



SD1274-01

RF POWER BIPOLAR TRANSISTORS VHF MOBILE APPLICATIONS

FEATURES SUMMARY

- 160 MHz
- 13.6 VOLTS
- COMMON EMITTER
- $P_{OUT} = 30 \text{ W MIN. WITH } 10 \text{ dB GAIN}$

DESCRIPTION

The SD1274-01 is a 13.6 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications. The SD1274-01 utilizes an emitter ballasted die geometry to withstand severe load mismatch conditions.

Figure 1. Package

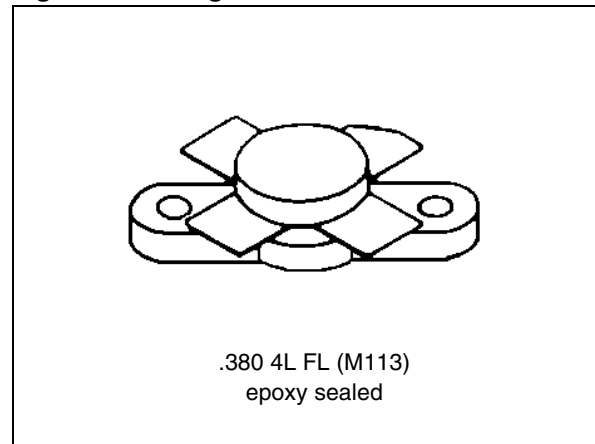


Figure 2. Pin Connection

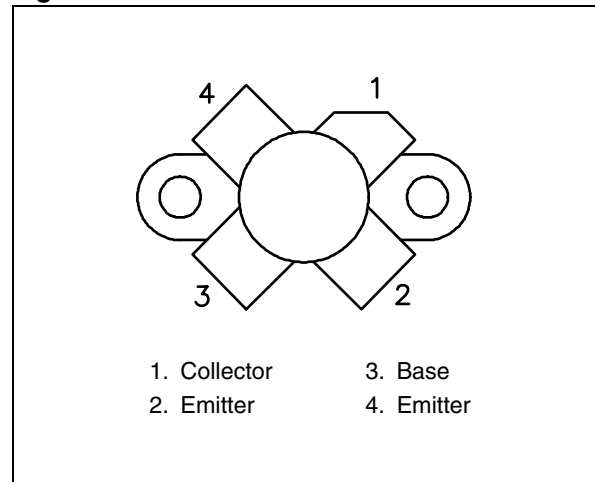


Table 1. Order Codes

| Order Codes | Marking | Package | Packaging |
|-------------|-----------|---------|---------------|
| SD1274-01 | SD1274-01 | M113 | PLASTIC TRAYS |

Table 2. Absolute Maximum Ratings ($T_{case} = 25^{\circ}C$)

| 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 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | - 65 to +150 | $^{\circ}C$ |

Table 3. Thermal Data

| Symbol | Parameter | Value | Unit |
|---------------|----------------------------------|-------|---------------|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 1.2 | $^{\circ}C/W$ |

ELECTRICAL SPECIFICATIONS ($T_{CASE} = 25^{\circ}C$)**Table 4. Static**

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

Table 5. Dynamic

| Symbol | Test Conditions | Value | | | Unit |
|-----------|---|-------|------|------|------|
| | | Min. | Typ. | Max. | |
| P_{OUT} | $f = 160\text{ MHz}; P_{IN} = 3.0\text{ W}; V_{CE} = 13.6\text{ V}$ | 30 | — | — | W |
| G_P | $f = 160\text{ MHz}; P_{IN} = 3.0\text{ W}; V_{CE} = 13.6\text{ V}$ | 10 | — | — | dB |
| C_{OB} | $f = 1\text{ MHz}; V_{CB} = 15\text{ V}$ | — | 95 | — | pF |

TYPICAL PERFORMANCE

Figure 3. Power Output vs Supply Voltage (136 MHz)

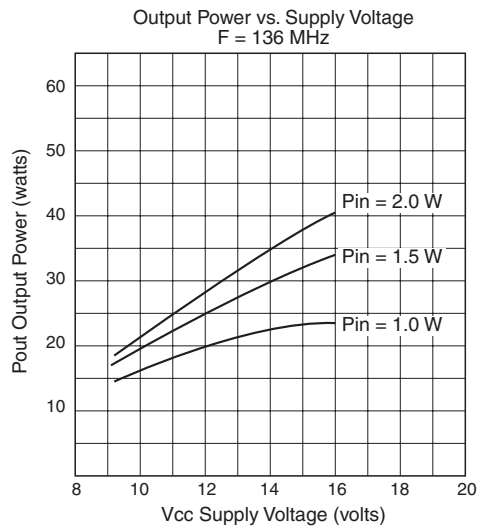


Figure 4. Power Output vs Supply Voltage (150 MHz)

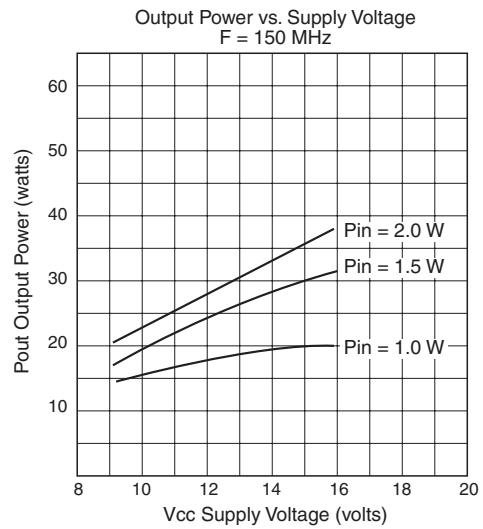


Figure 5. Power Output vs Supply Voltage (175 MHz)

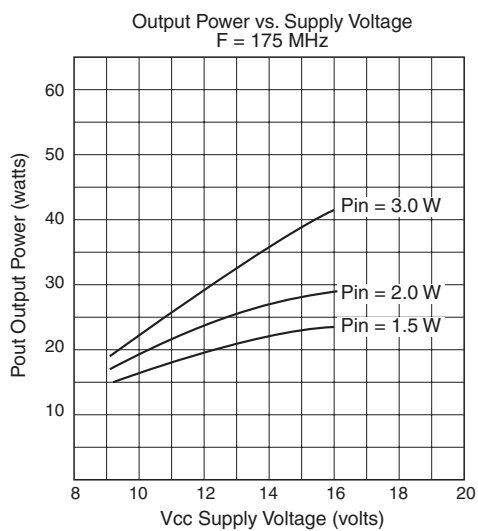


Figure 6. Power Gain vs Frequency

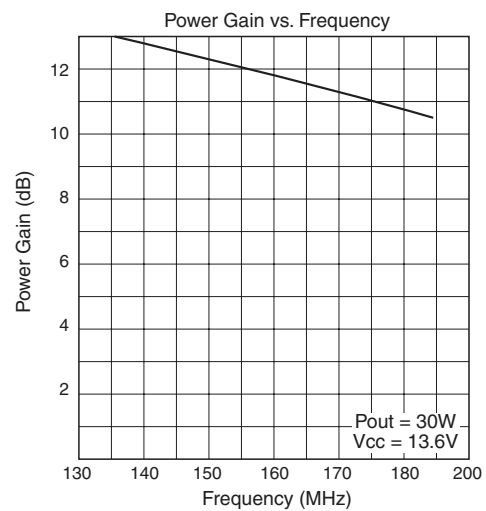
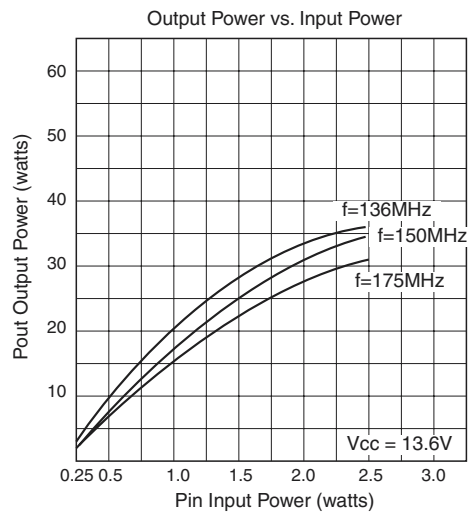


Figure 7. Power Output vs Power Input

Table 6. Impedance Data ⁽¹⁾

| FREQ. | Z _{IN} (Ω) | Z _{CL} (Ω) |
|---------|---------------------|---------------------|
| 175 MHz | 1.0 + j 0.4 | 2.3 + j 0.1 |

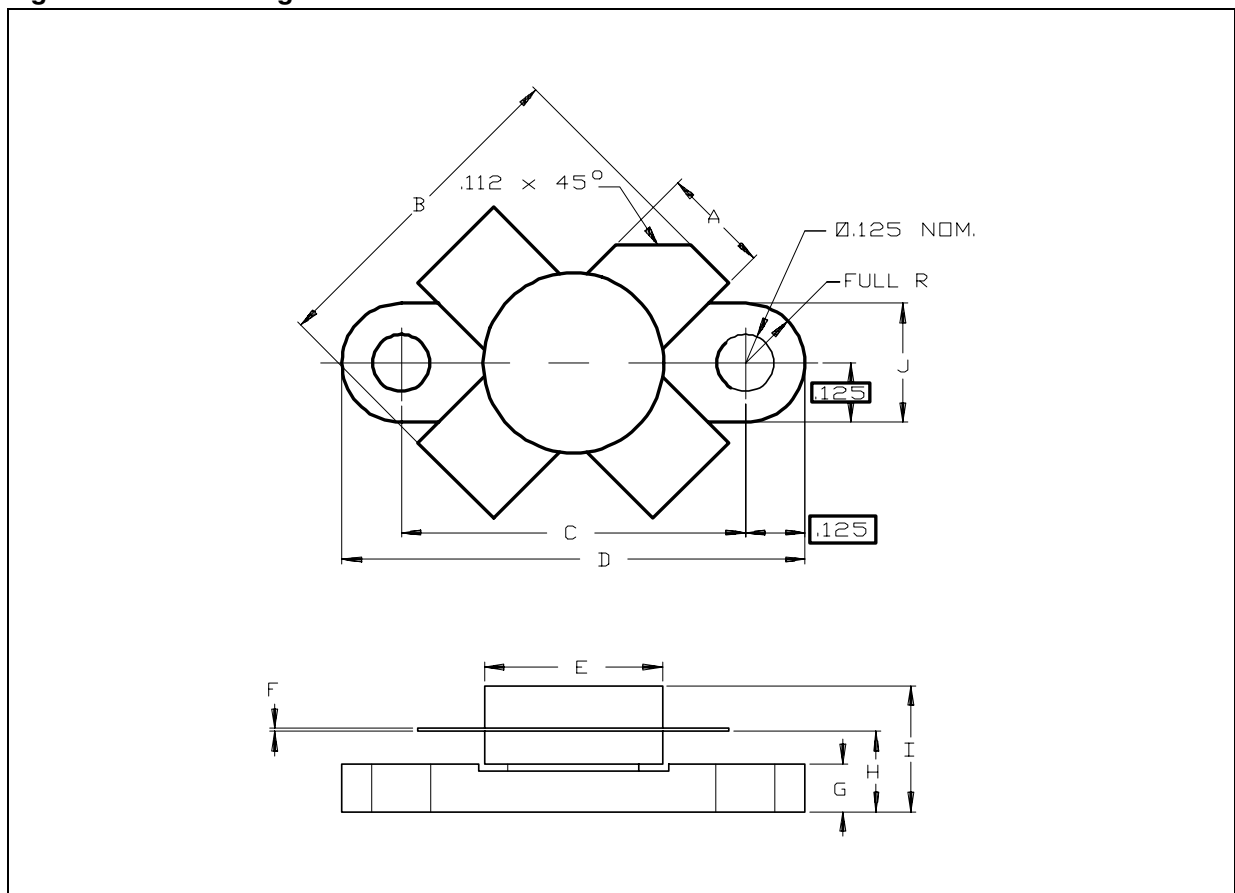
Note: 1. P_{IN} = 3.0 W; V_{CE} = 12.5 V

PACKAGE MECHANICAL

Table 7. M113 Mechanical Data

| Symbol | millimeters | | | inches | | |
|--------|-------------|-----|-------|--------|-----|-------|
| | Min | Typ | Max | Min | Typ | Max |
| A | 5.59 | | 5.84 | 0.220 | | 0.230 |
| B | 19.94 | | | 0.785 | | |
| C | 18.29 | | 18.54 | 0.720 | | 0.730 |
| D | 24.64 | | 24.89 | 0.970 | | 0.980 |
| E | | | 9.78 | | | 0.385 |
| F | 0.10 | | 0.15 | 0.004 | | 0.006 |
| G | 2.16 | | 2.67 | 0.085 | | 0.105 |
| H | 4.06 | | 4.57 | 0.160 | | 0.180 |
| I | | | 7.11 | | | 0.280 |
| J | 6.10 | | 6.48 | 0.240 | | 0.255 |

Figure 8. M113 Package Dimensions



Note: Drawing is not to scale.

REVISION HISTORY

Table 8. Revision History

| Date | Revision | Description of Changes |
|-------------|-----------------|---------------------------------------|
| June-1993 | 1 | First Issue |
| 24-May-2004 | 2 | Stylesheet update. No content change. |

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