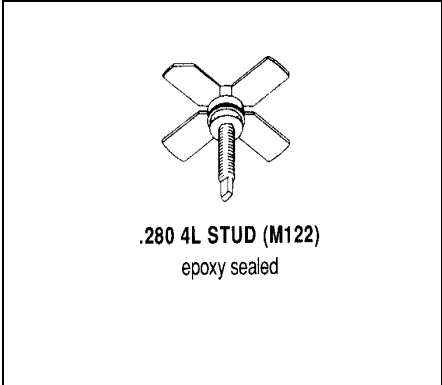


# SD4012

## RF & MICROWAVE TRANSISTORS UHF COMMUNICATIONS APPLICATIONS

### Features

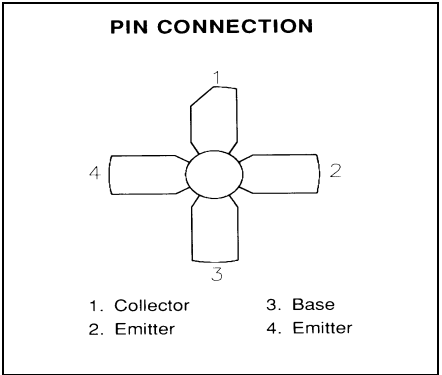
- 400 MHz
- 28 VOLTS
- P<sub>OUT</sub> = 3 WATTS
- G<sub>P</sub> = 11.7 dB GAIN MINIMUM
- OVERLAY GEOMETRY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- REFRACTORY/GOLD METALIZATION



### DESCRIPTION:

The SD4012 is a gold metallized epitaxial silicon NPN planar transistor using diffused emitter ballast resistors for superior ruggedness. The SD4012 can withstand a 30:1 VSWR.

Ideal for military communications applications in the 225 – 400 MHz frequency range, the SD4012 provides typically 13 dB gain with 60% collector efficiency.



### ABSOLUTE MAXIMUM RATINGS (T<sub>case</sub> = 25°C)

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	55	V
V <sub>CEO</sub>	Collector-Emitter Voltage	30	V
V <sub>EBO</sub>	Emitter-Base Voltage	3.5	V
I <sub>C</sub>	Device Current	0.7	A
P <sub>DISS</sub>	Power Dissipation	11	W
T <sub>J</sub>	Junction Temperature	+200	°C
T <sub>STG</sub>	Storage Temperature	-65 to +150	°C

### Thermal Data

R <sub>TH(J-C)</sub>	Thermal Resistance Junction-case	16.0	°C/W
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## ELECTRICAL SPECIFICATIONS (T<sub>case</sub> = 25°C)

### STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV <sub>CBO</sub>	I <sub>C</sub> = 20 mA	I <sub>E</sub> = 0 mA	55	---	---	V
BV <sub>EBO</sub>	I <sub>E</sub> = 5 mA	I <sub>C</sub> = 0 mA	3.5	---	---	V
BV <sub>CES</sub>	I <sub>C</sub> = 20 mA	V <sub>BE</sub> = 0 V	55	---	---	V
BV <sub>CEO</sub>	I <sub>C</sub> = 50 mA	I <sub>B</sub> = 0 mA	30	---	---	V
I <sub>CBO</sub>	V <sub>CB</sub> = 30 V	I <sub>E</sub> = 0 mA	---	---	1	mA
HFE	V <sub>CE</sub> = 5 V	I <sub>C</sub> = 1 A	10	---	150	---

### DYNAMIC

Symbol	Test Conditions			Value			Unit
				Min.	Typ.	Max.	
P <sub>OUT</sub>	f = 400 MHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	3.0	---	---	W
η <sub>C</sub>	f = 400 MHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	---	---	---	%
G <sub>p</sub>	f = 400 MHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	11.7	---	---	dB
VSWR	f = 400 MHz	P <sub>IN</sub> = 0.2 W	V <sub>CC</sub> = 28 V	---	---	30:1	W
C <sub>OB</sub>	f = 1 MHz	V <sub>CB</sub> = 28V		---	---	6	W

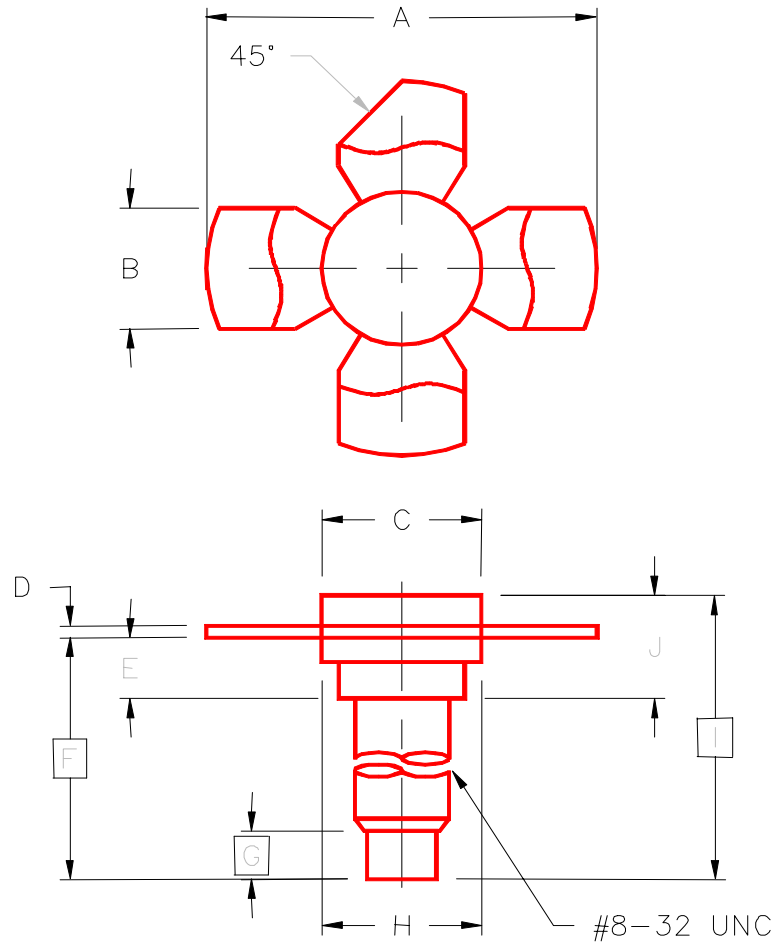
### IMPEDANCE DATA

FREQ	Z <sub>IN</sub> (Ω)	Z <sub>CL</sub> (Ω)
300 MHz	0.8 – j0.5	33.0 + j57.0
325 MHz	0.9 – j0.2	31.0 + j52.0
350 MHz	1.1 + j.25	28.0 + j49.0
375 MHz	1.5 + j.75	26.0 + j46.0
400 MHz	1.9 + j1.0	23.0 + j45.0
425 MHz	2.5 + j0.7	20.0 + j42.0
450 MHz	3.3 + j0.1	17.0 + j36.0

P<sub>OUT</sub> = 3 W  
V<sub>CE</sub> = 28 V

**PACKAGE MECHANICAL DATA**

PACKAGE STYLE M122



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	1.010/25,65	1.055/26,80	I	.640/16,26	
B	.220/5,59	.230/5,84	J	.175/4,45	.217/5,51
C	.270/6,86	.285/7,24			
D	.003/0,08	.007/0,18			
E	.117/2,97	.137/3,48			
F	.572/14,53				
G	.130/3,30				
H	.275/6,99	.285/7,24			