GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

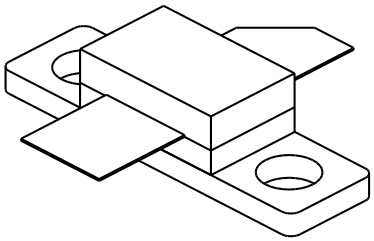
0912-45

45 Watts, 50 Volts, Pulsed
Avionics 960 - 1215 MHz

GENERAL DESCRIPTION

The 0912-45 is a COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 960-1215 MHz. The device has gold thin-film metallization for proven highest MTTF. The transistor includes input prematch for broadband capacity. Low thermal resistance package reduces junction temperature, extends life.

CASE OUTLINE
55CX, STYLE 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25ºC[2]	225 Watts
Maximum Voltage and Current	
BVces Collector to Base Voltage	60 Volts
BVebo Emitter to Base Voltage	4.0 Volts
Ic Collector Current	4.5 Amps
Maximum Temperatures	
Storage Temperature	- 65 to + 150ºC
Operating Junction Temperature	+ 200ºC

ELECTRICAL CHARACTERISTICS @ 25 ^{O}C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out	F = 960-1215 MHz	45			Watts
Pin	Power Input	Vcc = 50 Volts			7.0	Watts
Pg[2]	Power Gain	PW = 10 μsec	8.0	9.0		dB
η_c[2]	Collector Efficiency	DF = 1%		45		%
VSWR[2]	Load Mismatch Tolerance	F = 1090 MHz			10:1	

BVebo	Emitter to Base Breakdown	Ie = 25 mA	4.0			Volts
BVces	Collector to Emitter Breakdown	Ic = 75 mA	60			Volts
Cob	Capacitance Collector to Base	Vcb = 50V		20		pF
$\mathbf{h_{FE}}$	DC - Current Gain	Ic = 300 mA, Vce = 5 V	10			
θ**jc**[2]	Thermal Resistance				0.8	ºC/W

Note 1: At rated output power and pulse conditions
2: At rated pulse conditions

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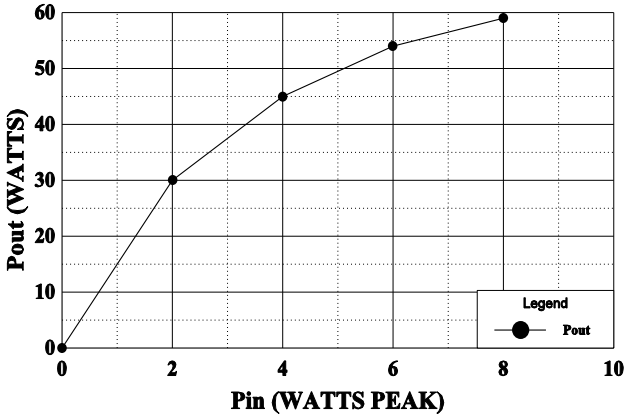
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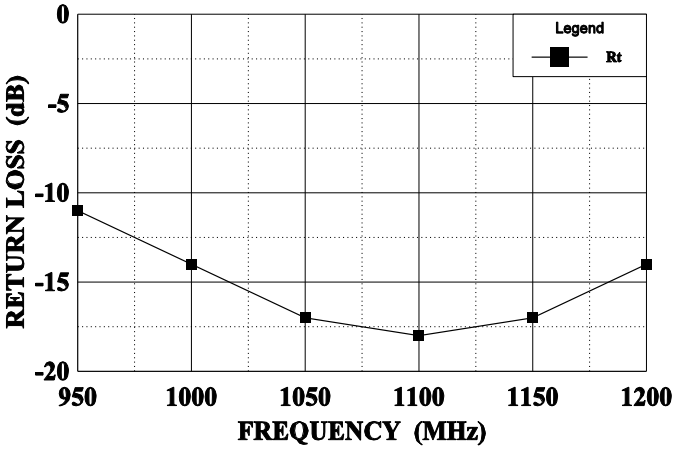
POWER OUTPUT vs POWER INPUT

Vcc = 50 V, F = 1090 MHz



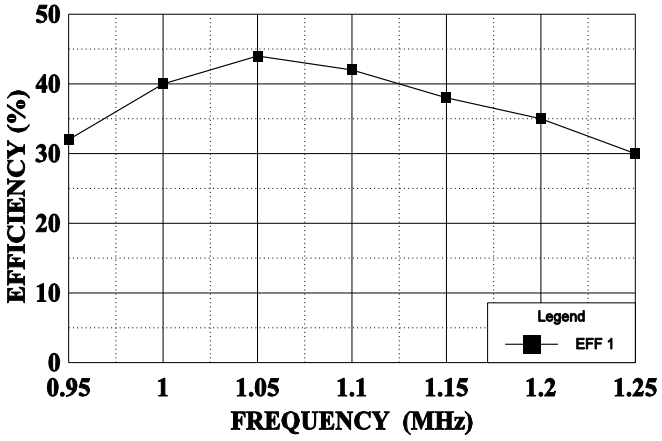
WIDEBAND CIRCUIT INPUT RETURN L0SS

Vcc = 50 V, Pin = 7.0 W



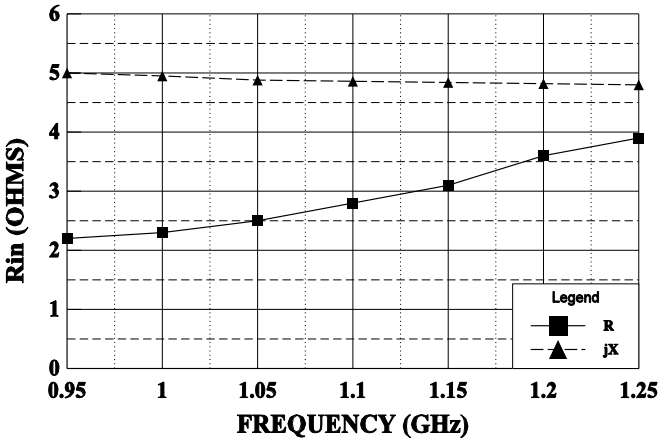
EFFICIENCY vs FREQUENCY

Vcc = 50 V, Pin = 7.0 W



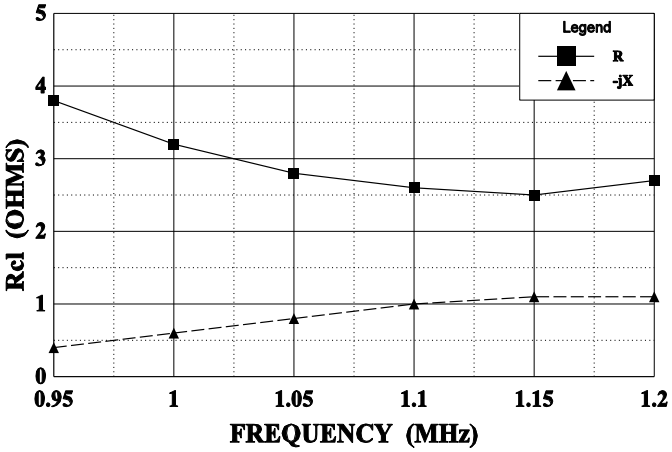
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 50 V, Pin = 7. 0 W



SERIES LOAD IMPEDANCE vs FREQUENCY

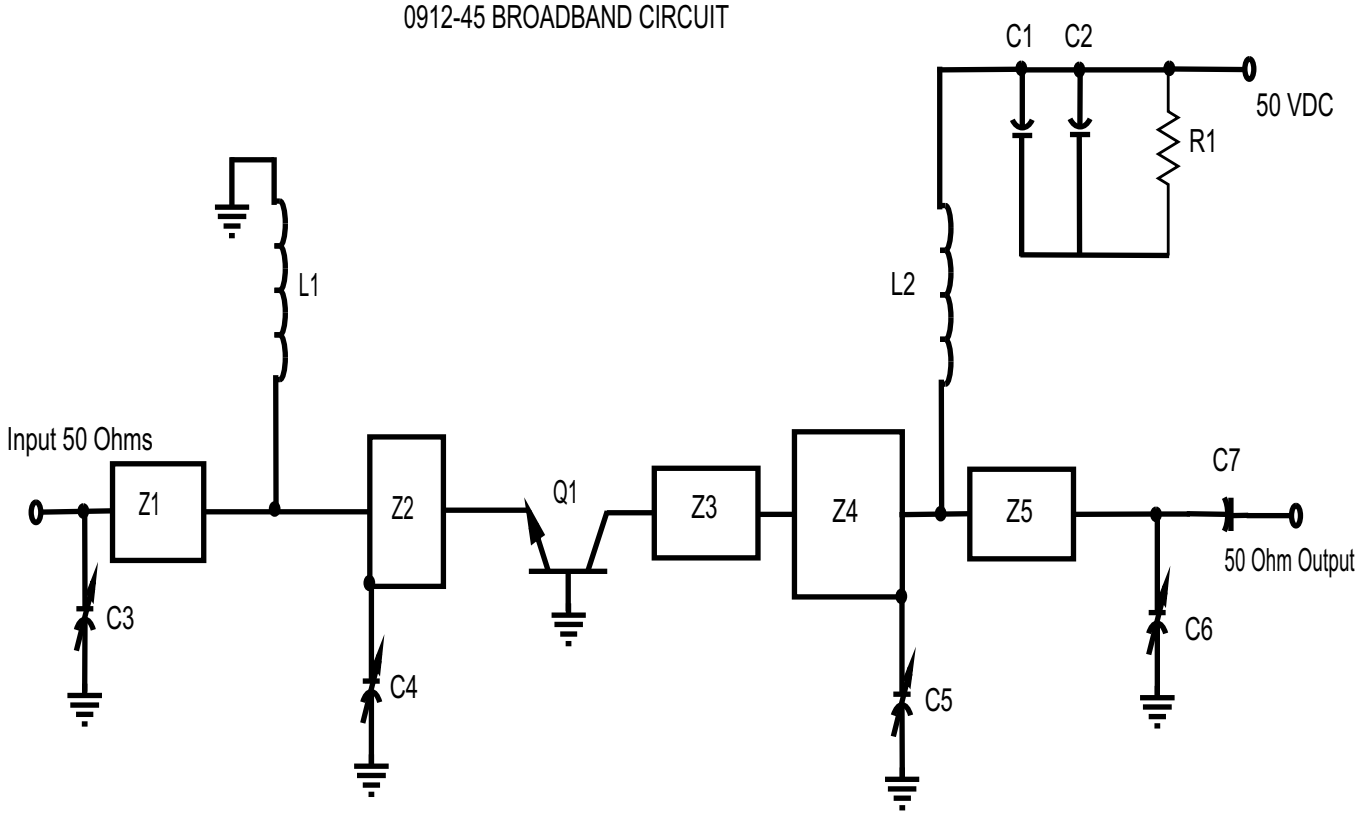
Vcc = 50 V, Pin = 7.0 W



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0912-45 BROADBAND CIRCUIT



PC Board Material .010" Dielectric Teflon Fiberglass

Z1=50 , .08 , = .027"w X .59"L
Z2=2.7 .064 , =.80"w X .44"L
Z3=10 , .062 , =.20"w X .443"L
Z4=3.7 , .08 , =.55"w X .55"L
Z5=50 , .075 , =.027"w X .56"L
L1= Inductor #14 wire, 0.7" long
L2= Inductor #18 wire, 1.5" long

C1=Capacitor 100 pF "B" (100mil) ATC
C2=Capacitor 68mfd, 75V Electrolytic
C3, C4, C5, C6= Capacitor .35-3.5pF Piston Trimmer
C4=Capacitor 47pF "B" (100mil) ATC
R1= Resistor, 15WK 1/4W
Q1=GHz Transistor 0912-45

All electrical lengths taken at 1.09 GHz

August 1996