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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





# SD1275

## RF POWER BIPOLAR TRANSISTORS VHF MOBILE APPLICATIONS

### FEATURES SUMMARY

- 160 MHz
- 13.6 VOLTS
- COMMON EMITTER
- $P_{OUT} = 40 \text{ W MIN. WITH } 9 \text{ dB GAIN}$

### 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.

Figure 1. Package

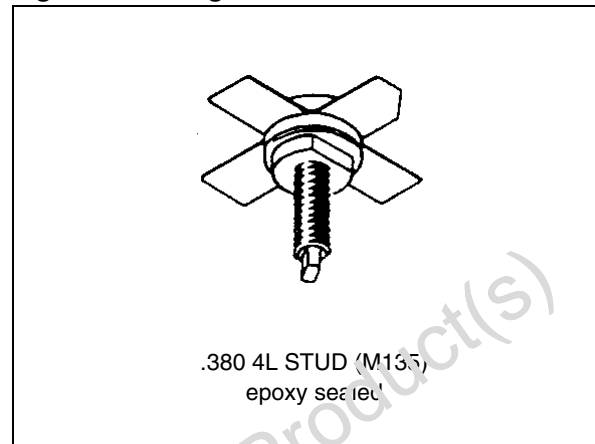


Figure 2. Pin Connection

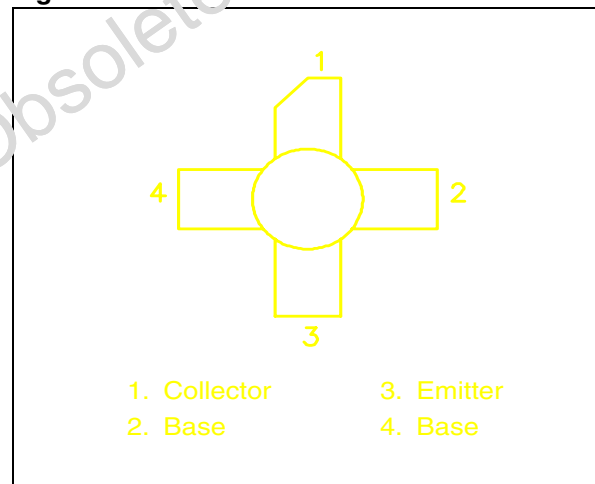


Table 1. Order Codes

Order Codes	Marking	Package	Packaging
SD1275	SD1275	M135	BLACK CARDBOARDS

**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.	
$P_{OUT}$	$f = 160\text{ MHz}; P_{IN} = 5.0\text{ W}; V_{CE} = 13.6\text{ V}$	40	—	—	W
$G_P$	$f = 160\text{ MHz}; P_{IN} = 5.0\text{ W}; V_{CE} = 13.6\text{ V}$	9	—	—	dB
$C_{OB}$	$f = 1\text{ MHz}; V_{CB} = 15\text{ V}$	—	95	—	pF

## TYPICAL PERFORMANCE

Figure 3. Power Gain vs Frequency

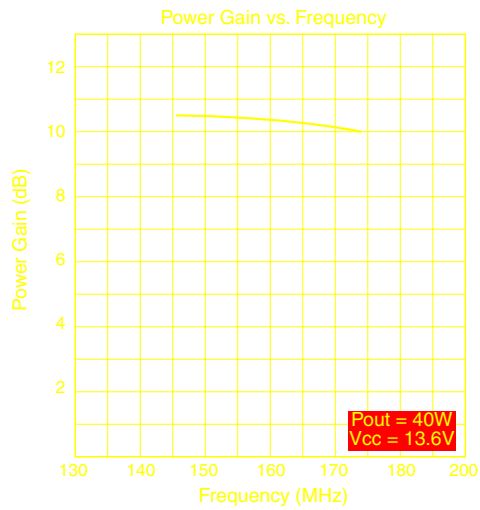


Figure 4. Power Output vs Power Input

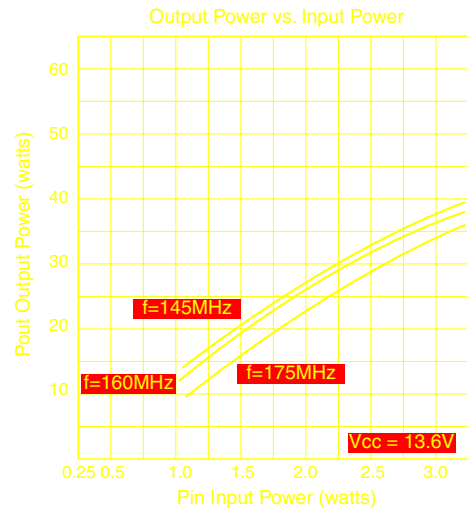


Figure 5. Power Output vs Supply Voltage (175 MHz)

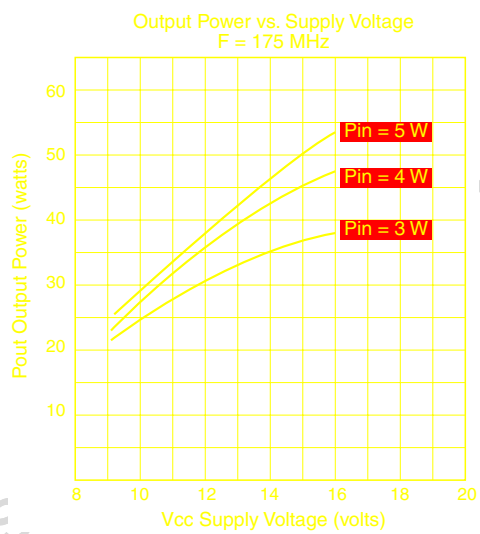
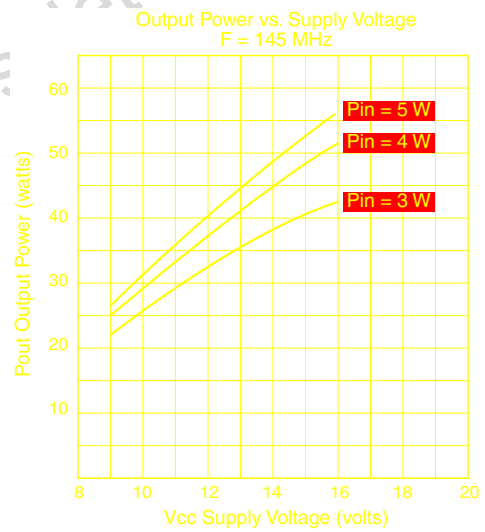
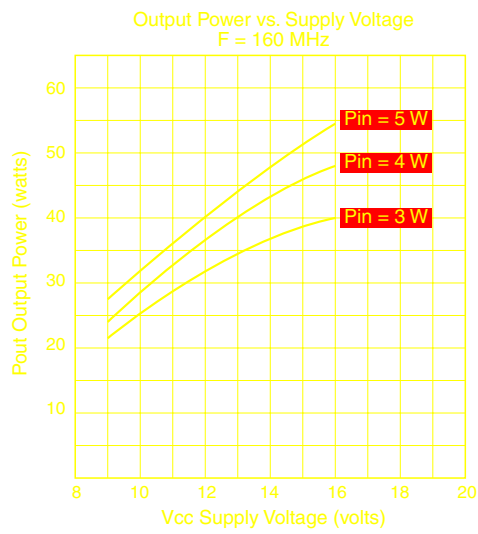


Figure 6. Power Output vs Supply Voltage (145 MHz)



**Figure 7. Power Output vs Supply Voltage  
(160 MHz)**



**Table 6. Impedance Data (1)**

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

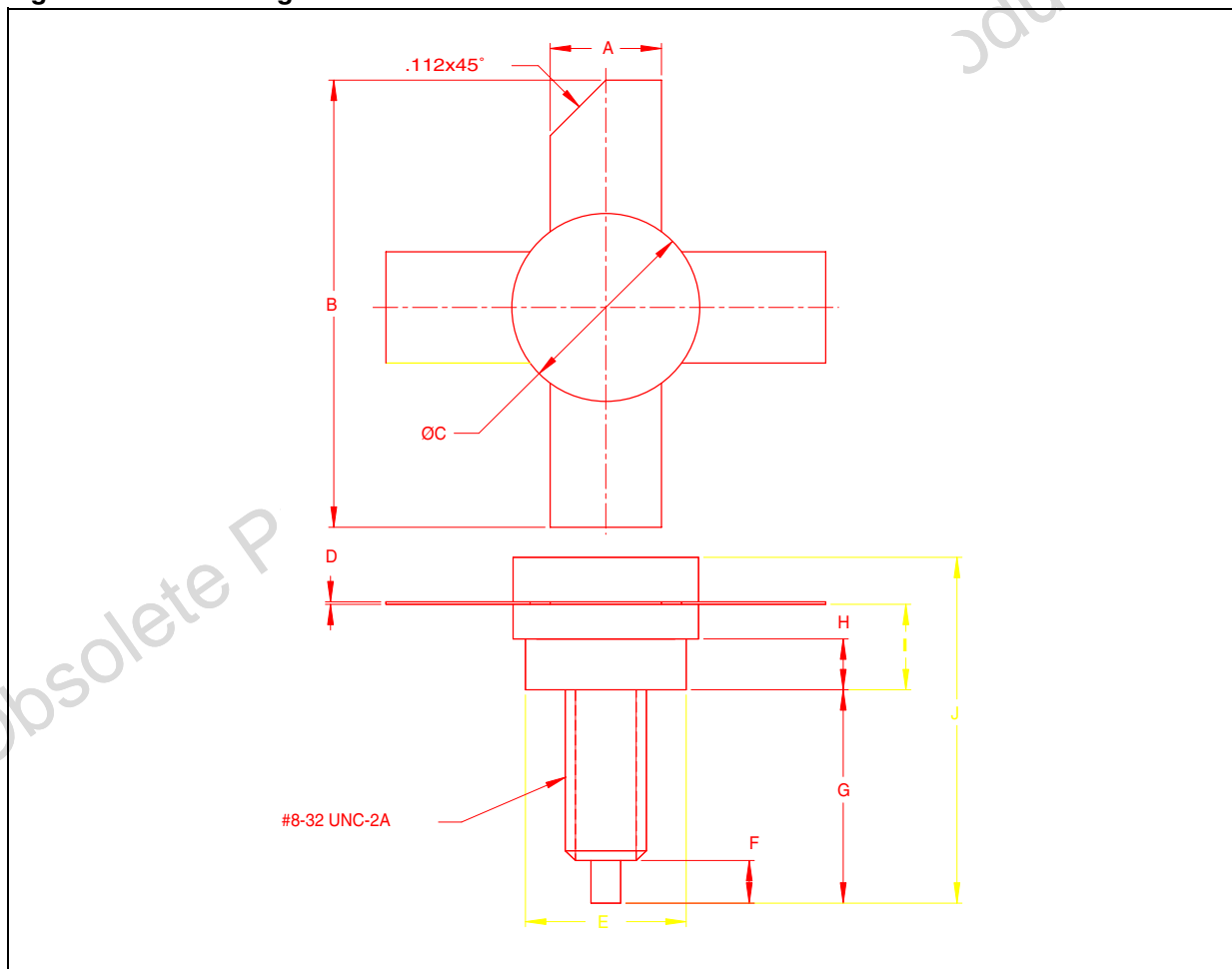
Note: 1. P<sub>IN</sub> = 3.0 W; V<sub>CE</sub> = 12.5 V

## 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



**REVISION HISTORY**

**Table 8. Revision History**

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

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