

**DESCRIPTION**

The SD1224 is an epitaxial silicon NPN planar transistor designed primarily for 28 V FM Class C RF amplifiers utilized in ground station transmitters. This device utilizes ballasted emitter resistors and improved metallization systems to achieve optimum load mismatch capability.

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

**KEY FEATURES**

- 175 MHz
- 28 Volts
- Class C
- Common Emitter
- Efficiency 60% Min.
- $P_{OUT} = 40$  W Min.
- $G_P = 7.6$  dB Gain

**APPLICATIONS/BENEFITS**

- VHF FM Applications

**ABSOLUTE MAXIMUM RATINGS ( $T_{CASE} = 25^{\circ}C$ )**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	65	V
$V_{CEO}$	Collector-Emitter Voltage	35	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	5.0	A
$P_{DISS}$	Power Dissipation	60	W
$T_J$	Junction Temperature	+200	$^{\circ}C$
$T_{STG}$	Storage Temperature	-65 to +150	$^{\circ}C$

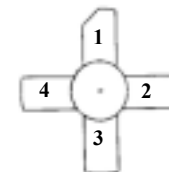


**.380 4LSTUD (M135)**  
epoxy sealed

**THERMAL DATA**

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	2.9	$^{\circ}C/W$
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**PIN CONNECTION**



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

**STATIC ELECTRICAL SPECIFICATIONS (T<sub>CASE</sub> = 25°C)**

Symbol	Test Conditions	SD1224			Units
		Min.	Typ.	Max.	
<b>BV<sub>CBO</sub></b>	<b>I<sub>C</sub> = 10 mA</b> <b>I<sub>B</sub> = 0 mA</b>	65	—	—	V
<b>BV<sub>CES</sub></b>	<b>I<sub>C</sub> = 200 mA</b> <b>V<sub>BE</sub> = 0 V</b>	65	—	—	V
<b>BV<sub>CEO</sub></b>	<b>I<sub>C</sub> = 200 mA</b> <b>I<sub>B</sub> = 0 mA</b>	35	—	—	V
<b>BV<sub>EBO</sub></b>	<b>I<sub>E</sub> = 10 mA</b> <b>I<sub>C</sub> = 0 mA</b>	4.0	—	—	V
<b>I<sub>CES</sub></b>	<b>V<sub>CE</sub> = 30 V</b> <b>I<sub>E</sub> = 0 mA</b>	—	—	10	mA
<b>I<sub>CBO</sub></b>	<b>V<sub>CB</sub> = 30 V</b> <b>I<sub>E</sub> = 0 mA</b>	—	—	1	mA
<b>h<sub>FE</sub></b>	<b>V<sub>CE</sub> = 5 V</b> <b>I<sub>C</sub> = 500 mA</b>	5	—	200	—

**DYNAMIC ELECTRICAL SPECIFICATIONS (T<sub>CASE</sub> = 25°C)**

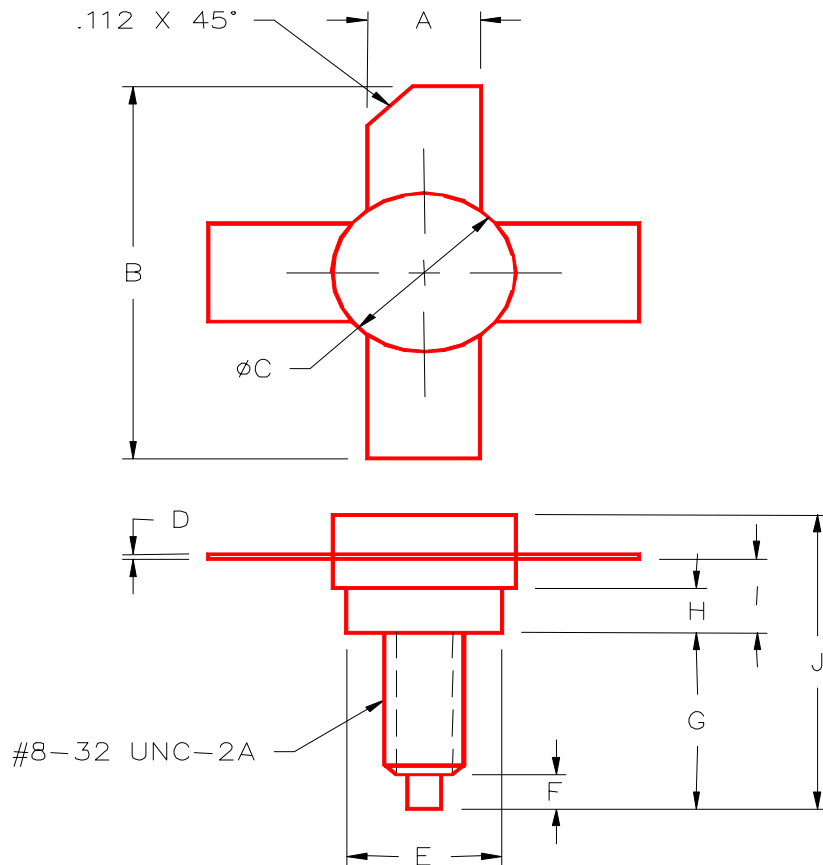
Symbol	Test Conditions	SD1224			Units
		Min.	Typ.	Max.	
<b>P<sub>OUT</sub></b>	<b>f = 175 MHz</b> <b>P<sub>IN</sub> = 7.0 W</b> <b>V<sub>CE</sub> = 28 V</b>	40	—	—	W
<b>G<sub>p</sub></b>	<b>f = 175 MHz</b> <b>P<sub>IN</sub> = 7.0 W</b> <b>V<sub>CE</sub> = 28 V</b>	7.6	—	—	dB
<b>η<sub>C</sub></b>	<b>f = 175 MHz</b> <b>P<sub>IN</sub> = 7.0 W</b> <b>V<sub>CE</sub> = 28 V</b>	60	—	—	%
<b>C<sub>OB</sub></b>	<b>f = 1 MHz</b> <b>V<sub>CB</sub> = 30 V</b>	—	—	65	pF

**IMPEDANCE DATA**

<b>P<sub>IN</sub> (W)</b>	<b>P<sub>OUT</sub> (W)</b>	<b>Z<sub>IN</sub> (Ω)</b>	<b>Z<sub>CL</sub> (Ω)</b>
2.0	28.5	0.85 + j 1.20	3.25 + j 7.05
4.0	43.0	1.05 + j 1.32	4.45 + j 5.40
6.0	53.0	1.01 + j 1.42	5.25 + j 4.42
8.0	60.5	1.05 + j 1.35	5.45 + j 4.12

**Test Conditions:** V<sub>CE</sub> = 28 V  
 f = 175 MHz

PACKAGE STYLE M135



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.220/5,59	.230/5,84	I	.155/3,94	.175/4,45
B	.980/24,89		J		.750/19,05
C	.370/9,40	.385/9,78			
D	.004/0,10	.007/0,18			
E	.320/8,13	.330/8,38			
F	.100/2,54	.130/3,30			
G	.450/11,43	.490/12,45			
H	.090/2,29	.100/2,54			



SD1224

**RF & MICROWAVE TRANSISTORS**

**PRODUCT PREVIEW**

www.Microsemi.com

NOTES