GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

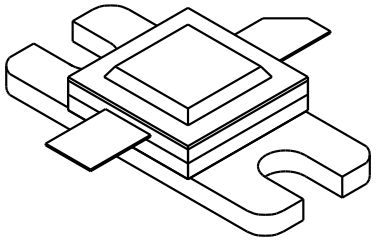
1416 - 100

100 Watts - 50 Volts, Pulsed
Radar 1400 - 1600 MHz

GENERAL DESCRIPTION

The 1416-100 is an internally matched, COMMON BASE transistor capable of providing 100 Watts of pulsed RF output power at one microsecond pulse width, ten percent duty factor across the band 1400-1600 MHz. This hermetically solder-sealed transistor is specifically designed for short pulse radar applications. It utilizes gold metalization and diffused emitter ballasting to provide high reliability and supreme ruggedness.

CASE OUTLINE
55AW, STYLE 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25ºC 564 Watts

Maximum Voltage and Current

BVces	Collector to Emitter Voltage	55 Volts
BVebo	Emitter to Base Voltage	4.0 Volts
Ic	Collector Current	10 Amps

Maximum Temperatures

Storage Temperature	- 65 to + 200ºC
Operating Junction Temperature	+ 200ºC

ELECTRICAL CHARACTERISTICS @ 25 ^{O}C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out	F = 1400-1600 MHz	100			Watts
Pin	Power Input	Vcc = 50 Volts			20	Watts
Pg	Power Gain	Pulse Width =1.0 µs	6.5	7.0		dB
ηc	Collector Efficiency	Duty = 10%		40		%
VSWR	Load Mismatch Tolerance	F=1600MHz, Po=100W			10:1	

BVces	Collector to Emitter Breakdown	Ic = 10 mA	55			Volts
BVebo	Emitter to Base Breakdown	Ie = 10 mA	3.0			Volts
BVcbo	Emitter to Base Breakdown	Ic = 10 mA	65			Volts
Hfe	DC Current Gain	Vce = 5 V, Ic = 100mA	5.0			
θjc	Thermal Resistance	Rated Pulse Condition			0.31	ºC/W

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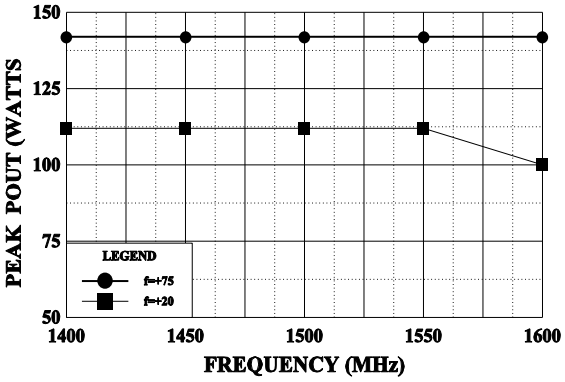
CHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

1416-100

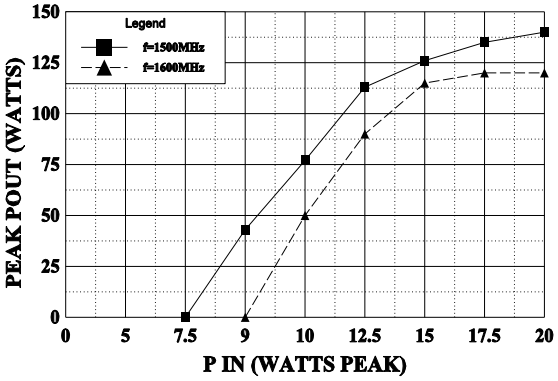
POWER OUTPUT vs FREQUENCY

Vcc=50V, Pin=20W, 1.0 usec @ 10%



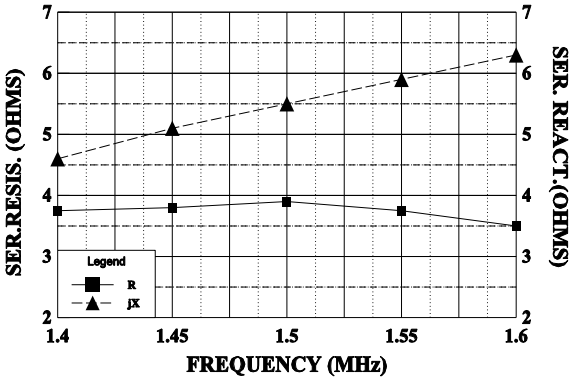
POUT vs PIN (WATTS PEAK)

Vcc=50V, Pulse=1 usec, Duty 10%



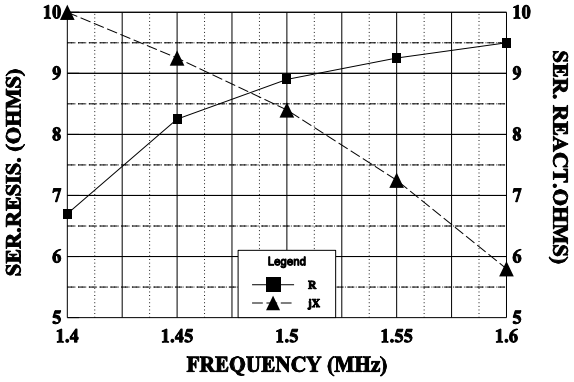
SERIES LOAD IMPEDANCE vs FREQUENCY

Pin=20W Peak, Vcc=50V, 1.0 usec @ 10%



SERIES INPUT IMPEDANCE vs FREQUENCY

Pin=W Peak, Vcc=50V, 1.0 usec @ 10%



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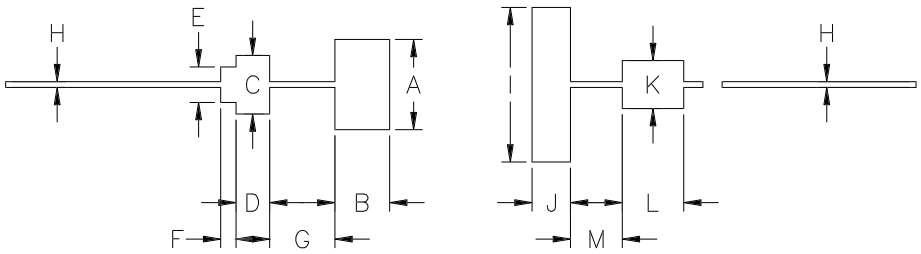
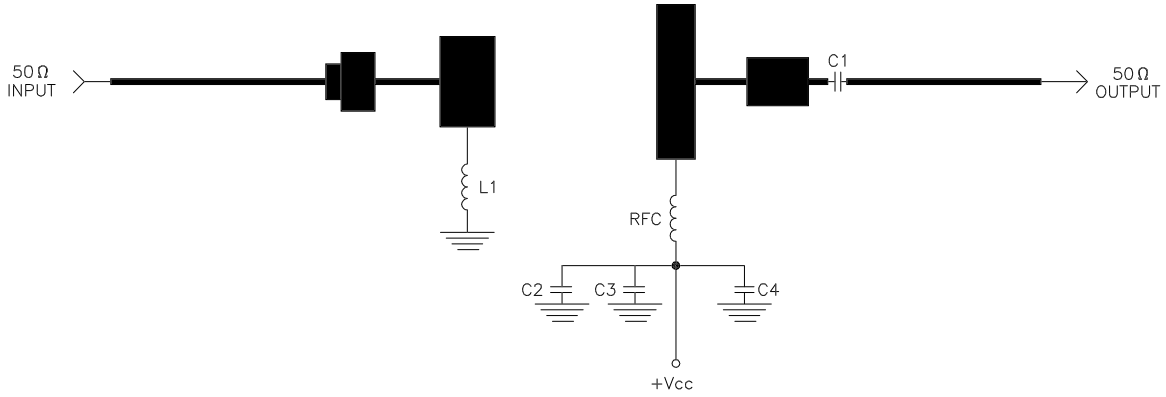
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED



DIM	INCHES
A	.470
B	.285
C	.185
D	.175
E	.185
F	.080
G	.340
H	.030
I	.805
J	.200
K	.250
L	.320
M	.270

1416-100 TEST CIRCUIT



= Microstrip on 0.010" Duroid, Er=2.25
C1 = 82pF CHIP
C2 = 150pF CHIP
C3 = 1.0 MFD
C4 = 100 MFD
L1 = 1 pieces copper wire 0.022" dia., 0.75" long

GHz TECHNOLOGY	CAGE 0PJR2	DWG NO. 1416-100	REV –
		SCALE 1/1	SHEET