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SD1274-01

RF POWER BIPOLAR TRANSISTORS VHF MOBILE APPLICATIONS

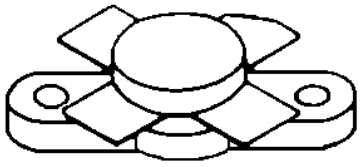
FEATURES SUMMARY

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

DESCRIPTION

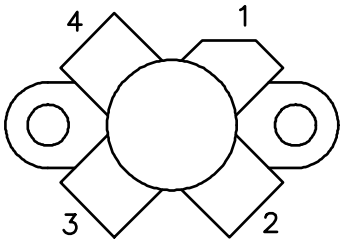
The SD1274-01 is a 13.6 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF communications. The SD1274-01 utilizes an emitter ballasted die geometry to withstand severe load mismatch conditions.

Figure 1. Package



.380 4L FL (M113)
epoxy sealed

Figure 2. Pin Connection



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

Table 1. Order Codes

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

Table 2. Absolute Maximum Ratings (T_{case} = 25°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	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

Table 3. Thermal Data

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

ELECTRICAL SPECIFICATIONS (T_{CASE} = 25°C)

Table 4. Static

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

Table 5. Dynamic

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

TYPICAL PERFORMANCE

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

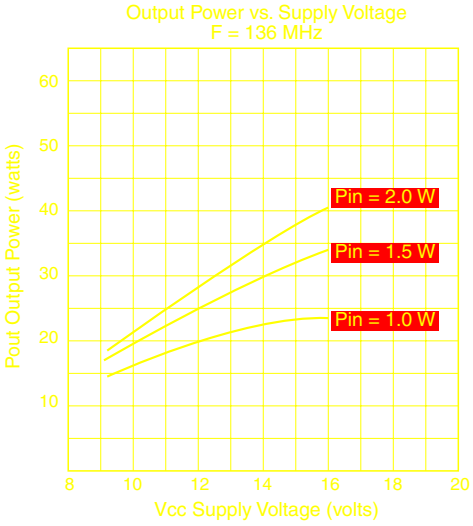


Figure 4. Power Output vs Supply Voltage (150 MHz)

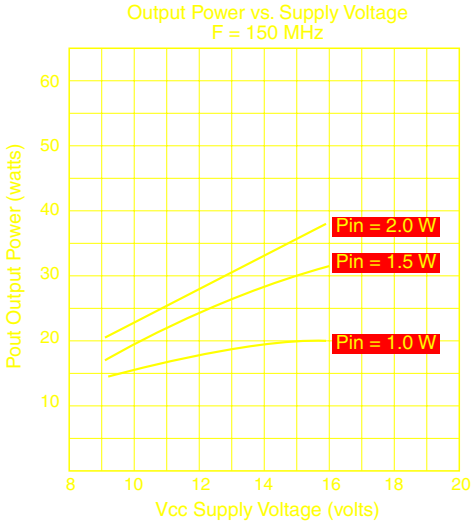


Figure 5. Power Output vs Supply Voltage (175 MHz)

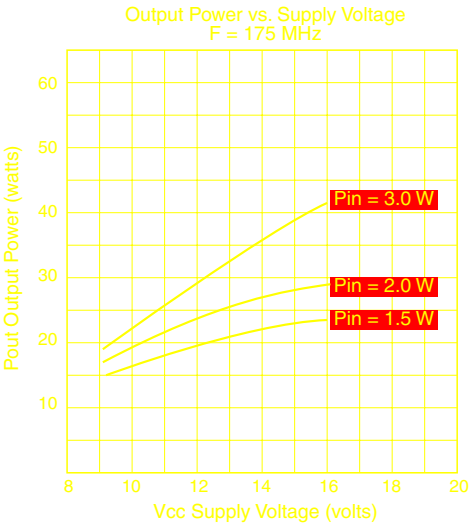


Figure 6. Power Gain vs Frequency

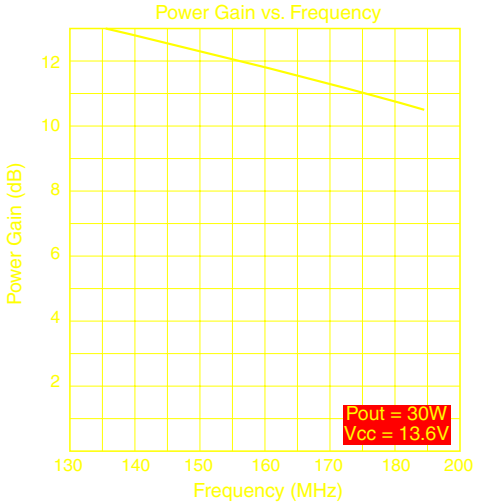


Figure 7. Power Output vs Power Input

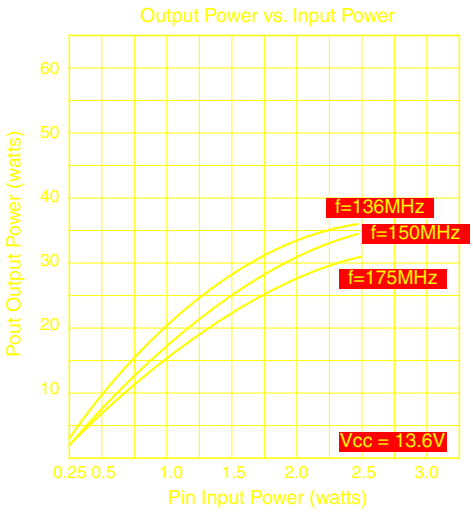


Table 6. Impedance Data (1)

FREQ.	Z_{IN} (Ω)	Z_{CL} (Ω)
175 MHz	1.0 + j 0.4	2.3 + j 0.1

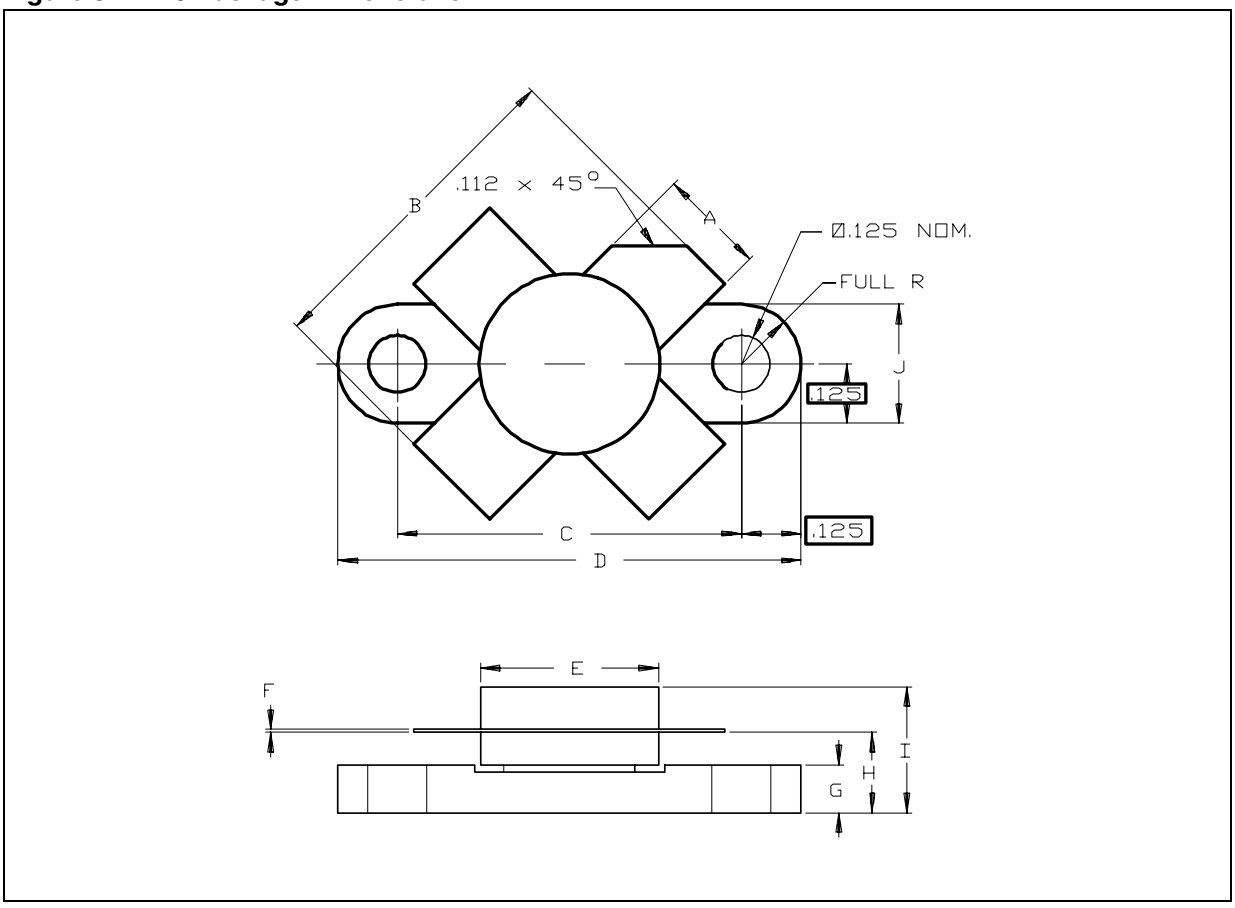
Note: 1. P_{IN} = 3.0 W; V_{CE} = 12.5 V

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.