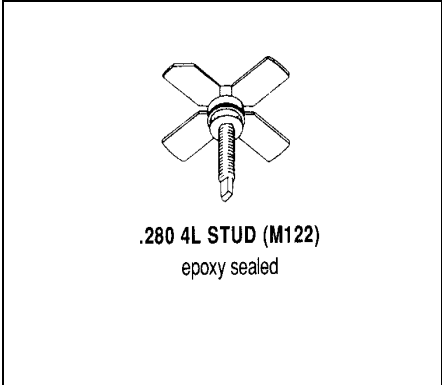


SD4012

**RF & MICROWAVE TRANSISTORS
UHF COMMUNICATIONS APPLICATIONS**

Features

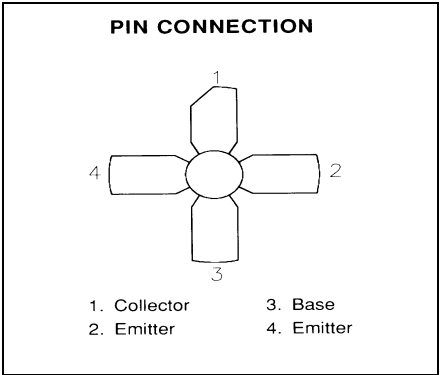
- 400 MHz
- 28 VOLTS
- P_{OUT} = 3 WATTS
- G_P = 11.7 dB GAIN MINIMUM
- OVERLAY GEOMETRY
- LOW THERMAL RESISTANCE
- INPUT/OUTPUT MATCHING
- REFRACTORY/GOLD METALIZATION



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_{case} = 25°C)

| Symbol | Parameter | Value | Unit |
|-------------------|---------------------------|-------------|------|
| V _{CBO} | Collector-Base Voltage | 55 | V |
| V _{CEO} | Collector-Emitter Voltage | 30 | V |
| V _{EBO} | Emitter-Base Voltage | 3.5 | V |
| I _C | Device Current | 0.7 | A |
| P _{DISS} | Power Dissipation | 11 | W |
| T _J | Junction Temperature | +200 | °C |
| T _{STG} | Storage Temperature | -65 to +150 | °C |

Thermal Data

| | | | |
|----------------------|----------------------------------|------|------|
| R _{TH(J-C)} | Thermal Resistance Junction-case | 16.0 | °C/W |
|----------------------|----------------------------------|------|------|

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

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|-------------------|------------------------|-----------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV _{CBO} | I _C = 20 mA | I _E = 0 mA | 55 | --- | --- | V |
| BV _{EBO} | I _E = 5 mA | I _C = 0 mA | 3.5 | --- | --- | V |
| BV _{CES} | I _C = 20 mA | V _{BE} = 0 V | 55 | --- | --- | V |
| BV _{CEO} | I _C = 50 mA | I _B = 0 mA | 30 | --- | --- | V |
| I _{CBO} | V _{CB} = 30 V | I _E = 0 mA | --- | --- | 1 | mA |
| HFE | V _{CE} = 5 V | I _C = 1 A | 10 | --- | 150 | --- |

DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|------------------|-----------------|-------------------------|------------------------|-------|------|------|------|
| | | | | Min. | Typ. | Max. | |
| P _{OUT} | f = 400 MHz | P _{IN} = 0.2 W | V _{CC} = 28 V | 3.0 | --- | --- | W |
| η _C | f = 400 MHz | P _{IN} = 0.2 W | V _{CC} = 28 V | --- | --- | --- | % |
| G _P | f = 400 MHz | P _{IN} = 0.2 W | V _{CC} = 28 V | 11.7 | --- | --- | dB |
| VSWR | f = 400 MHz | P _{IN} = 0.2 W | V _{CC} = 28 V | --- | --- | 30:1 | W |
| C _{OB} | f = 1 MHz | V _{CB} = 28V | | --- | --- | 6 | W |

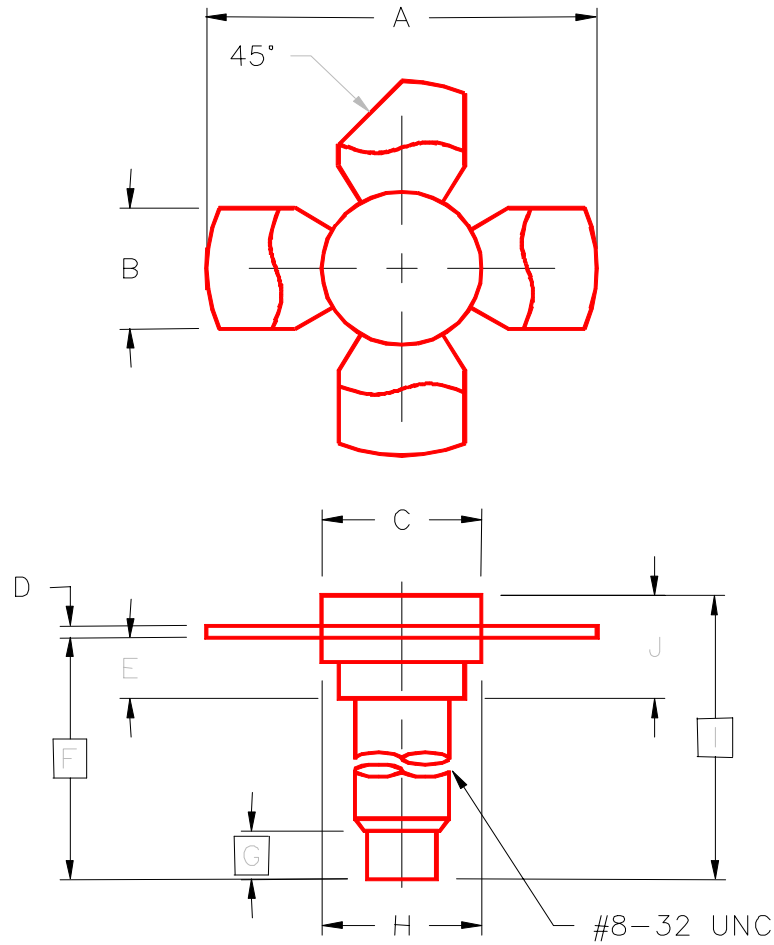
IMPEDANCE DATA

| FREQ | Z _{IN} (Ω) | Z _{CL} (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_{OUT} = 3 W
V_{CE} = 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 | | | |