



# SD1274

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

Figure 1. Package

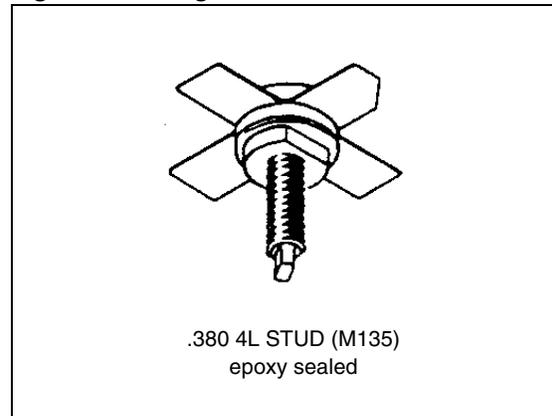


Figure 2. Pin Connection

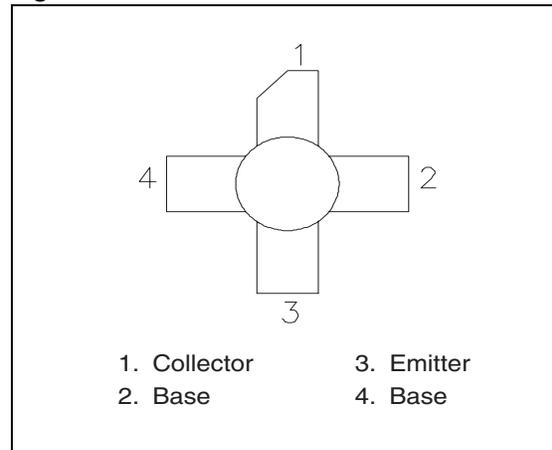


Table 1. Order Codes

Order Codes	Marking	Package	Packaging
SD1274	SD1274	M135	BLACK CARDBOARDS

**Table 2. Absolute Maximum Ratings (T<sub>case</sub> = 25°C)**

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	36	V
V <sub>CEO</sub>	Collector-Emitter Voltage	16	V
V <sub>CES</sub>	Collector-Emitter Voltage	36	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.0	V
I <sub>C</sub>	Device Current	8.0	A
P <sub>DISS</sub>	Power Dissipation	70	W
T <sub>J</sub>	Junction Temperature	+200	°C
T <sub>STG</sub>	Storage Temperature	- 65 to +150	°C

**Table 3. Thermal Data**

Symbol	Parameter	Value	Unit
R <sub>TH(j-c)</sub>	Junction-Case Thermal Resistance	1.2	°C/W

**ELECTRICAL SPECIFICATIONS (T<sub>CASE</sub> = 25°C)****Table 4. Static**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV <sub>CES</sub>	I <sub>C</sub> = 15 mA; V <sub>BE</sub> = 0 mA	36	—	—	V
BV <sub>CEO</sub>	I <sub>C</sub> = 50 mA; I <sub>B</sub> = 0 mA	16	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 5 mA; I <sub>C</sub> = 0 mA	4.0	—	—	V
I <sub>CBO</sub>	V <sub>CB</sub> = 15 V; I <sub>E</sub> = 0 mA	—	—	5	mA
h <sub>FE</sub>	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 250 mA	20	—	—	—

**Table 5. Dynamic**

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 160 MHz; P <sub>IN</sub> = 3.0 W; V <sub>CE</sub> = 13.6 V	30	—	—	W
G <sub>P</sub>	f = 160 MHz; P <sub>IN</sub> = 3.0 W; V <sub>CE</sub> = 13.6 V	10	—	—	dB
C <sub>OB</sub>	f = 1 MHz; V <sub>CB</sub> = 15 V	—	95	—	pF

## TYPICAL PERFORMANCE

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

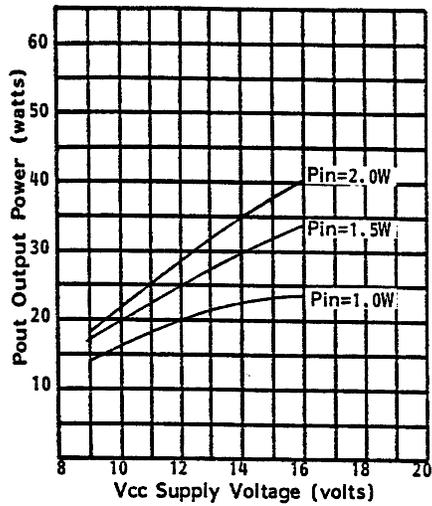


Figure 4. Power Output vs Supply Voltage (150 MHz)

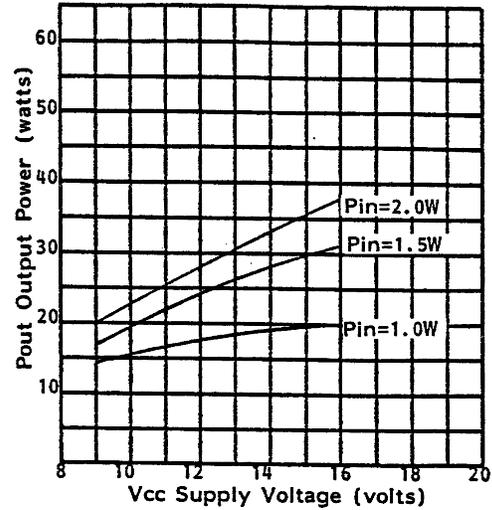


Figure 5. Power Output vs Supply Voltage (175 MHz)

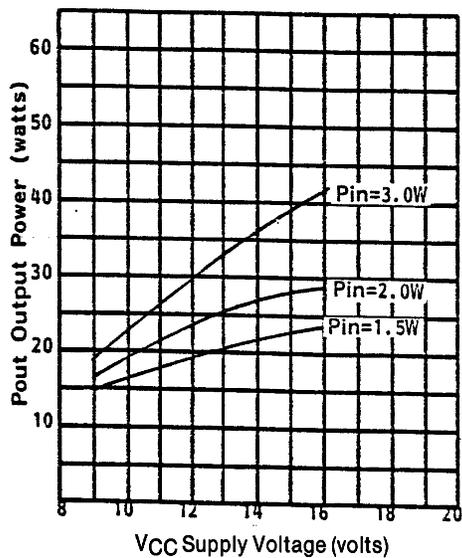


Figure 6. Power Gain vs Frequency

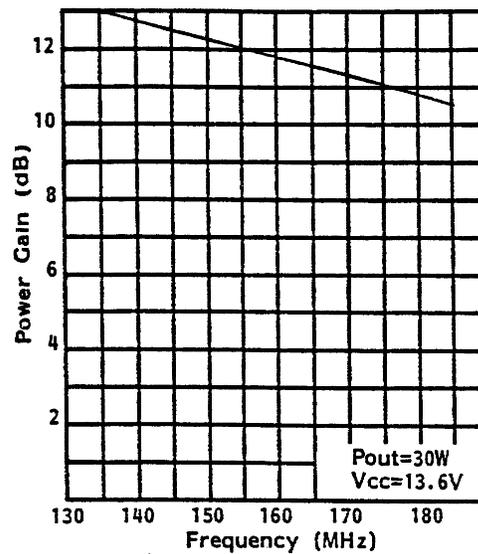
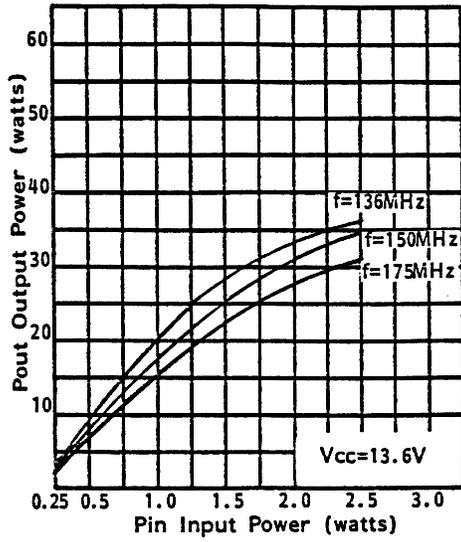


Figure 7. Power Output vs Power Input

Table 6. Impedance Data <sup>(1)</sup>

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

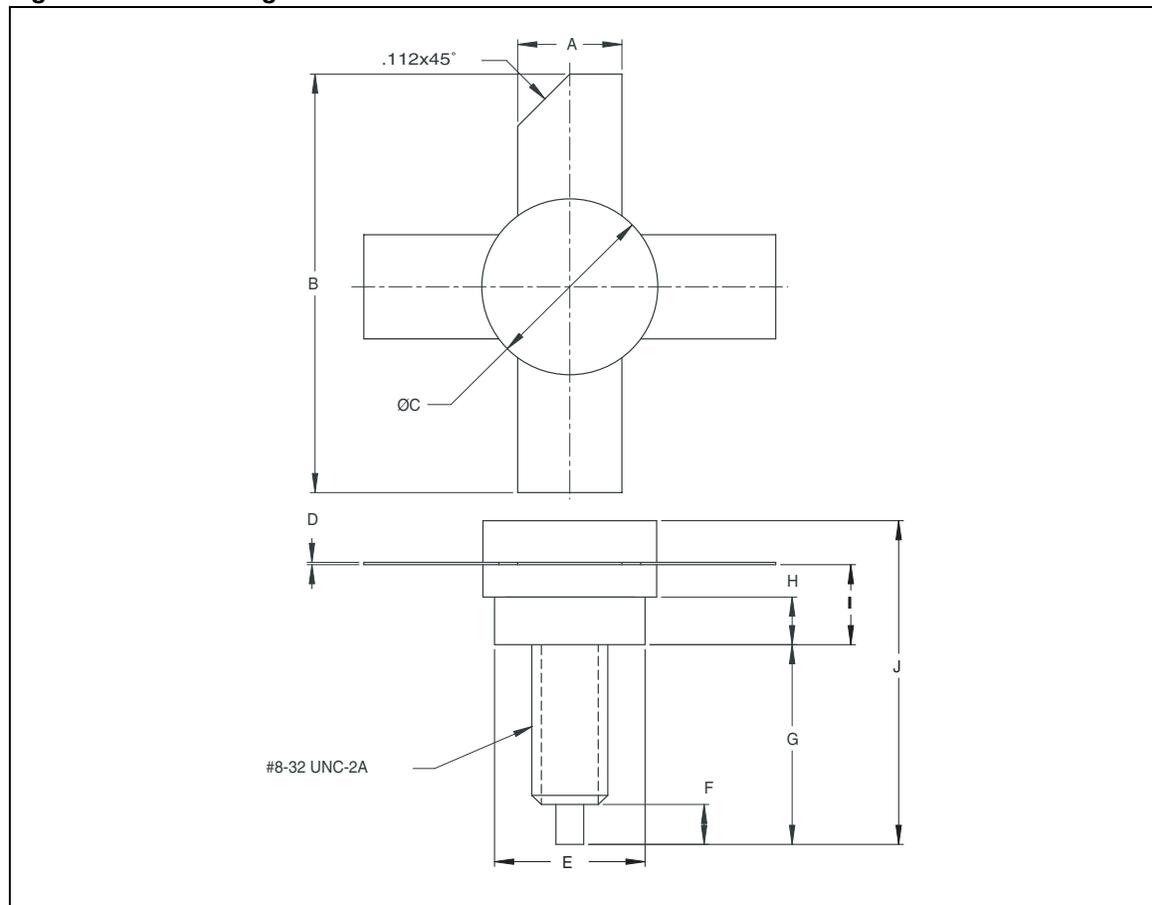
Note: 1. P<sub>IN</sub> = 3.0 W; V<sub>CE</sub> = 12.5 V

## PACKAGE MECHANICAL

Table 7. M135 Mechanical Data

Symbol	millimeters			inches		
	Min	Typ	Max	Min	Typ	Max
A	5.59		5.84	0.220		0.230
B	24.89			0.980		
C	9.40		9.78	0.370		0.385
D	0.10		0.18	0.004		0.007
E	8.13		8.38	0.320		0.330
F	2.54		3.30	0.100		0.130
G	11.43		12.45	0.450		0.490
H	2.29		2.54	0.090		0.100
I	3.94		4.45	0.155		0.175
J			19.05			0.750

Figure 8. M135 Package Dimensions



Note: Drawing is not to scale.

**REVISION HISTORY**

**Table 8. Revision History**

<b>Date</b>	<b>Revision</b>	<b>Description of Changes</b>
June-1993	1	First Issue
7-May-2004	2	Stylesheet update. No content change.

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