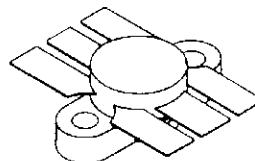


## RF & MICROWAVE TRANSISTORS VHF APPLICATIONS

- 136 - 175 MHz
- 28 VOLTS
- EFFICIENCY 55%
- COMMON EMITTER
- GOLD METALLIZATION
- INTERNAL INPUT MATCHING
- $P_{OUT} = 125 \text{ W MIN. WITH } 9.2 \text{ dB GAIN}$



**.500 6LFL (M111)**  
epoxy sealed

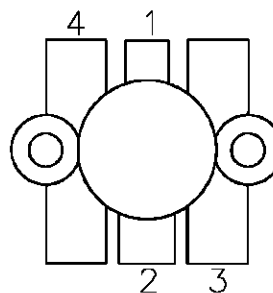
**ORDER CODE**  
SD1480

**BRANDING**  
SD1480

### DESCRIPTION

The SD1480 is a common emitter 28 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications applications. This internally matched device incorporates diffused emitter ballasting resistors and provides high gain and stable operation across the entire 136 - 175 MHz VHF communications band.

### PIN CONNECTION



- |              |            |
|--------------|------------|
| 1. Collector | 3. Emitter |
| 2. Base      | 4. Emitter |

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}\text{C}$ )

| Symbol     | Parameter                 | Value        | Unit               |
|------------|---------------------------|--------------|--------------------|
| $V_{CBO}$  | Collector-Base Voltage    | 65           | V                  |
| $V_{CEO}$  | Collector-Emitter Voltage | 36           | V                  |
| $V_{CES}$  | Collector-Emitter Voltage | 65           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0          | V                  |
| $I_C$      | Device Current            | 20           | A                  |
| $P_{DISS}$ | Power Dissipation         | 270          | W                  |
| $T_J$      | Junction Temperature      | +200         | $^{\circ}\text{C}$ |
| $T_{STG}$  | Storage Temperature       | - 65 to +150 | $^{\circ}\text{C}$ |

### THERMAL DATA

|               |                                  |      |                      |
|---------------|----------------------------------|------|----------------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 0.65 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|------|----------------------|

## SD1480

### ELECTRICAL SPECIFICATIONS ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

#### STATIC

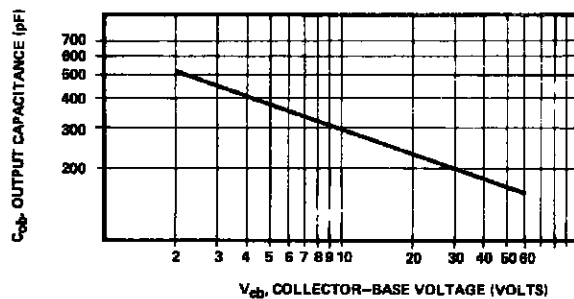
| Symbol     | Test Conditions         |                        | Value |      |      | Unit |
|------------|-------------------------|------------------------|-------|------|------|------|
|            |                         |                        | Min.  | Typ. | Max. |      |
| $BV_{CBO}$ | $I_C = 100 \text{ mA}$  | $I_E = 0 \text{ mA}$   | 65    | —    | —    | V    |
| $BV_{CES}$ | $I_C = 100 \text{ mA}$  | $V_{BE} = 0 \text{ V}$ | 65    | —    | —    | V    |
| $BV_{CEO}$ | $I_C = 100 \text{ mA}$  | $I_B = 0 \text{ mA}$   | 35    | —    | —    | V    |
| $BV_{EBO}$ | $I_E = 10 \text{ mA}$   | $I_C = 0 \text{ mA}$   | 4.0   | —    | —    | V    |
| $I_{CES}$  | $V_{CE} = 30 \text{ V}$ | $I_E = 0 \text{ mA}$   | —     | —    | 15   | mA   |
| $h_{FE}$   | $V_{CE} = 5 \text{ V}$  | $I_C = 5 \text{ A}$    | 20    | —    | 200  | —    |

#### DYNAMIC

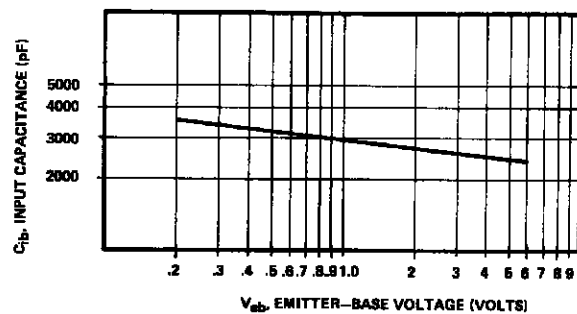
| Symbol        | Test Conditions       |                           |                         | Value |      |      | Unit |
|---------------|-----------------------|---------------------------|-------------------------|-------|------|------|------|
|               |                       |                           |                         | Min.  | Typ. | Max. |      |
| $P_{OUT}$     | $f = 150 \text{ MHz}$ | $P_{IN} = 15 \text{ W}$   | $V_{CE} = 28 \text{ V}$ | 125   | —    | —    | W    |
| $P_G$         | $f = 150 \text{ MHz}$ | $P_{OUT} = 125 \text{ W}$ | $V_{CE} = 28 \text{ V}$ | 9.2   | —    | —    | dB   |
| $\eta_c$      | $f = 150 \text{ MHz}$ | $P_{OUT} = 125 \text{ W}$ | $V_{CE} = 28 \text{ V}$ | 55    | —    | —    | %    |
| $C_{OB}$      | $f = 1 \text{ MHz}$   | $V_{CB} = 28 \text{ V}$   |                         | —     | —    | 250  | pF   |
| Load Mismatch | $f = 150 \text{ MHz}$ | $P_{IN} = 15 \text{ W}$   | $V_{CE} = 28 \text{ V}$ | 20:1  | —    | —    | VSWR |

#### TYPICAL PERFORMANCE

OUTPUT CAPACITANCE vs COLLECTOR BASE VOLTAGE

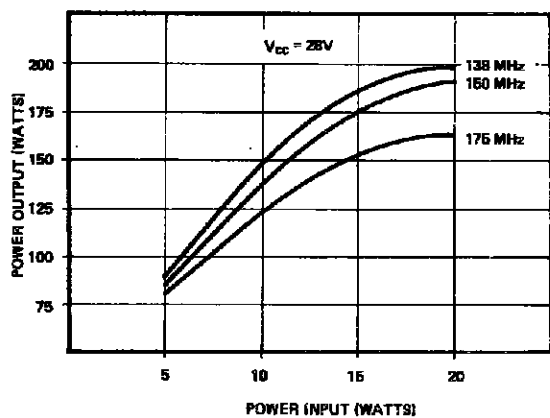


INPUT CAPACITANCE vs EMITTER BASE VOLTAGE

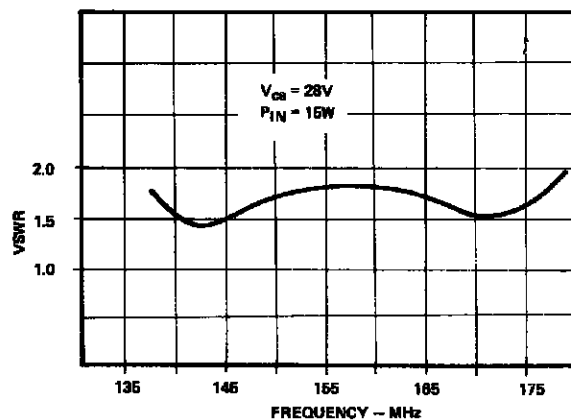


## TYPICAL PERFORMANCE (cont'd)

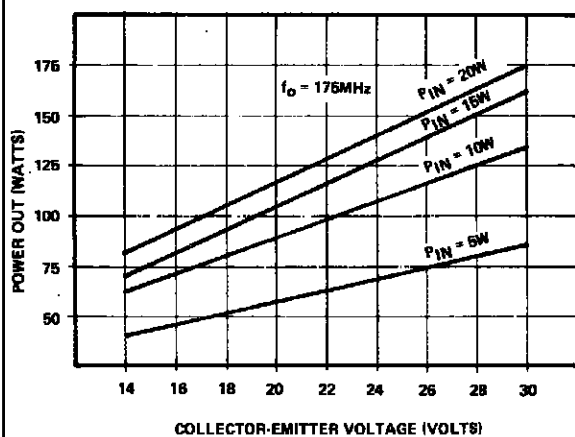
POWER OUTPUT vs POWER INPUT



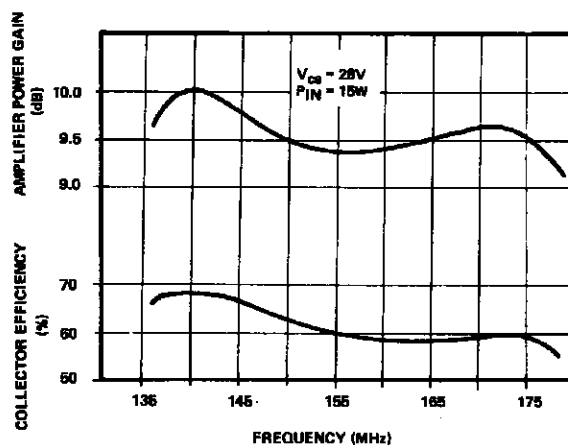
INPUT VSWR vs FREQUENCY



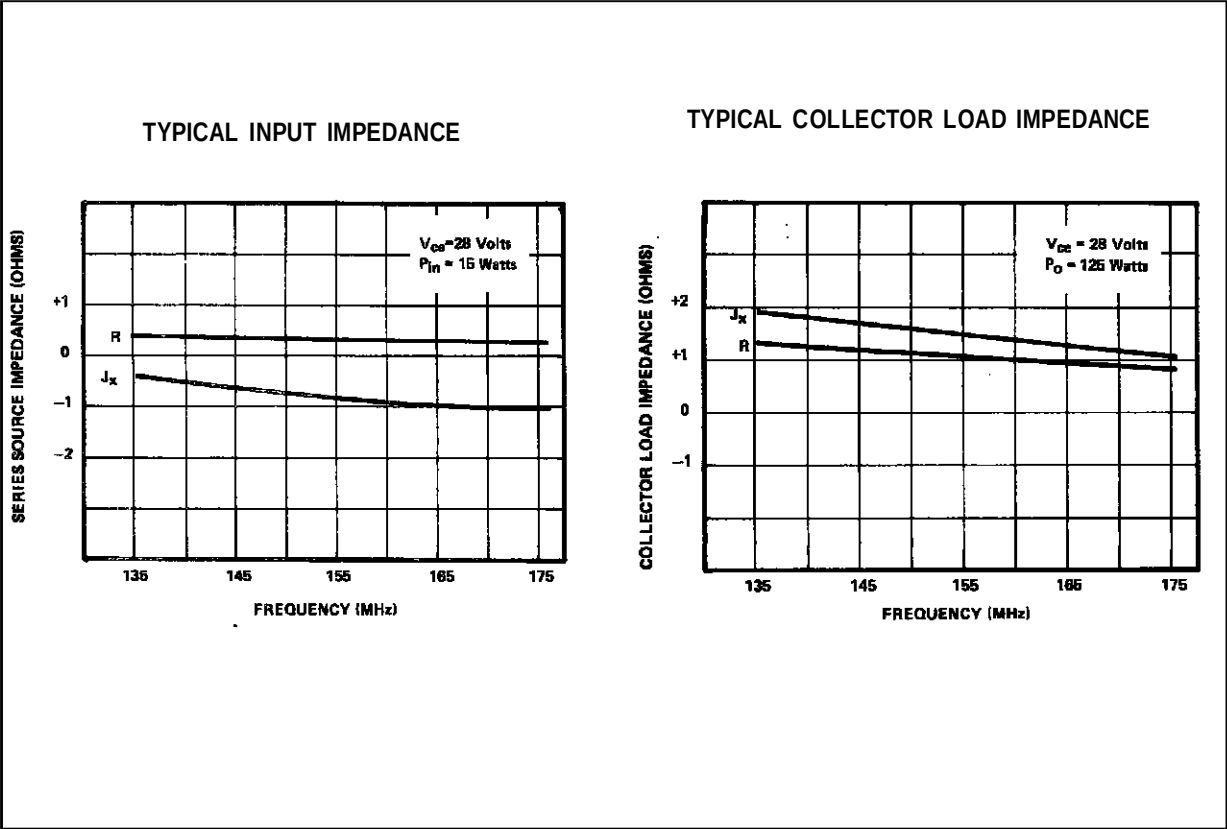
POWER OUTPUT vs COLLECTOR EMITTER VOLTAGE



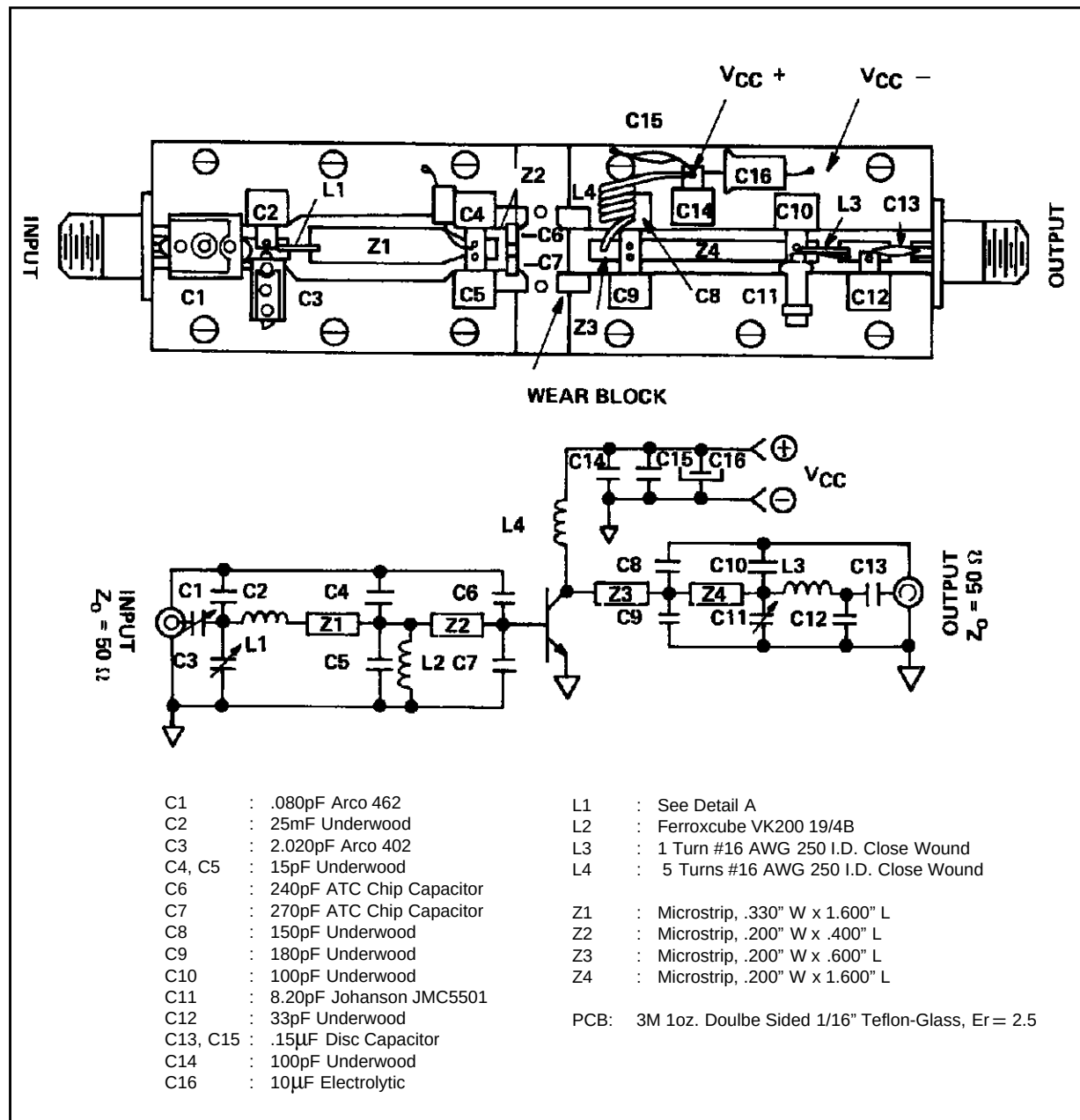
POWER GAIN &amp; COLLECTOR EFFICIENCY vs FREQUENCY



IMPEDANCE DATA

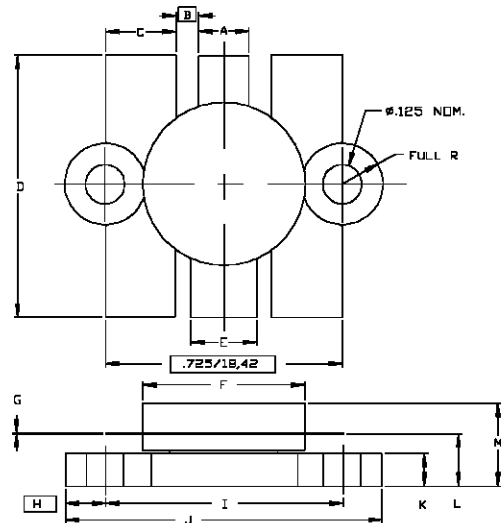


## TEST CIRCUIT



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0111 rev. D



| SGS-THOMSON MICROELECTRONICS |                      |                      | CONT'D |                      |                      |
|------------------------------|----------------------|----------------------|--------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |        | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .150/3.43            | .160/4.06            | K      | .095/2.41            | .105/2.67            |
| B                            | .045/1.14            |                      | L      | .160/4.06            | .180/4.58            |
| C                            | .210/5.33            | .220/5.59            | M      | .285/7.24            |                      |
| D                            | .835/21.21           | .865/21.97           |        |                      |                      |
| E                            | .200/5.08            | .210/5.33            |        |                      |                      |
| F                            | .490/12.45           | .510/12.95           |        |                      |                      |
| G                            | .003/0.08            | .007/0.19            |        |                      |                      |
| H                            | .125/3.18            |                      |        |                      |                      |
| I                            | .720/18.29           | .730/18.54           |        |                      |                      |
| J                            | .970/24.64           | .980/24.89           |        |                      |                      |

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