

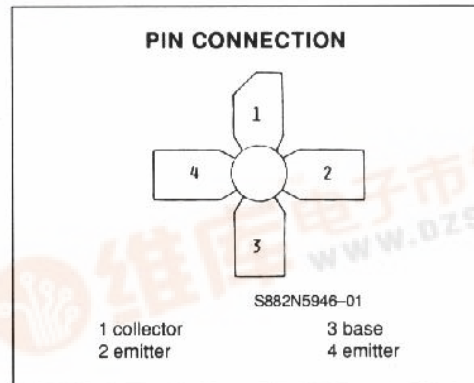
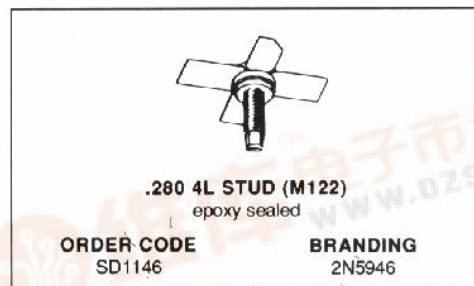


140 Commerce Drive
Montgomeryville, PA 18936-1013
Tel: (215) 631-9840

2N5946

RF & MICROWAVE TRANSISTORS
450–512MHz CLASS C MOBILE APPLICATIONS

- CLASS C TRANSISTOR
- FREQUENCY 470MHz
- VOLTAGE 12.5V
- POWER OUT 10.0W
- POWER GAIN 6.0dB
- EFFICIENCY 60%
- COMMON EMITTER



DESCRIPTION

The 2N5946 is a 12.5V epitaxial silicon NPN planar transistor designed primarily for UHF communications. This device utilizes improved metallization to achieve infinite VSWR at rated operating conditions.

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

| Symbol | Parameter | Value | Unit |
|-----------|-----------------------------|---------------|-------------|
| V_{CBO} | Collector - Base Voltage | 36.0 | V |
| V_{CEO} | Collector - Emitter Voltage | 16.0 | V |
| V_{CES} | Collector - Emitter Voltage | 36.0 | V |
| V_{EBO} | Emitter - Base Voltage | 4.0 | V |
| I_C | Collector Current | 2.0 | A |
| P_{tot} | Total Power Dissipation | 37.5 | W |
| T_{stg} | Storage Temperature | - 65 to + 150 | $^{\circ}C$ |
| T_J | Junction Temperature | + 200 | $^{\circ}C$ |

THERMAL DATA

| | | | |
|---------------|----------------------------------|-----|---------------|
| $R_{th(j-c)}$ | Junction-case Thermal Resistance | 4.7 | $^{\circ}C/W$ |
|---------------|----------------------------------|-----|---------------|

March 1989

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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$)

STATIC

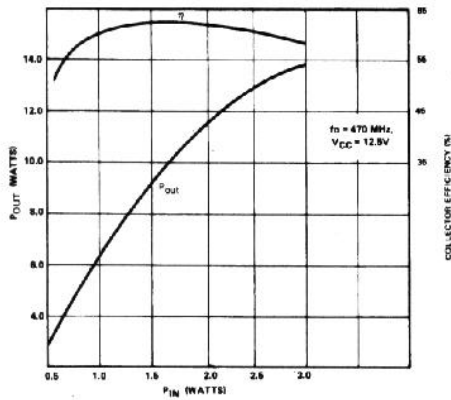
| Symbol | Test Conditions | | Value | | | Unit |
|------------|-----------------|--------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| BV_{CES} | $I_C = 200mA$ | $V_{BE} = 0$ | 36.0 | | | V |
| BV_{CEO} | $I_C = 200mA$ | $I_B = 0$ | 16 | | | V |
| BV_{EBO} | $I_E = 4mA$ | $I_C = 0$ | 4 | | | V |
| I_{CBO} | $V_{CB} = 15V$ | $I_E = 0$ | | | 2 | mA |
| h_{FE} | $V_{CE} = 5V$ | $I_C = .5A$ | 20 | | | |

DYNAMIC

| Symbol | Test Conditions | | Value | | | Unit |
|----------|-----------------|------------------|-------|------|------|------|
| | | | Min. | Typ. | Max. | |
| P_O | $f = 470MHz$ | $V_{CE} = 12.5V$ | 10 | | | W |
| G_P | $f = 470MHz$ | $V_{CE} = 12.5V$ | 6 | | | dB |
| C_{OB} | | $V_{CB} = 12.5V$ | | | 45 | pF |

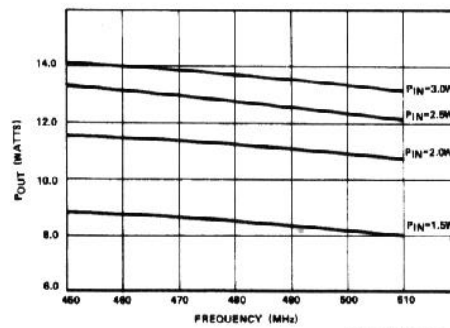
APPLICATION INFORMATION (typical curves)

POWER OUTPUT VS POWER INPUT



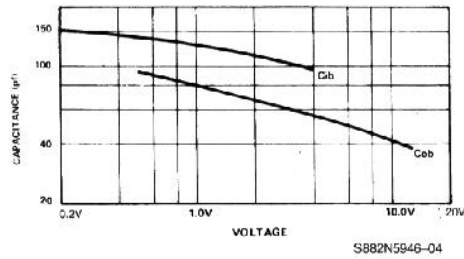
S882N5946-02

POWER OUTPUT VS FREQUENCY



S882N5946-03

CAPACITANCE VS VOLTAGE

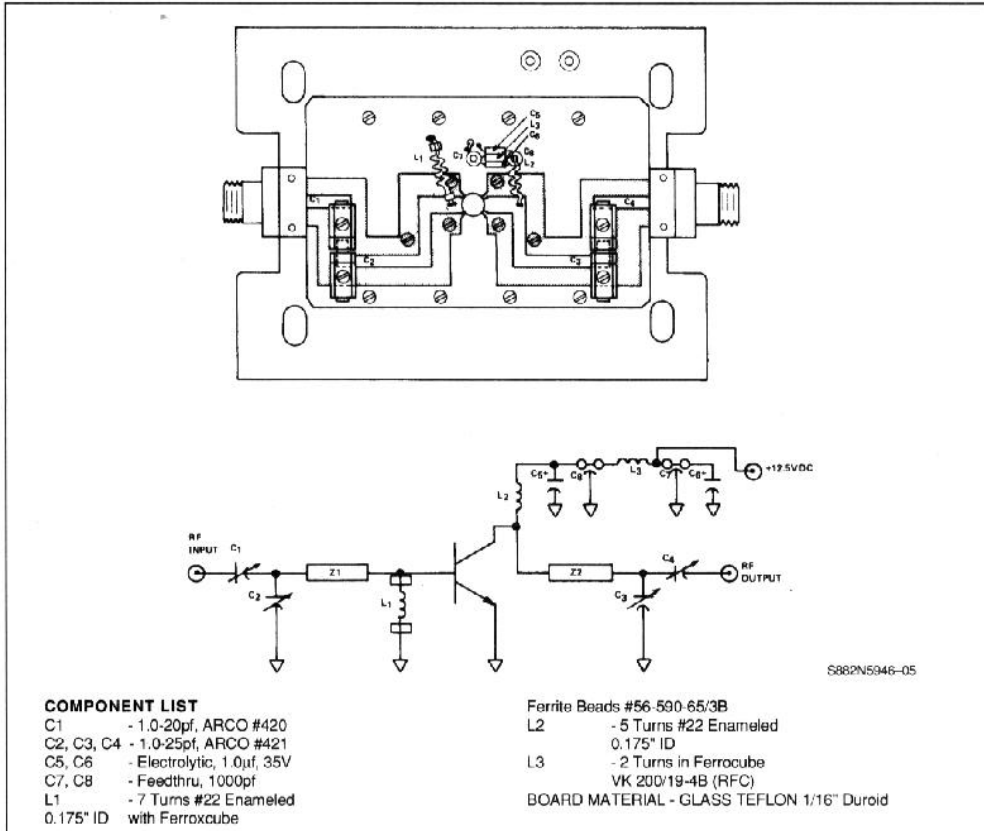


IMPEDANCE INFORMATION

$Z_{IN} = 1.6 + j2.2\Omega$
 $Z_{OUT} = 6.0 - j0.34\Omega$

$F = 470\text{MHz } 12\text{V}$
 $V_{CE} = 12.5\text{V}$
 $P_O = 10.0\text{W}$

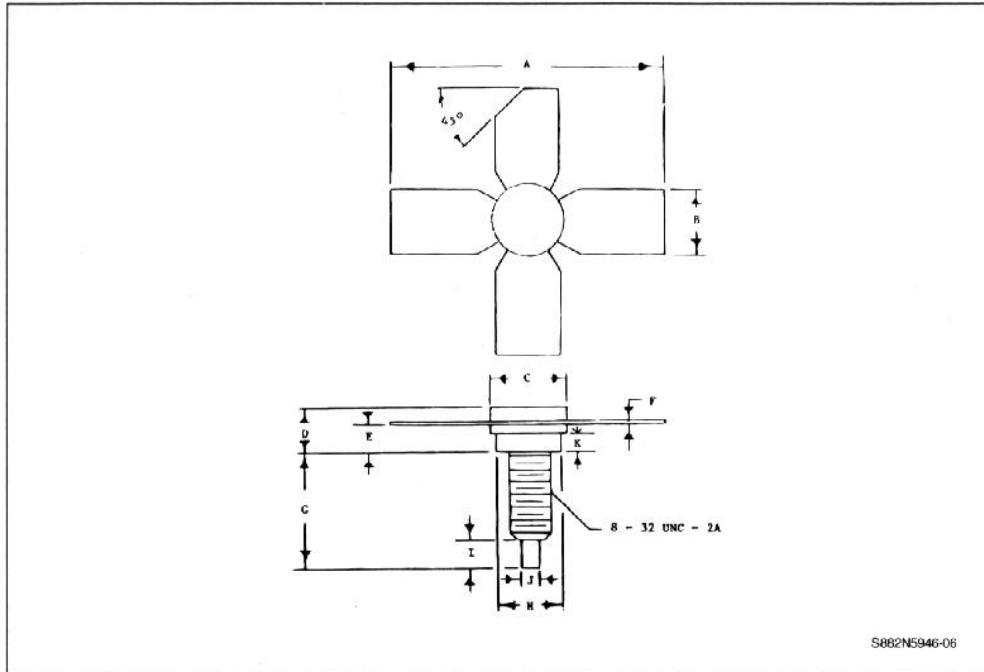
470MHz TEST CIRCUIT LAYOUT



2N5946

PACKAGE MECHANICAL DATA

.280 4LSTUD



| | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| A | | 1.055 |
| B | .220 | .230 |
| C | .275 | .285 |
| D | .178 | .192 |
| E | .110 | .125 |
| F | .004 | .006 |

| | Minimum Inches | Maximum Inches |
|---|----------------|----------------|
| G | .445 | .465 |
| H | .245 | .255 |
| I | .120 | .140 |
| J | .055 | .065 |
| K | .055 | .065 |