RF Products
Microsemi
Progress Powered by Technology

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2N5946

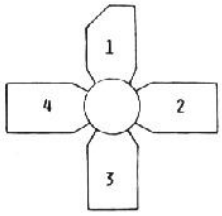
RF & MICROWAVE TRANSISTORS
450–512MHz CLASS C MOBILE APPLICATIONS

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

.280 4L STUD (M122)
epoxy sealed

ORDER CODE	BRANDING
SD1146	2N5946

PIN CONNECTION



S882N5946-01

1 collector
2 emitter
3 base
4 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°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	°C
T_j	Junction Temperature	+ 200	°C

THERMAL DATA

$R_{th(j-c)}$	Junction-case Thermal Resistance	4.7	°C/W

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

STATIC

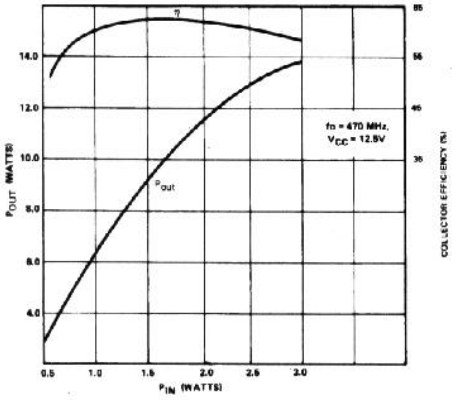
Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CES}	I_C = 200mA	V_{BE} = 0	36.0			V
BV_{CEO}	I_C = 200mA	I_B = 0	16			V
BV_{EBO}	I_E = 4mA	I_C = 0	4			V
I_{CBO}	V_{CB} = 15V	I_E = 0			.2	mA
h_{FE}	V_{CE} = 5V	I_C = .5A	20			

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	I_C = 0			45	pF

APPLICATION INFORMATION (typical curves)

POWER OUTPUT VS POWER INPUT



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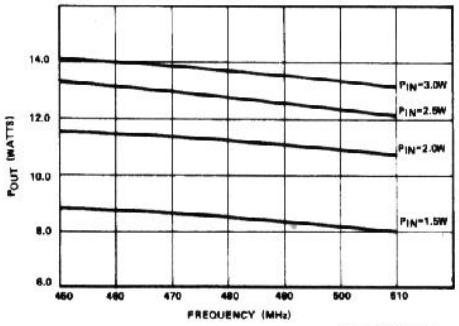
POWER OUTPUT VS FREQUENCY



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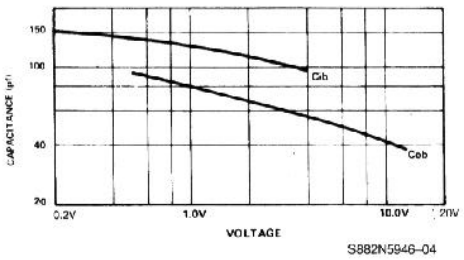
CAPACITANCE VS VOLTAGE



IMPEDANCE INFORMATION

Z_{IN} = 1.6 + j2.2Ω

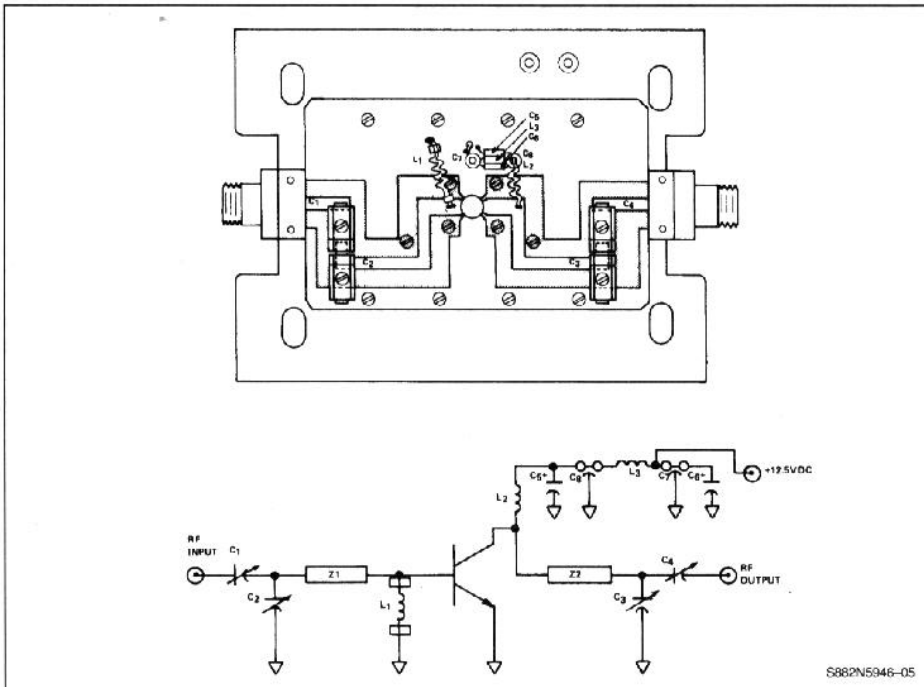
Z_{OUT} = 6.0 - j0.34Ω

F = 470MHz 12V

V_{CE} = 12.5V

P_O = 10.0W

470MHz TEST CIRCUIT LAYOUT

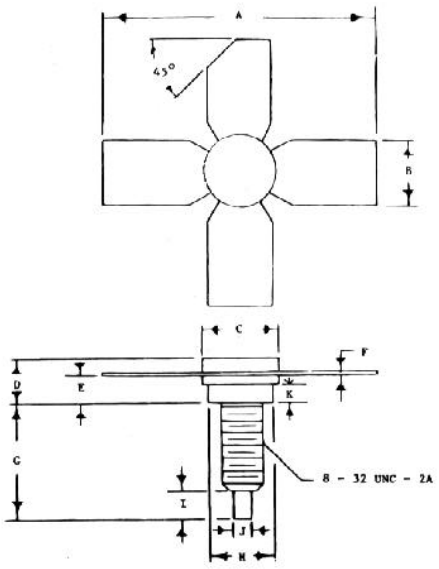


COMPONENT LIST

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 Ferrocube
VK 200/19-4B (RFC)
BOARD MATERIAL - GLASS TEFLON 1/16" Duroid

PACKAGE MECHANICAL DATA

.280 4LSTUD



S882N5946-06

	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