



# 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

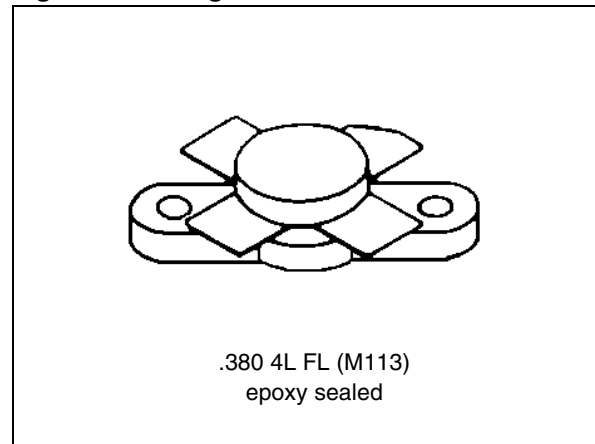


Figure 2. Pin Connection

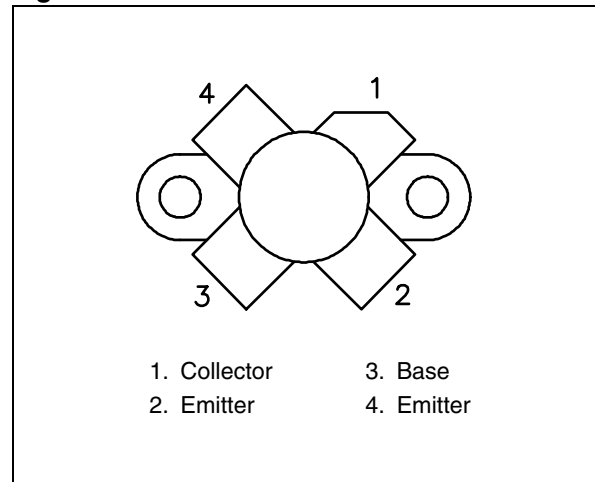


Table 1. Order Codes

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

**Table 2. Absolute Maximum Ratings (T<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**

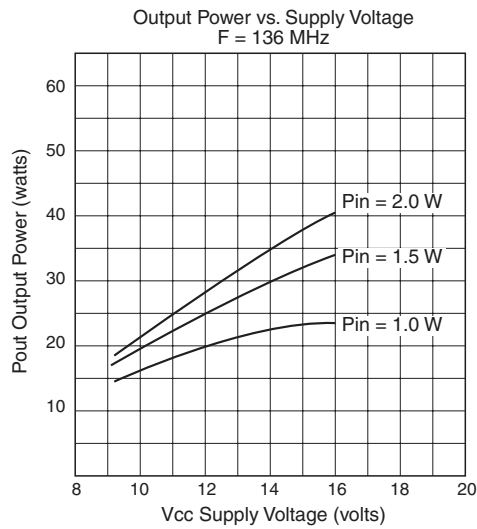
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV <sub>CES</sub>	I <sub>C</sub> = 15 mA; V <sub>BE</sub> = 0 mA	36	—	—	V
BV <sub>CEO</sub>	I <sub>C</sub> = 50 mA; I <sub>B</sub> = 0 mA	16	—	—	V
BV <sub>EBO</sub>	I <sub>E</sub> = 5 mA; I <sub>C</sub> = 0 mA	4.0	—	—	V
I <sub>CBO</sub>	V <sub>CB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

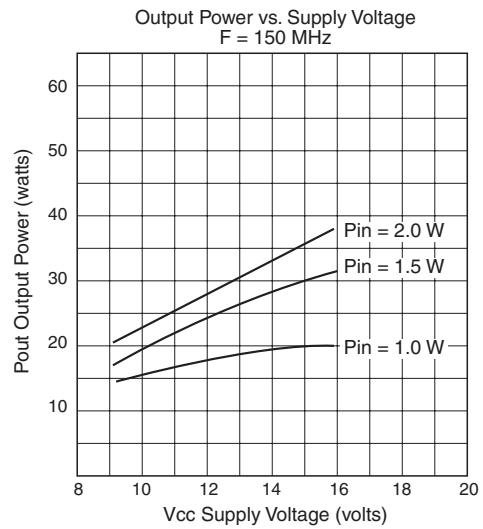
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 160 MHz; P <sub>IN</sub> = 3.0 W; V <sub>CE</sub> = 13.6 V	30	—	—	W
G <sub>p</sub>	f = 160 MHz; P <sub>IN</sub> = 3.0 W; V <sub>CE</sub> = 13.6 V	10	—	—	dB
C <sub>OB</sub>	f = 1 MHz; V <sub>CB</sub> = 15 V	—	95	—	pF

## TYPICAL PERFORMANCE

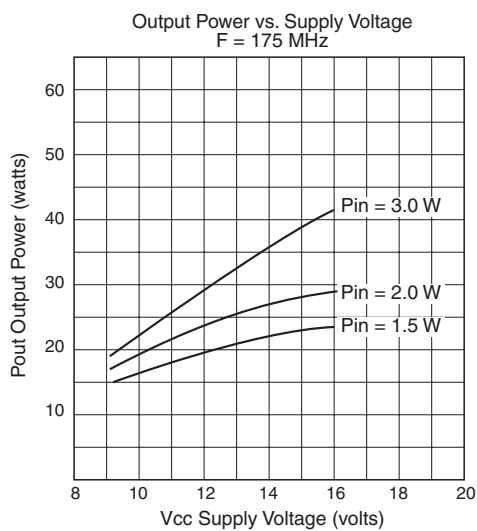
**Figure 3. Power Output vs Supply Voltage (136 MHz)**



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



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



**Figure 6. Power Gain vs Frequency**

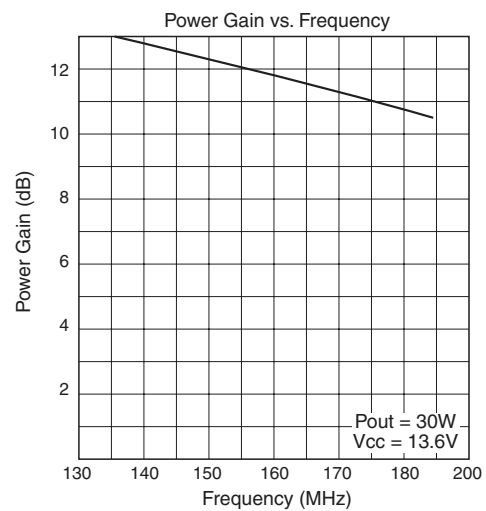
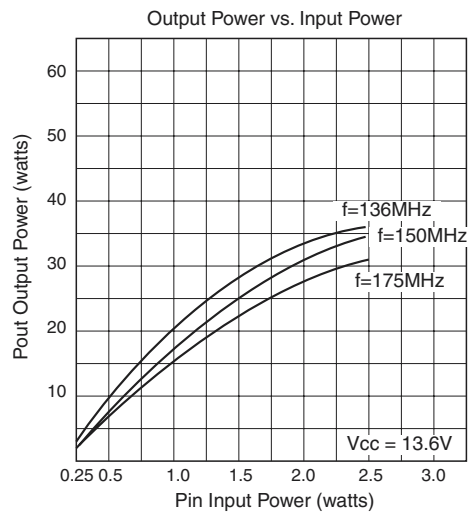


Figure 7. Power Output vs Power Input

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

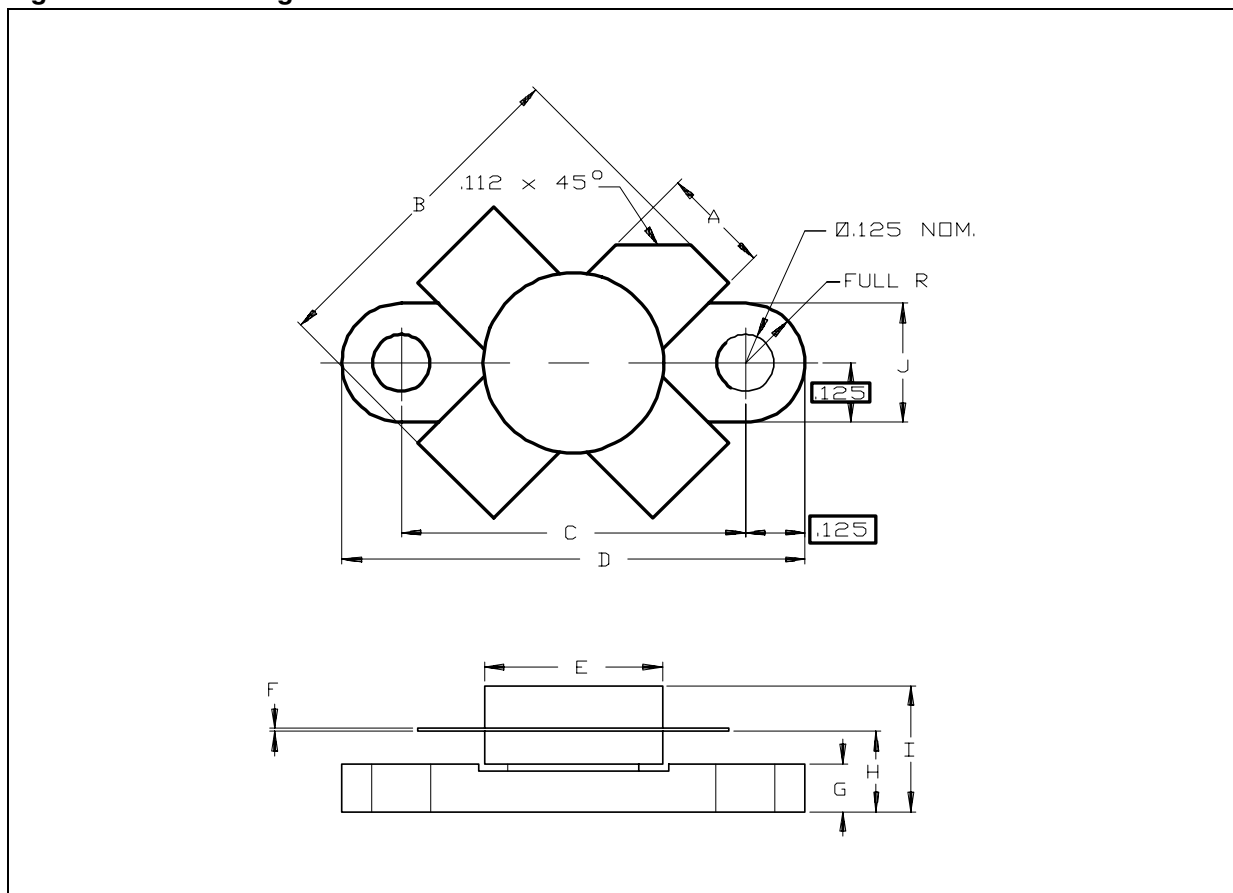
Note: 1. P<sub>IN</sub> = 3.0 W; V<sub>CE</sub> = 12.5 V

## PACKAGE MECHANICAL

Table 7. 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**

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

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