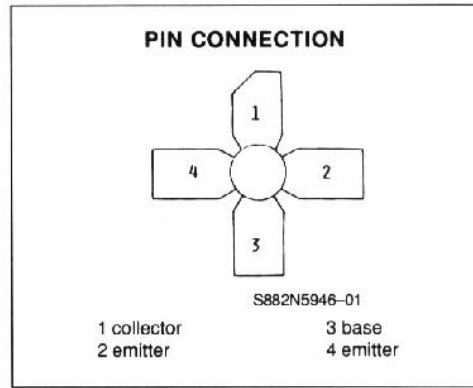
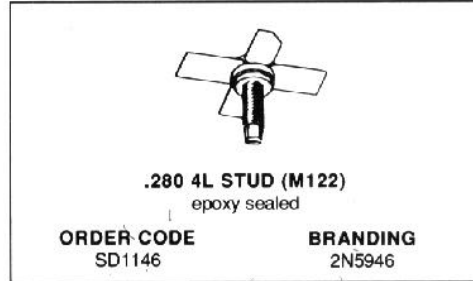


RF & MICROWAVE TRANSISTORS
450–512MHz CLASS C MOBILE APPLICATIONS

- 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	$^{\circ}C/W$
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2N5946

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

STATIC

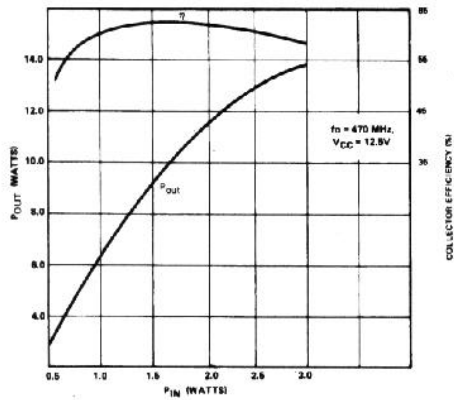
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CES}	$I_C = 200\text{mA}$ $V_{BE} = 0$	36.0			V
BV_{CEO}	$I_C = 200\text{mA}$ $I_B = 0$	16			V
BV_{EBO}	$I_E = 4\text{mA}$ $I_C = 0$	4			V
I_{CBO}	$V_{CB} = 15\text{V}$ $I_E = 0$			2	mA
h_{FE}	$V_{CE} = 5\text{V}$ $I_C = .5\text{A}$	20			

DYNAMIC

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_O	$f = 470\text{MHz}$ $V_{CE} = 12.5\text{V}$	10			W
G_P	$f = 470\text{MHz}$ $V_{CE} = 12.5\text{V}$	6			dB
C_{OB}	$V_{CB} = 12.5\text{V}$ $I_C = 0$			45	pF

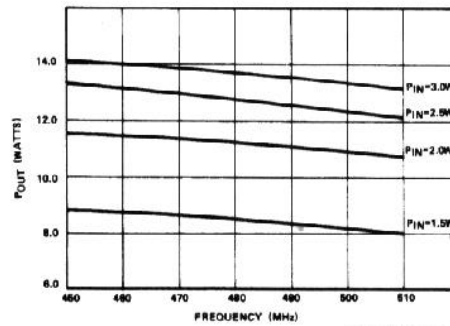
APPLICATION INFORMATION (typical curves)

POWER OUTPUT VS POWER INPUT



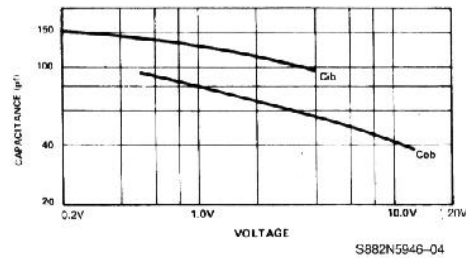
S882N5946-02

POWER OUTPUT VS FREQUENCY



S882N5946-03

CAPACITANCE VS VOLTAGE



IMPEDANCE INFORMATION

$$Z_{IN} = 1.6 + j2.2\Omega$$

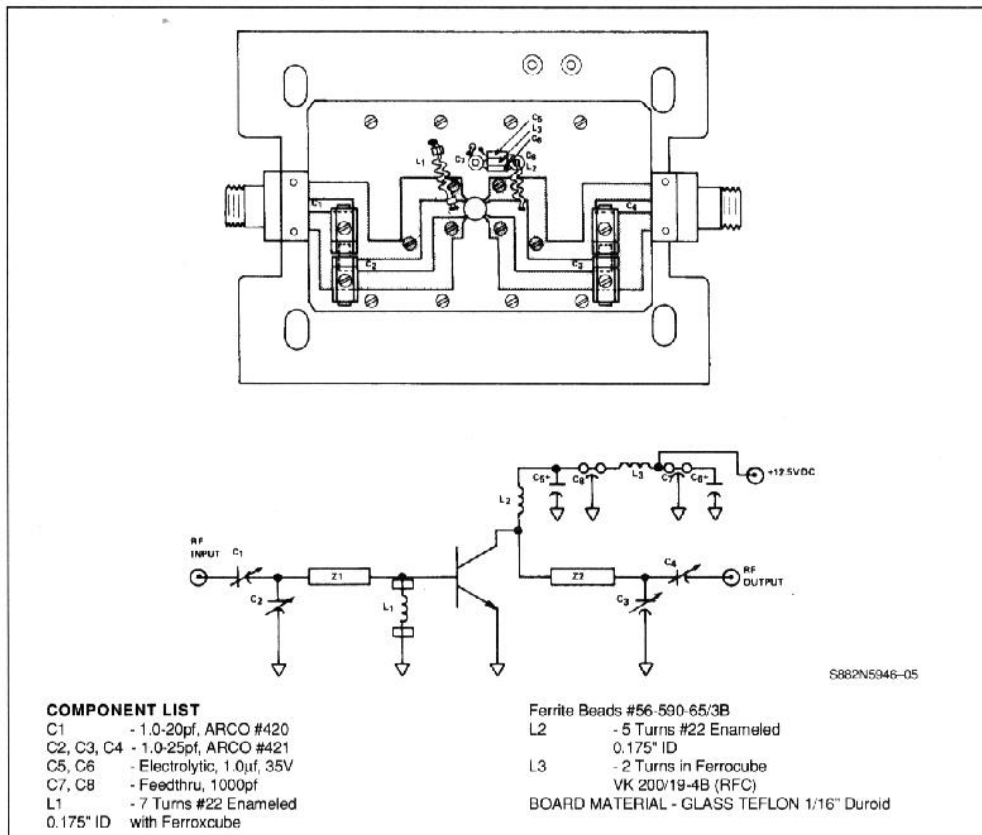
$$Z_{OUT} = 6.0 - j0.34\Omega$$

$$F = 470\text{MHz } 12\text{V}$$

$$V_{CE} = 12.5\text{V}$$

$$P_O = 10.0\text{W}$$

470MHz TEST CIRCUIT LAYOUT



COMPONENT LIST

C1 - 1.0-20pf, ARCO #420
 C2, C3, C4 - 1.0-25pf, ARCO #421
 C5, C6 - Electrolytic, 1.0µf, 35V
 C7, C8 - Feedthru, 1000pf
 L1 - 7 Turns #22 Enameled
 0.175" ID with Ferroxcube

Ferrite Beads #56-590-65/3B

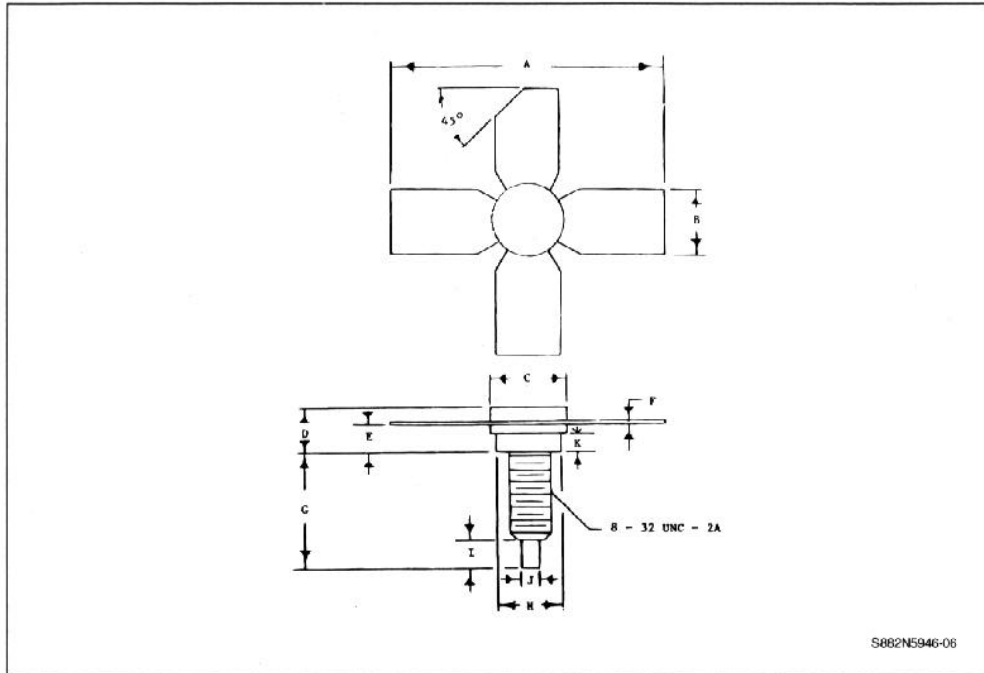
L2 - 5 Turns #22 Enameled
 0.175" ID
 L3 - 2 Turns in Ferroxcube
 VK 200/19-4B (RFC)

BOARD MATERIAL - GLASS TEFLON 1/16" Duroid

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