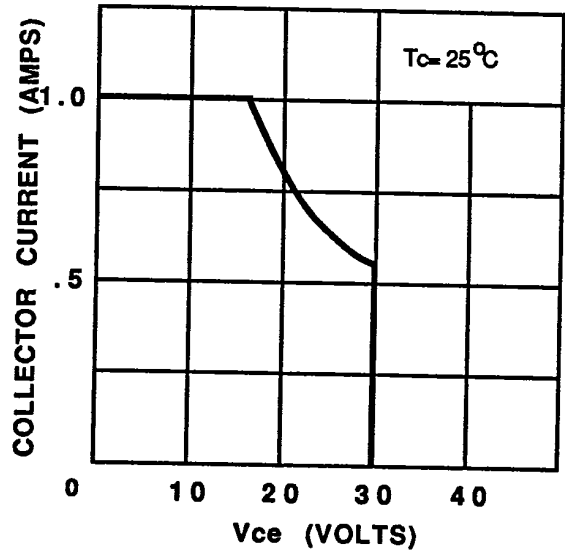
**ELECTRICAL CHARACTERISTICS**

| SYMBOL            | CHARACTERISTICS                          | TEST CONDITIONS   | MIN. | TYP. | MAX. | UNITS |
|-------------------|--|---|------|------|------|-------|
| P <sub>out</sub>  | Power Output (Class AB)                  | f = 1000 MHz<br>V <sub>cc</sub> = 28 V<br>I <sub>cq</sub> = 10 mA | 10   |      |      | Watts |
| P <sub>in</sub>   | Power Input                              |   |      |      | 1.5  | Watts |
| I <sub>c</sub>    | Collector Current                        |   |      |      | 0.8  | Amps  |
| η <sub>c</sub>    | Collector Efficiency                     |   |      | 50   |      | %     |
| VSWR              | Load Mismatch Tolerance                  | At Rated Power Out  |      |      | 3:1  |       |
| BV <sub>ebo</sub> | Breakdown Voltage (Emitter to Base)      | I <sub>c</sub> = 0, I <sub>e</sub> = 5 mA                         | 4.0  |      |      | Volts |
| BV <sub>ces</sub> | Breakdown Voltage (Collector to Emitter) | V <sub>be</sub> = 0, I <sub>c</sub> = 50 mA                       | 50   |      |      | Volts |
| BV <sub>ceo</sub> | Breakdown Voltage (Collector to Emitter) | I <sub>b</sub> = 0, I <sub>c</sub> = 50 mA                        | 29   |      |      | Volts |
| C <sub>ob</sub>   | Capacitance-Collector to Base            | f = 1 MHz, V <sub>cb</sub> = 28 V                                 |      | 11   |      | pF    |
| h <sub>FE</sub>   | DC-Current Gain                          | V <sub>c</sub> = 5 V, I <sub>c</sub> = 200 mA                     | 10   |      |      |       |
| θ <sub>jc</sub>   | Thermal Resistance                       | T <sub>c</sub> = 25 °C  |      |      | 6.0  | °C/W  |

**POWER OUTPUT VS FREQUENCY (TYPICAL)**



**DC SAFE OPERATING AREA (TYPICAL)**

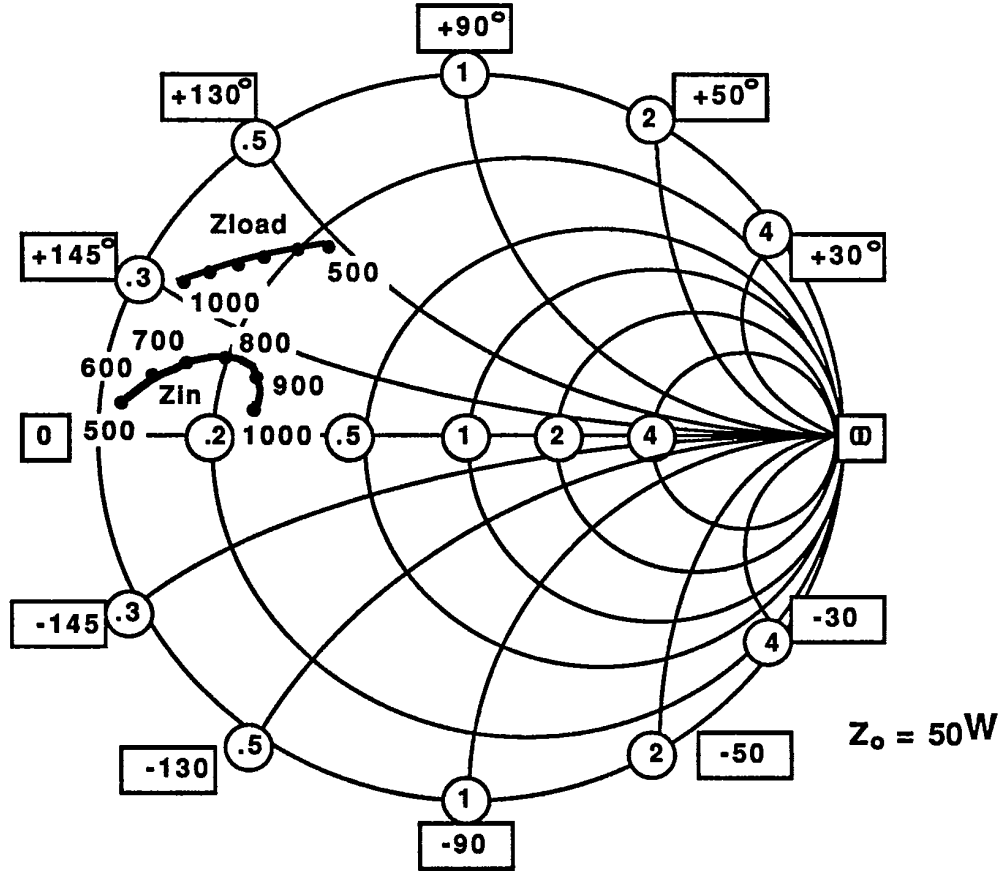


SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE

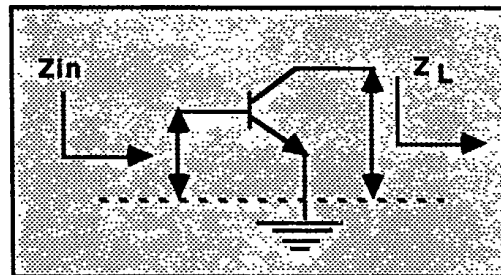
2/16

**SMITH CHART**  
**0510-10**

NORMALIZED IMPEDANCE AND ADMITTANCE COORDINATES



Typical series input and output impedances at rated power output conditions for single side normalized to 50 ohms.



| FREQUENCY<br>MHz | R    | Zin<br>JX | FREQUENCY<br>MHz | R    | Zload<br>JX |
|------------------|------|-----------|------------------|------|-------------|
| 500              | 4.0  | +3.8      | 500              | 13.2 | +23.3       |
| 600              | 5.8  | +4.9      | 600              | 11.8 | +21.1       |
| 700              | 7.9  | +5.8      | 700              | 10.0 | +18.9       |
| 800              | 9.6  | +5.5      | 800              | 8.5  | +16.3       |
| 900              | 10.8 | +4.8      | 900              | 7.0  | +14.4       |
| 1000             | 10.6 | +3.0      | 1000             | 5.2  | +12.0       |

Q17