CHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

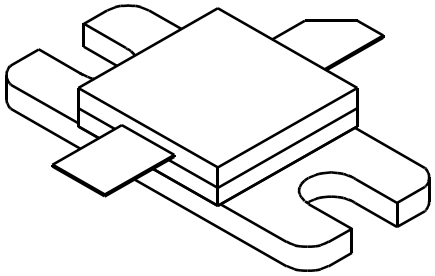
1920A12

12 Watts PEP, 25 Volts, Class A
10 dB Gain
Personal 1930 - 1990 MHz

GENERAL DESCRIPTION

The 1920A12 is a COMMON EMITTER transistor capable of providing 12 Watts of Class A, RF output power over the band 1930-1990 MHz. This transistor is specifically designed for **PERSONAL COMMUNICATIONS BASE STATION LINEAR** amplifier applications. It includes Input prematching and utilizes Gold metalization and HIGH VALUE EMITTER ballasting to provide high reliability and supreme ruggedness.

CASE OUTLINE
55AR, STYLE 2
COMMON EMITTER



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25ºC	120 Watts
Maximum Voltage and Current	
BVces Collector to Emitter Voltage	55 Volts
LVceo Collector to Emitter Voltage	27 Volts
BVebo Emitter to Base Voltage	3.5 Volts
Ic Collector Current	14 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 - PEP	F =1930 - 1990 MHz	12			Watt
Pin	Power Input - PEP	Vce = 25 Volts			1.4	Watt
Pg	Power Gain - Small Signal	Icq = 2.0 Amps	10	11		dB
IMD$_3$	Intermodulation Distortion	As Above		-32		dB
η_c	Collector Efficiency	At P1dB		30		%
VSWR$_1$	Load Mismatch Tolerance				3:1	

BVces	Collector to Emitter Breakdown	Ic = 50 mA	55			Volts
BVceo	Collector to Emitter Breakdown	Ic = 50 mA	27			Volts
BVebo	Emitter to Base Breakdown	Ie = 10 mA	3.5			Volts
Ices	Collector Leakage Current	Vce = 27 Volts			10	mA
h$_{FE}$	DC - Current Gain	Vce = 5 V, Ic = 0.7 A	20		100	
θjc	Thermal Resistance	Tc = 25ºC			1.6	ºC/W

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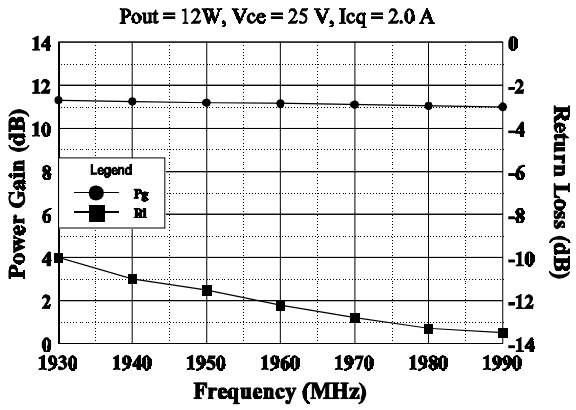
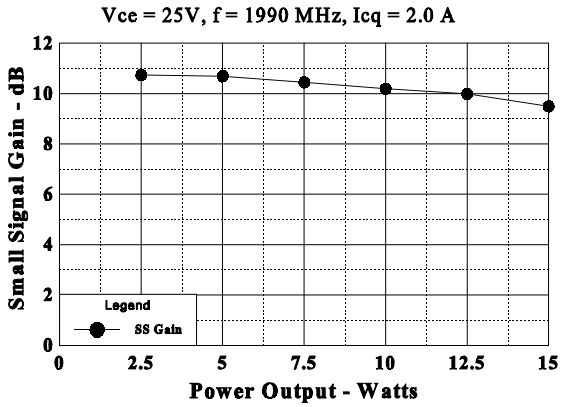
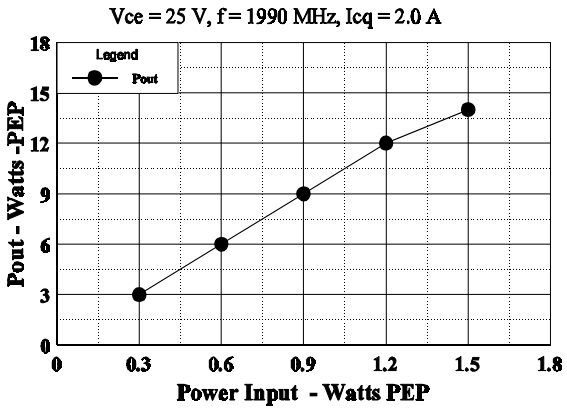
BROADBAND POWER GAIN & RETURN LOSS



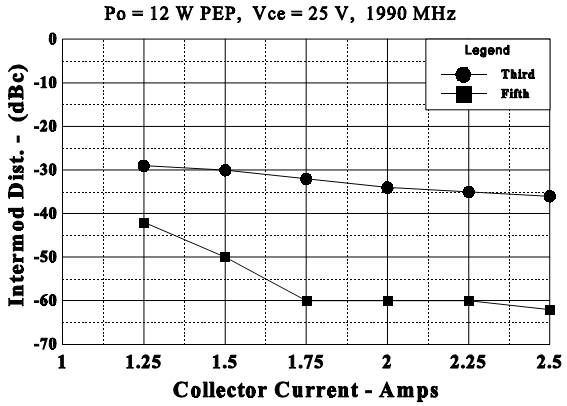
Power Gain vs Power Output



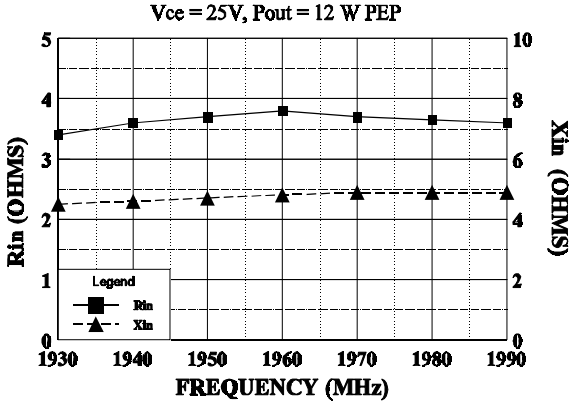
Power Output vs Power Input



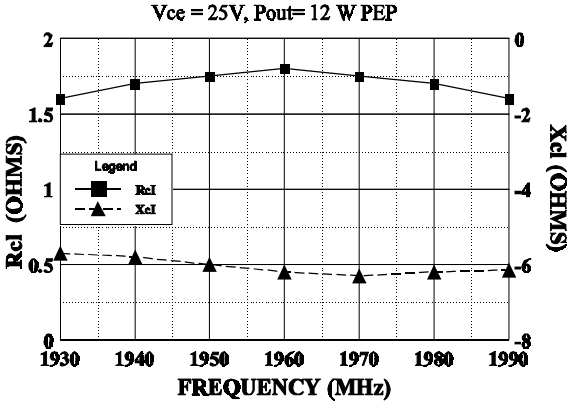
INTERMOD DIST. vs COLLECTOR CURRENT



INPUT IMPEDANCE



LOAD IMPEDANCE



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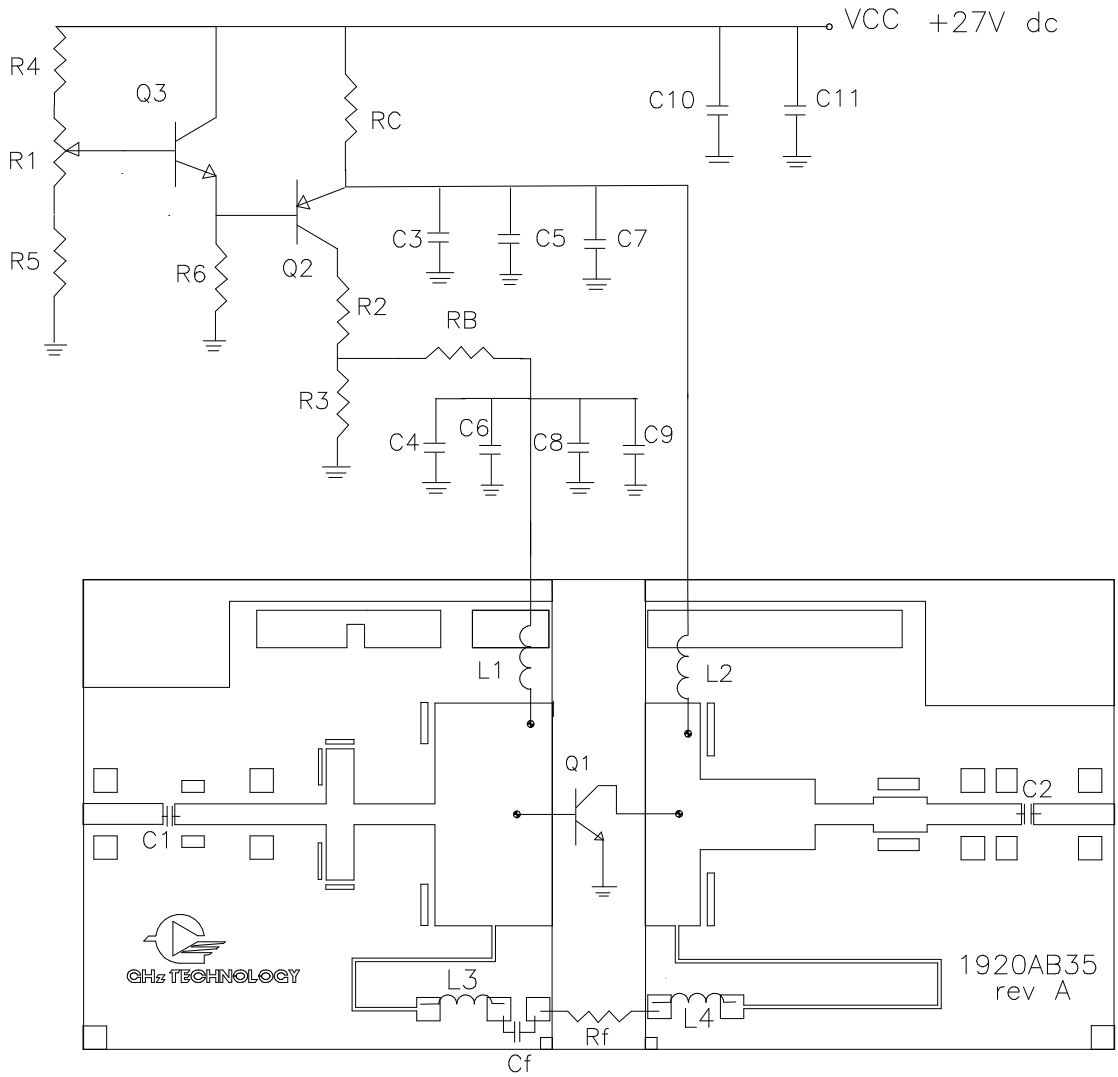
TEST CIRCUIT 1920A12



Q1=1920A12
Q2=BD136, PNP
Q3=2N2222A,NPN
R1=1k pot.
R2=47 OHM 2W
R3=82 OHM 1W
R4=360 OHM 1/4W
R5=5.1k 1/4W
R6=2.2K 1/2W
RB = 4.7 OHM 1/4W
RC=1 OHM 5W
Rf = 51 ohm 1/2w

C1,C2=62 pf chip, ATC
C3,C4=10,000 pf chip, ATC
C5,C6=11 pf chip (ATC 100 B)
C7=10 uf, 35 V electrolytic
C8=220 uf 10V electrolytic
C9=.068 uf
C10=.33 uf
C11=47 uf 35V electrolytic
Cf =10,000 pf chip (ATC 200B)
L1,L2,L3,L4 = 6T, .08 dia
#24awg magnet wire
PCB: USE 1920AB35A circuit