GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

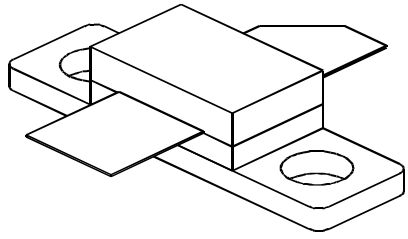
0912-7

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

GENERAL DESCRIPTION

The 0912-7 is a COMMON BASE bipolar transistor. It is designed for pulsed systems in the frequency band 960-1215 MHz. The transistor includes input prematch for broadband capability. The device has gold thin-film metallization for proven highest MTTF. Low thermal resistance package reduces junction temperature, extends life.

CASE OUTLINE
55CX, STYLE 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C[2]	50 Watts
Maximum Voltage and Current	
BVces Collector to Emitter Voltage	60 Volts
BVebo Emitter to Base Voltage	4.0 Volts
Ic Collector Current	1.0 Amps
Maximum Temperatures	
Storage Temperature	- 65 to + 150 °C
Operating Junction Temperature	+ 200°C

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out	F = 960-1215 MHz	7			Watts
Pin	Power Input	Vcc = 50 Volts			1	Watts
Pg	Power Gain	PW = 10 μsec	8.5			d B
η_c	Collector Efficiency (1090 MHz)	DF =1%		40		%
VSWR	Load Mismatch Tolerance	F = 1090 MHz			10:1	

BVebo	Emitter to Base Breakdown	Ie = 10 mA	4			Volts
BVces	Collector to Emitter Breakdown	Ic = 20 mA	60			Volts
Cob	Capacitance Collector to Base	Vcb = 50 V		6.5	8	pF
$\mathbf{h_{FE}}$	DC - Current Gain	Ic= 100 mA, Vcc= 5V	10		120	
θ**jc** [2]	Thermal Resistance				3.5	°C/W

Note1: At Rated Power Output and pulse conditions.
2: At rated pulse conditions

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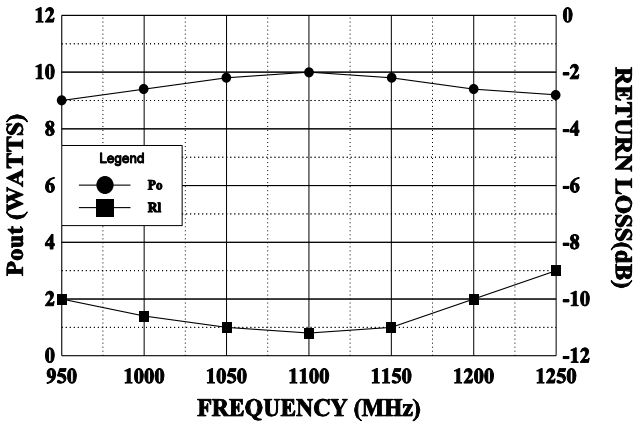
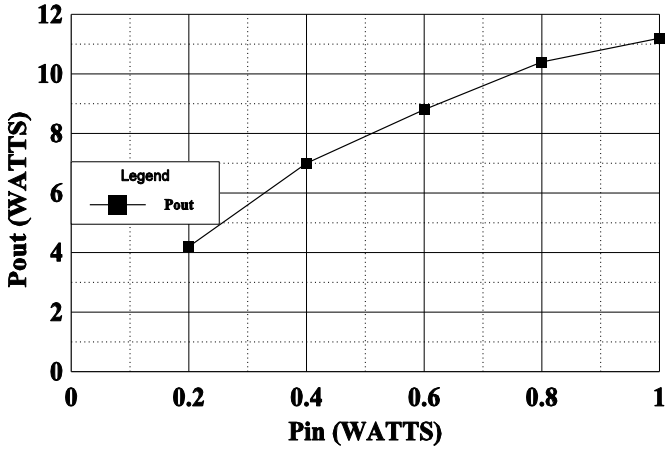
BROADBAND Pout & RETURN LOSS

Pin = 1 Watt Pk, Vcc = 50 Volts



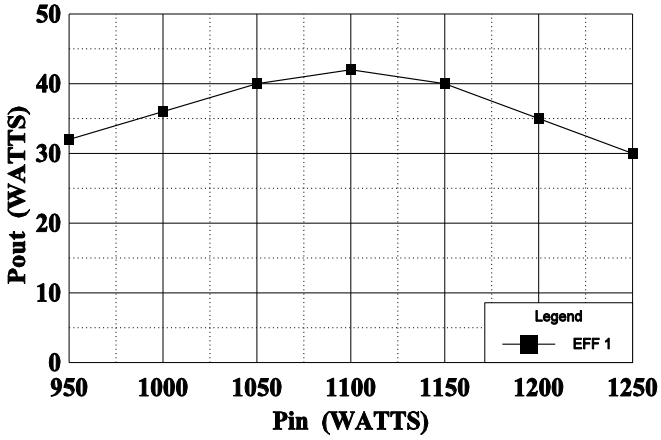
POWER OUTPUT vs POWER INPUT

Vcc = 50V, Frequency 1090 MHz



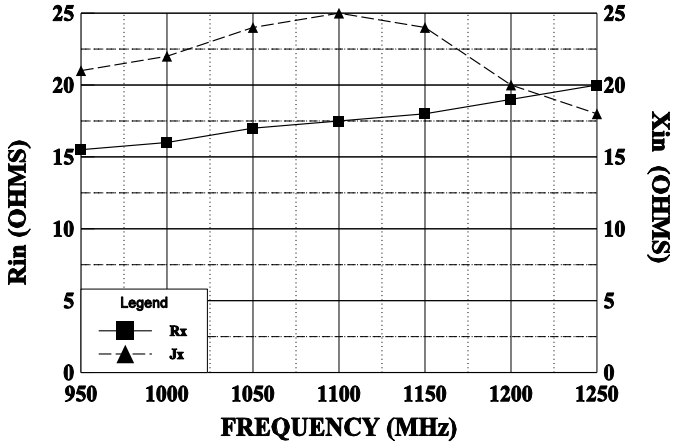
EFFICIENCY vs FREQUENCY

Vcc 50 Volts, Pin = 1 Watt



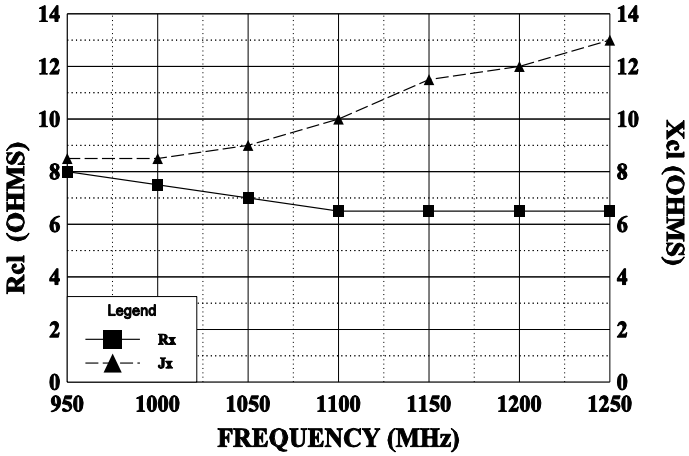
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 50 V, Pin = 1 W



SERIES LOAD IMPEDANCEvs FREQUENCY

Vcc = 50 V, Pin = 1W



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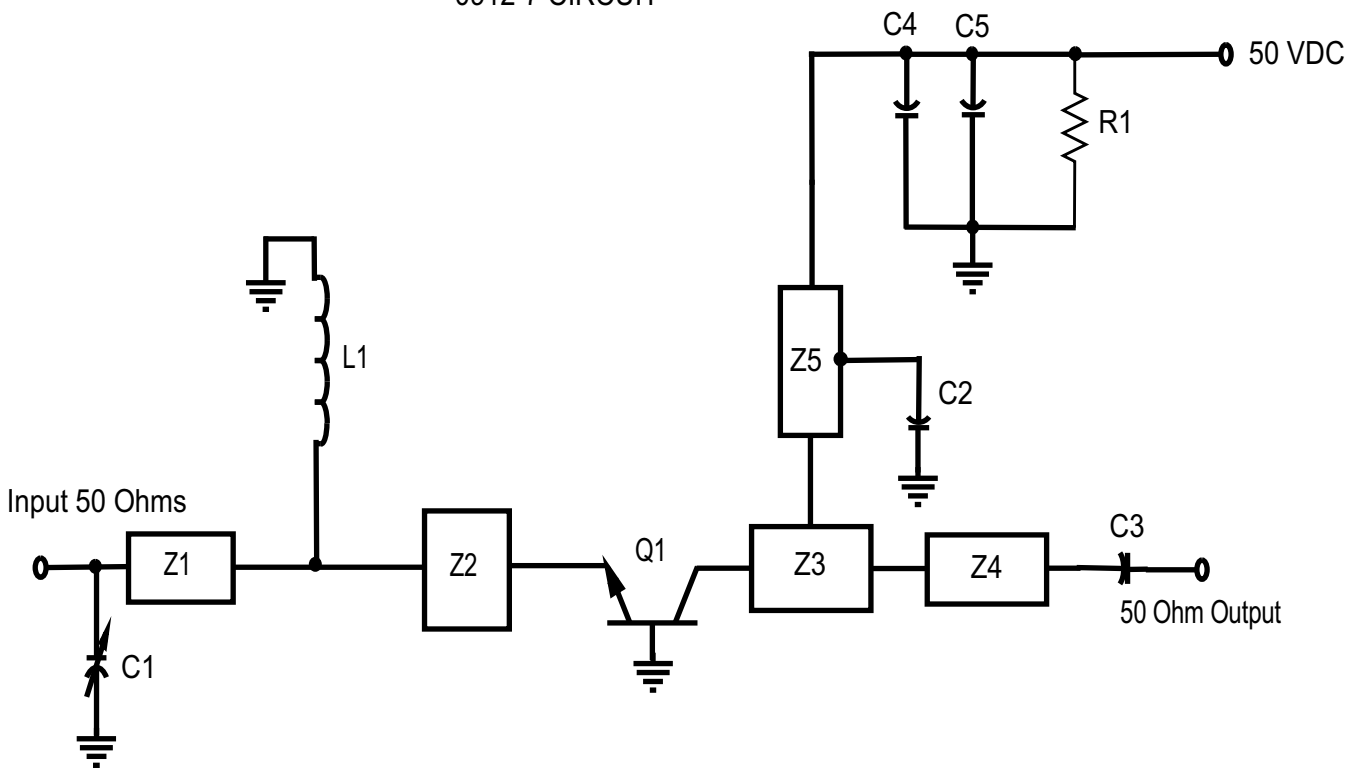
RF·MICROWAVE SILICON POWER TRANSISTORS

0912-7

0912-7 CIRCUIT



PC Board Material .010" Dielectric Teflon Fiberglass

Z1=50 , .062 , =.027"w X .45"L
Z2=5 , .033 ,=.43"w X .23"L
Z3=10 , .06 , =.20"w X .40"L
Z4=50 = .027"w X any convenient length
Z5=50 , .12 , =.027"w X .86"L
C1=Capacitor, .35-3.5pF Piston Trimmer
C2=Capacitor, 47pF ATC

Note: Slide C2 along Z5 for best tuning
C3=Capacitor, 47pF ATC
C4=Capacitor, 100 pF ATC
C5=Capacitor, 12mfd, 75 VDC, Electrolytic
L1=Inductor, #18 wire, 1.5" long
R1=Resistor, 10KW, 1/4W
Q1=Transistor, GHz 0912-7

All electrical lengths taken at 1.09 GHz

August 1996