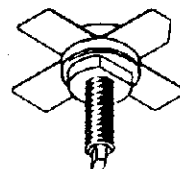


## RF & MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS

- 160 MHz
- 13.6 VOLTS
- COMMON EMITTER
- $P_{OUT} = 40 \text{ W MIN. WITH } 9.0 \text{ dB GAIN}$

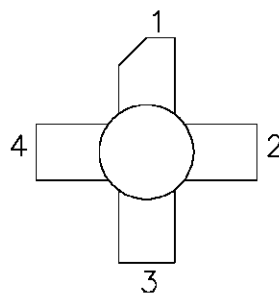


**.380 4L STUD (M135)**  
epoxy sealed

**ORDER CODE**  
SD1275

**BRANDING**  
SD1275

### PIN CONNECTION



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

### DESCRIPTION

The SD1275 is a 13.6 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications. The SD1275 utilizes an emitter ballasted die geometry to withstand severe load mismatch conditions.

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

| Symbol     | Parameter                 | Value        | Unit               |
|------------|---------------------------|--------------|--------------------|
| $V_{CBO}$  | Collector-Base Voltage    | 36           | V                  |
| $V_{CEO}$  | Collector-Emitter Voltage | 16           | V                  |
| $V_{CES}$  | Collector-Emitter Voltage | 36           | V                  |
| $V_{EBO}$  | Emitter-Base Voltage      | 4.0          | V                  |
| $I_C$      | Device Current            | 8.0          | A                  |
| $P_{DISS}$ | Power Dissipation         | 70           | 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 | 1.2 | $^{\circ}\text{C/W}$ |
|---------------|----------------------------------|-----|----------------------|

## SD1275

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

#### STATIC

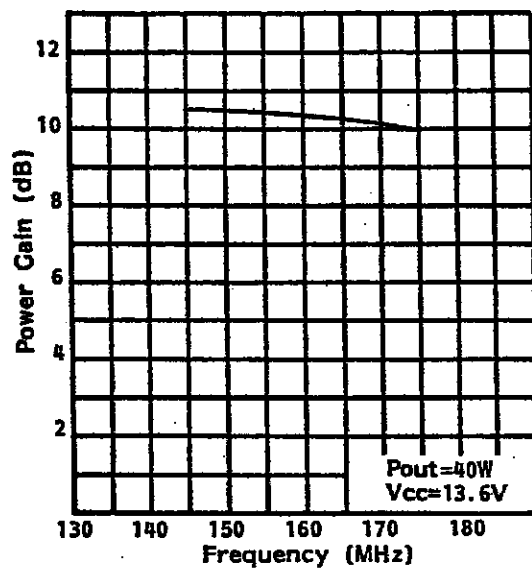
| Symbol            | Test Conditions                                           | Value |      |      | Unit |
|-------------------|-----------------------------------------------------------|-------|------|------|------|
|                   |                                                           | Min.  | Typ. | Max. |      |
| $BV_{\text{CES}}$ | $I_{\text{C}} = 15\text{mA}$ $V_{\text{BE}} = 0\text{mA}$ | 36    | —    | —    | V    |
| $BV_{\text{CEO}}$ | $I_{\text{C}} = 50\text{mA}$ $I_{\text{B}} = 0\text{mA}$  | 16    | —    | —    | V    |
| $BV_{\text{EBO}}$ | $I_{\text{E}} = 5\text{mA}$ $I_{\text{C}} = 0\text{mA}$   | 4.0   | —    | —    | V    |
| $I_{\text{CBO}}$  | $V_{\text{CB}} = 15\text{V}$ $I_{\text{E}} = 0\text{mA}$  | —     | —    | 5    | mA   |
| $h_{\text{FE}}$   | $V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 250\text{mA}$ | 20    | —    | —    | —    |

#### DYNAMIC

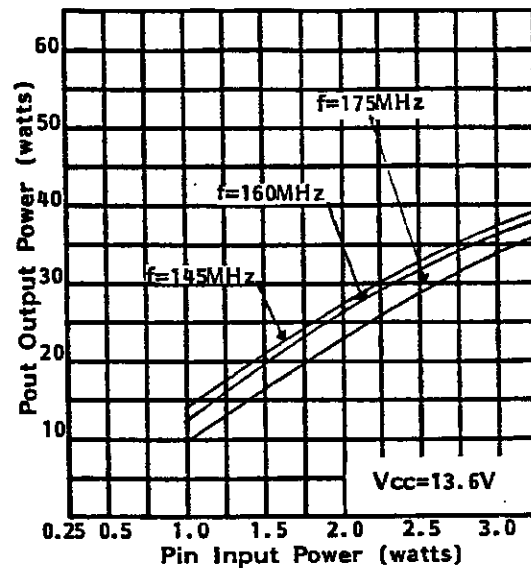
| Symbol           | Test Conditions                                                                     | Value |      |      | Unit |
|------------------|-------------------------------------------------------------------------------------|-------|------|------|------|
|                  |                                                                                     | Min.  | Typ. | Max. |      |
| $P_{\text{OUT}}$ | $f = 160\text{ MHz}$ $P_{\text{IN}} = 5.0\text{ W}$ $V_{\text{CE}} = 13.6\text{ V}$ | 40    | —    | —    | W    |
| $G_{\text{P}}$   | $f = 160\text{ MHz}$ $P_{\text{IN}} = 5.0\text{ W}$ $V_{\text{CE}} = 13.6\text{ V}$ | 9     | —    | —    | dB   |
| $C_{\text{OB}}$  | $f = 1\text{ MHz}$ $V_{\text{CB}} = 15\text{ V}$                                    | —     | 95   | —    | pF   |

#### TYPICAL PERFORMANCE

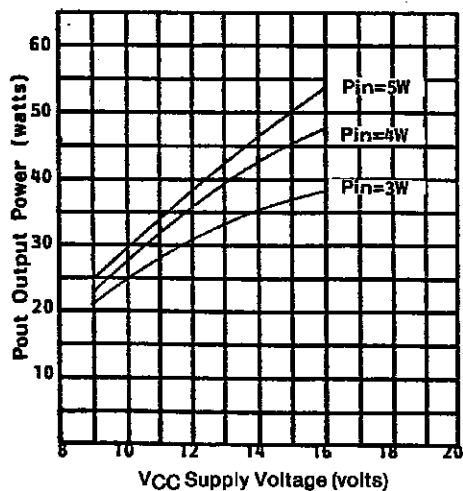
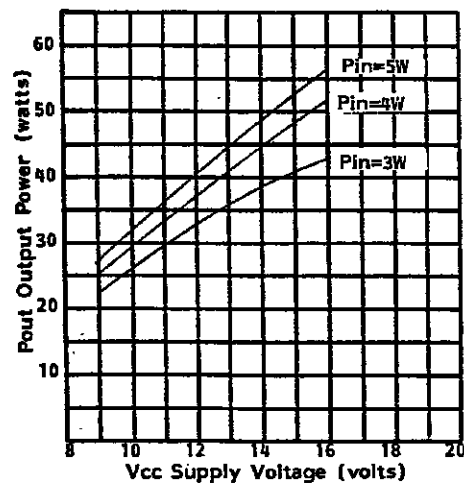
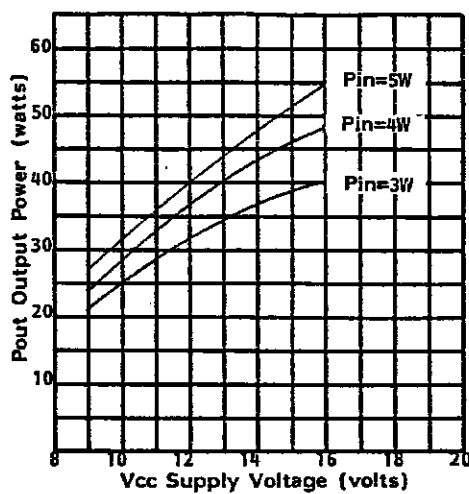
POWER GAIN vs FREQUENCY



POWER OUTPUT vs POWER INPUT



## TYPICAL PERFORMANCE (cont'd)

POWER OUTPUT vs SUPPLY VOLTAGE  
(175 MHz)POWER OUTPUT vs SUPPLY VOLTAGE  
(145 MHz)POWER OUTPUT vs SUPPLY VOLTAGE  
(160 MHz)

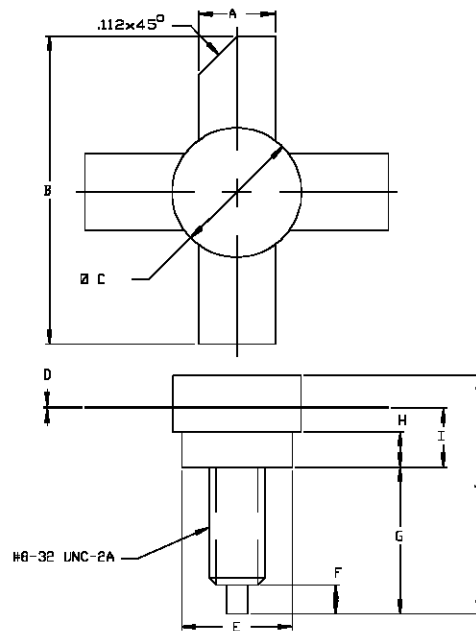
## IMPEDANCE DATA

| FREQ.   | Z <sub>IN</sub> (Ω) | Z <sub>CL</sub> (Ω) |
|---------|---------------------|---------------------|
| 160 MHz | 1.0 + j 0.4         | 2.3 + j 0.1         |

P<sub>IN</sub> = 3.0 WV<sub>CE</sub> = 12.5 V

## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0135



| SGS-THOMSON MICROELECTRONICS |                      |                      |
|------------------------------|----------------------|----------------------|
|                              | MINIMUM<br>Inches/mm | MAXIMUM<br>Inches/mm |
| A                            | .220/5,59            | .230/5,84            |
| B                            | .980/24,89           |                      |
| C                            | .370/9,40            | .385/9,78            |
| D                            | .004/0,10            | .007/0,18            |
| E                            | .320/8,13            | .330/8,38            |
| F                            | .100/2,54            | .130/3,30            |
| G                            | .450/11,43           | .490/12,45           |
| H                            | .090/2,29            | .100/2,54            |
| I                            | .155/3,94            | .175/4,45            |
| J                            |                      | .750/19,05           |

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