



SD1434

RF POWER BIPOLAR TRANSISTORS UHF MOBILE APPLICATIONS

FEATURES SUMMARY

- 470 MHz
- 12.5 VOLTS
- COMMON EMITTER
- $P_{OUT} = 45 \text{ W MIN. WITH } 5.0 \text{ dB GAIN}$

DESCRIPTION

The SD1434 is a 12.5 V Class C epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device utilizes diffused emitter resistors to achieve infinite VSWR under operating conditions.

Figure 1. Package

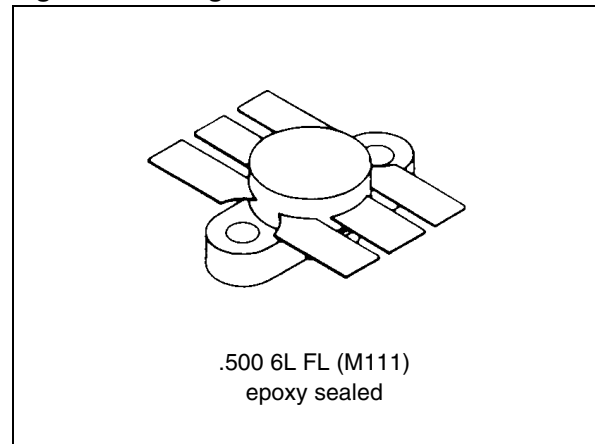


Figure 2. Pin Connection

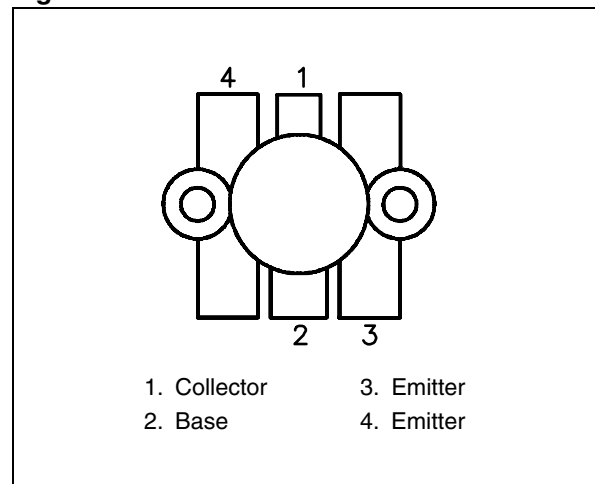


Table 1. Order Codes

Order Codes	Marking	Package	Packaging
SD1434	SD1434	M111	PLASTIC TRAYS

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

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	10.0	A
P_{DISS}	Power Dissipation	175	W
T_{J}	Junction Temperature	+200	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	- 65 to +150	$^{\circ}\text{C}$

Table 3. Thermal Data

Symbol	Parameter	Value	Unit
$R_{\text{TH(j-c)}}$	Junction-Case Thermal Resistance	1.0	$^{\circ}\text{C/W}$

ELECTRICAL SPECIFICATIONS ($T_{CASE} = 25^{\circ}C$)

Table 4. Static

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 5 \text{ mA}; I_E = 0 \text{ mA}$	36	—	—	V
BV_{CES}	$I_C = 20 \text{ mA}; V_{BE} = 0 \text{ V}$	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_{CES}	$V_{CE} = 22 \text{ V}; I_E = 0 \text{ mA}$	—	—	5	mA
I_{CBO}	$V_{CB} = 15 \text{ V}; I_E = 0 \text{ mA}$	—	—	5	mA
h_{FE}	$V_{CE} = 5 \text{ V}; I_C = 1 \text{ A}$	20	—	200	—

Table 5. Dynamic

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 470 \text{ MHz}; P_{IN} = 14 \text{ W}; V_{CE} = 12.5 \text{ V}$	45	—	—	W
G_P	$f = 470 \text{ MHz}; P_{IN} = 14 \text{ W}; V_{CE} = 12.5 \text{ V}$	5	—	—	dB
C_{OB}	$f = 1 \text{ MHz}; V_{CB} = 12.5 \text{ V}$	—	130	—	pF

TYPICAL PERFORMANCE

Figure 3. Power Output vs Power Input

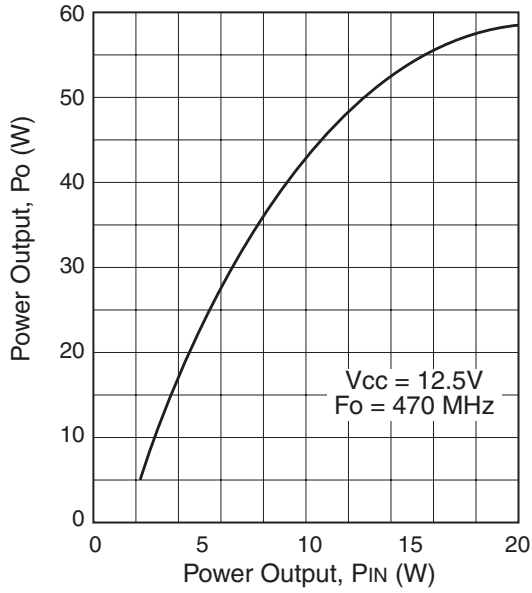


Figure 4. Power Output vs Frequency

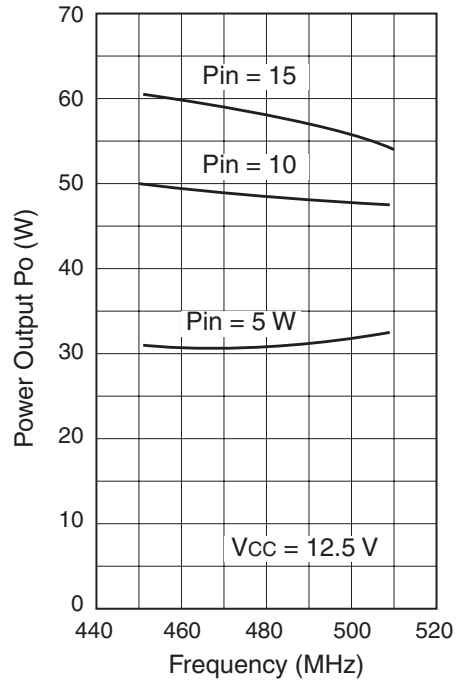
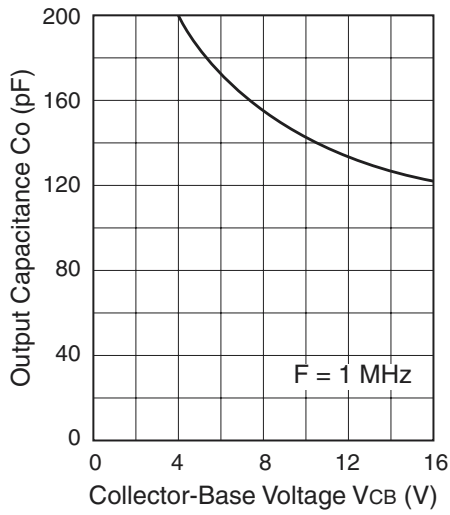


Figure 5. Output Capacitance vs Collector Base Voltage



IMPEDANCE DATA

Figure 6. Typical Input Impedance

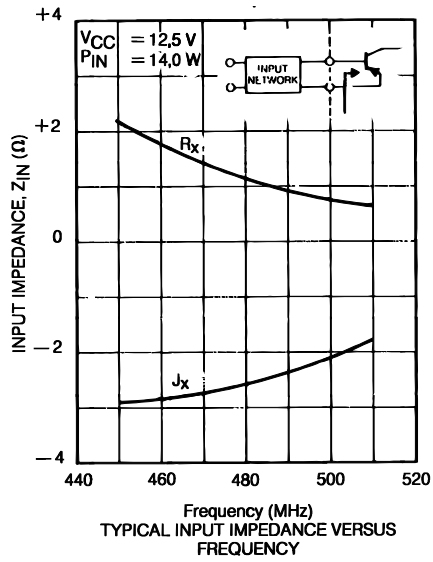
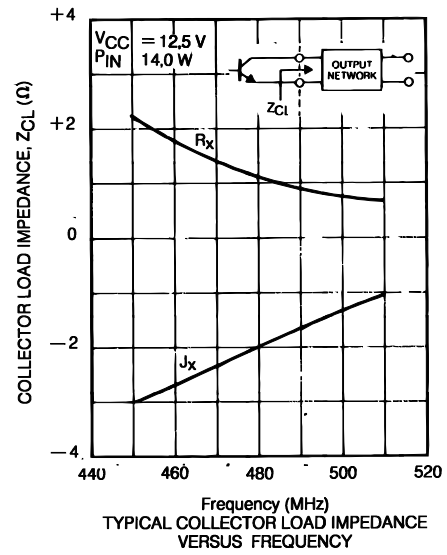


Figure 7. Typical Collector Load Impedance



TEST CIRCUIT

Figure 8. Test Circuit

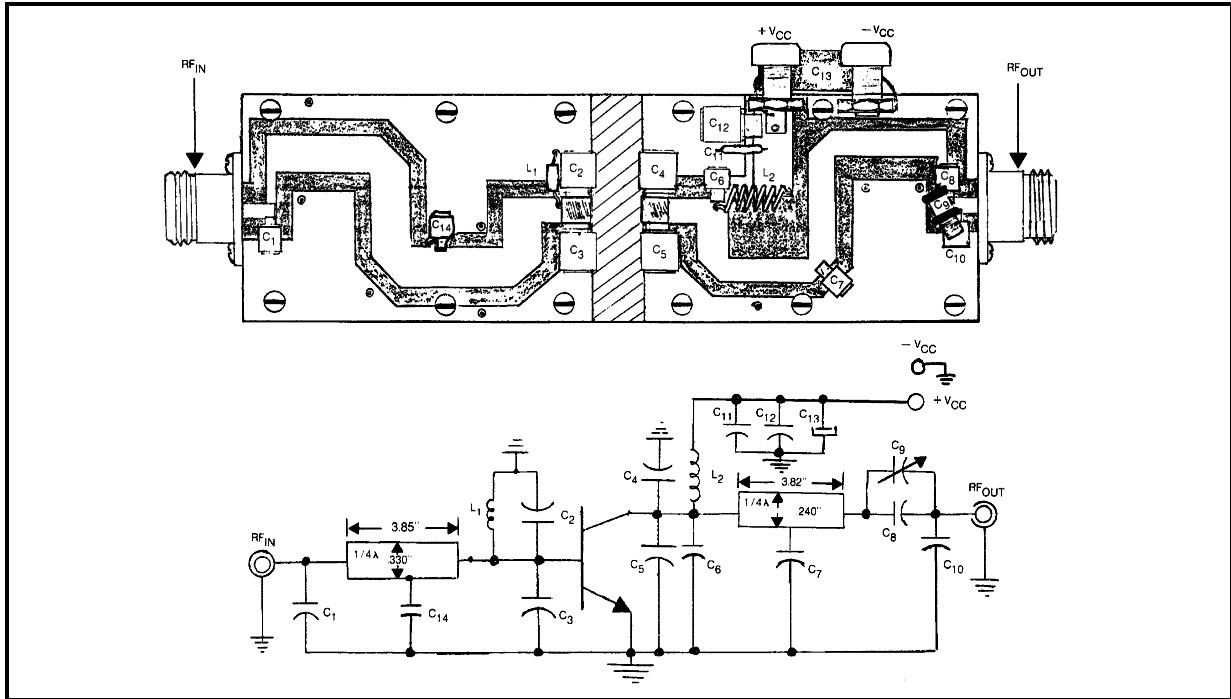


Table 6. Test Circuit

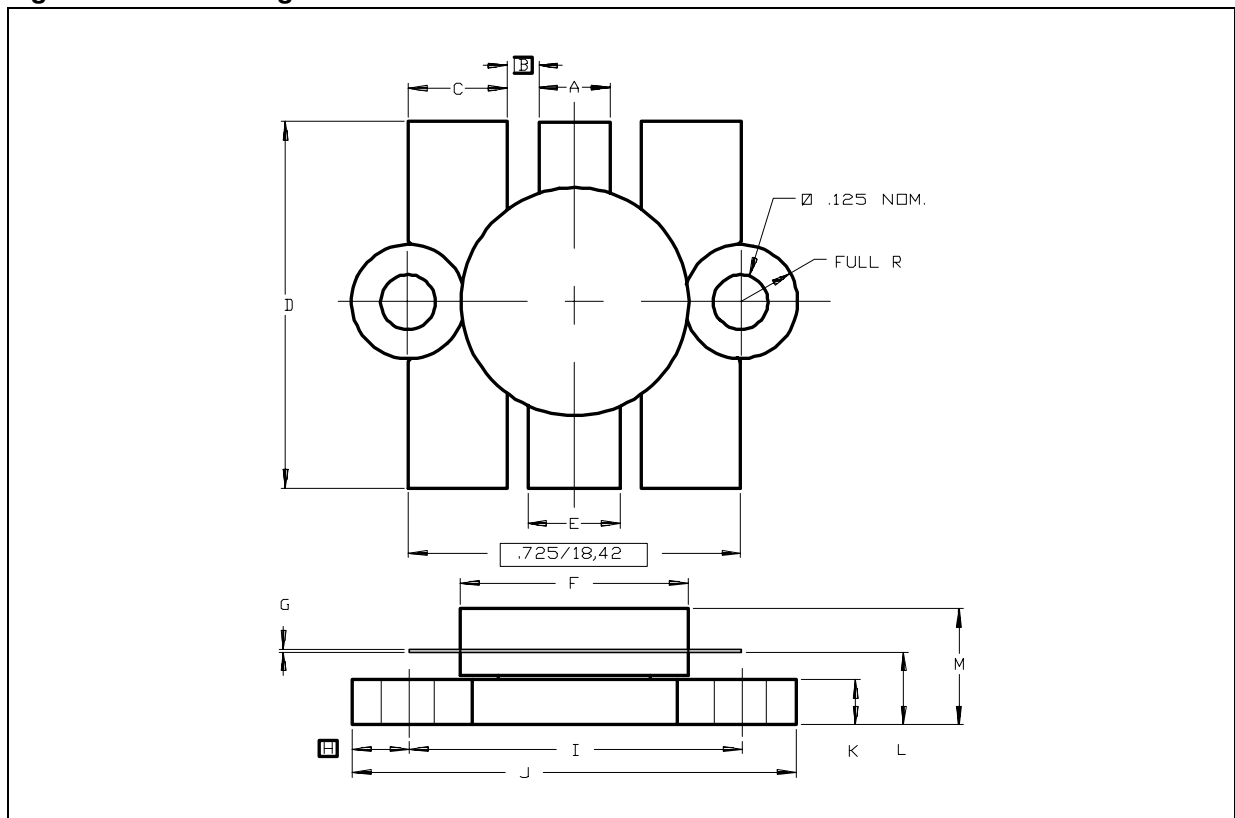
C1	10pF Unelco, 200 mil Sq.
C2	36pF Unelco, 400 mil Sq.
C3	34pF Unelco, 400 mil Sq.
C4	36pF Unelco, 400 mil Sq.
C5	38pF Unelco, 400 mil Sq.
C6	16pF Unelco, 200 mil Sq.
C7	10pF Unelco, 200 mil Sq.
C8	25pF Unelco, 200 mil Sq.
C9	1 - 12pF, ATC Variable
C10	6pF Unelco, 200 mil Sq.
C11	.01μF 50V, Erie Disc
C12	1000pF Unelco, 400 mil Sq.
C13	47μF 63V, Sprague Electrolytic
C14	10pF Unelco, 200 mil Sq.
L1	27μH Molded
L2	6 Turns, #18 AWG, .175" I.D.
Material	Pc Board, Double Sided Copper 1/32" Thick Teflon-Glass, 3M-K-6098

PACKAGE MECHANICAL

Table 7. M111 Mechanical Data

Symbol	millimeters			inches		
	Min	Typ	Max	Min	Typ	Max
A	3.43		4.06	0.150		0.160
B		1.14			0.045	
C	5.33		5.59	0.210		0.220
D	21.21		21.97	0.835		0.865
E	5.08		5.33	0.200		0.210
F	12.45		12.95	0.490		0.510
G	0.08		0.18	0.003		0.007
H		3.18			0.125	
I	18.29		18.54	0.720		0.730
J	24.64		24.89	0.970		0.980
K	2.41		2.67	0.095		0.105
L	3.81		4.32	0.150		0.170
M			7.11			0.280

Figure 9. M111 Package Dimensions



Note: Drawing is not to scale.

REVISION HISTORY

Table 8. Revision History

Date	Revision	Description of Changes
October-1992	1	First Issue
26-May-2004	2	Stylesheet update. No content change.

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