GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

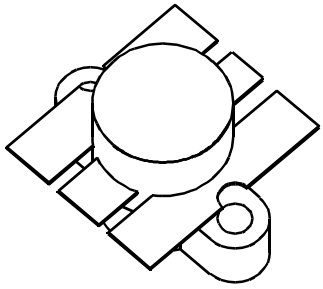
VTV300

30 Watts, 25 Volts
VHF Television - Band III

GENERAL DESCRIPTION

The VTV 300 is a COMMON EMITTER transistor capable of providing 30 Watts Peak, Class A, RF Output Power over the band 175 - 225 MHz. It is designed for high efficiency, high linerity, Class A operation. Gold Metalization and Diffused Ballasting are used to provide high reliability and supreme ruggedness.

CASE OUTLINE
55HV, STYLE 1



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C 146 Watts

Maximum Voltage and Current

BVces	Collector to Emitter Voltage	45 Volts
BVceo	Collector to Emitter Voltage	25 Volts
BVebo	Emitter to Base Voltage	4.0 Volts
Ic	Collector Current	14 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 - Pk Sync[1]	F = 175-225 MHz	30	35		Watts
Pin	Power Input	Vcc = 25 Volts		5		Watts
Pg	Power Gain	Ic = 5.0 Amps	6	7		dB
η	Efficiency			30		%
IMD[1]	Intermodulation Distortion	Pref = 7.5 Watts		-50		dB
$VSWR_1$	Load Mismatch Tolerance	F = 225 MHz			3:1	

LVceo	Collector to Emitter Breakdown	Ic = 25 mA	28			Volts
BVces	Collector to Base Breakdown	Ic = 100mA	45			Volts
BVebo	Emitter to Base Breakdown	Ie = 10 mA	4.0			Volts
h_{FE}	Current Gain	Vce = 5 V, 1mA	10	40		
Cob	Output Capacitance	Vcb = 25V, F=1MHz		135		pF
θjc	Thermal Resistance	Tc = 25°C		1.0	1.2	°C/W

Note 1: European three tone test method: Vision carrier -8dB, sound carrier -7dB, sideband signal -16 dB, 0 dB corresponds to peak sync level.

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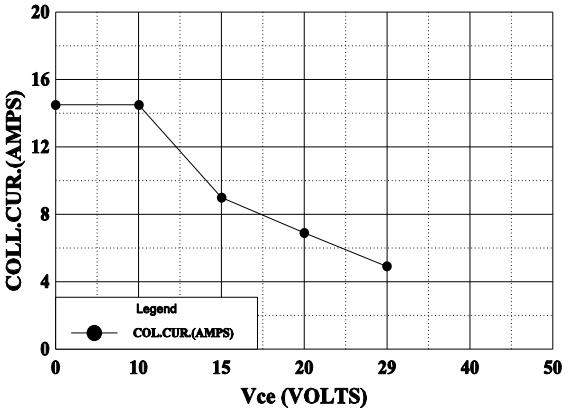
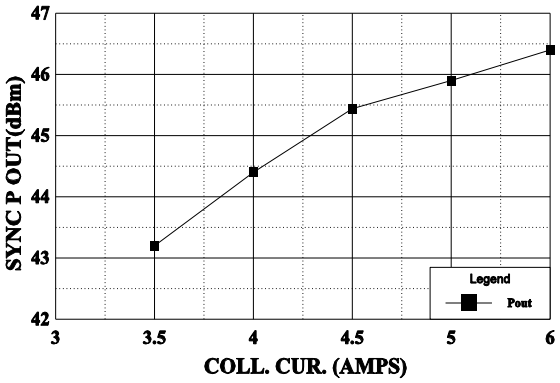
DC SAFE OPERATING AREA



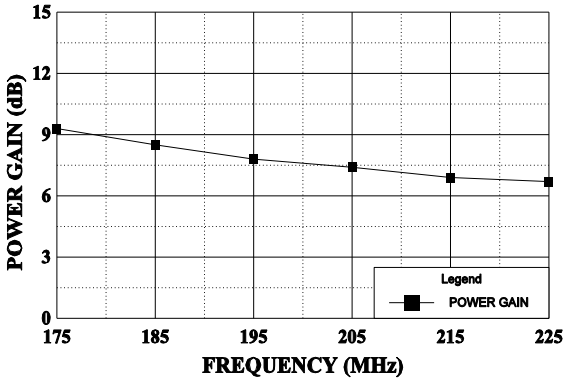
SYNC OUTPUT vs COLLECTOR CURRENT

Vcc - 25V, Frequency 225 MHz



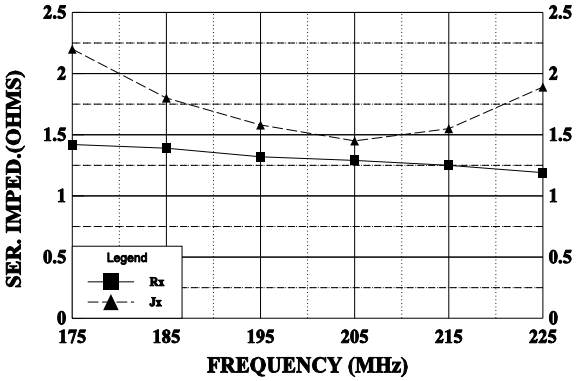
POWER GAIN vs FREQUENCY

Vcc = 25V, Ic = 5.0A, Ths = 65 C



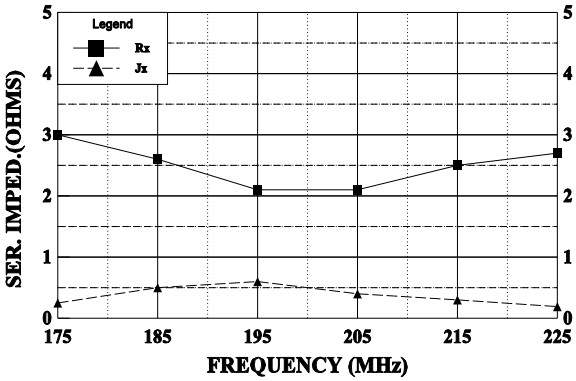
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 25V, Ic = 5.00A, Ths = 65 C



SERIES LOAD IMPEDANCE vs FREQUENCY

Vcc = 25V, Ic = 5.0A, Ths = 65 C



August 1996

CHz TECHNOLOGY
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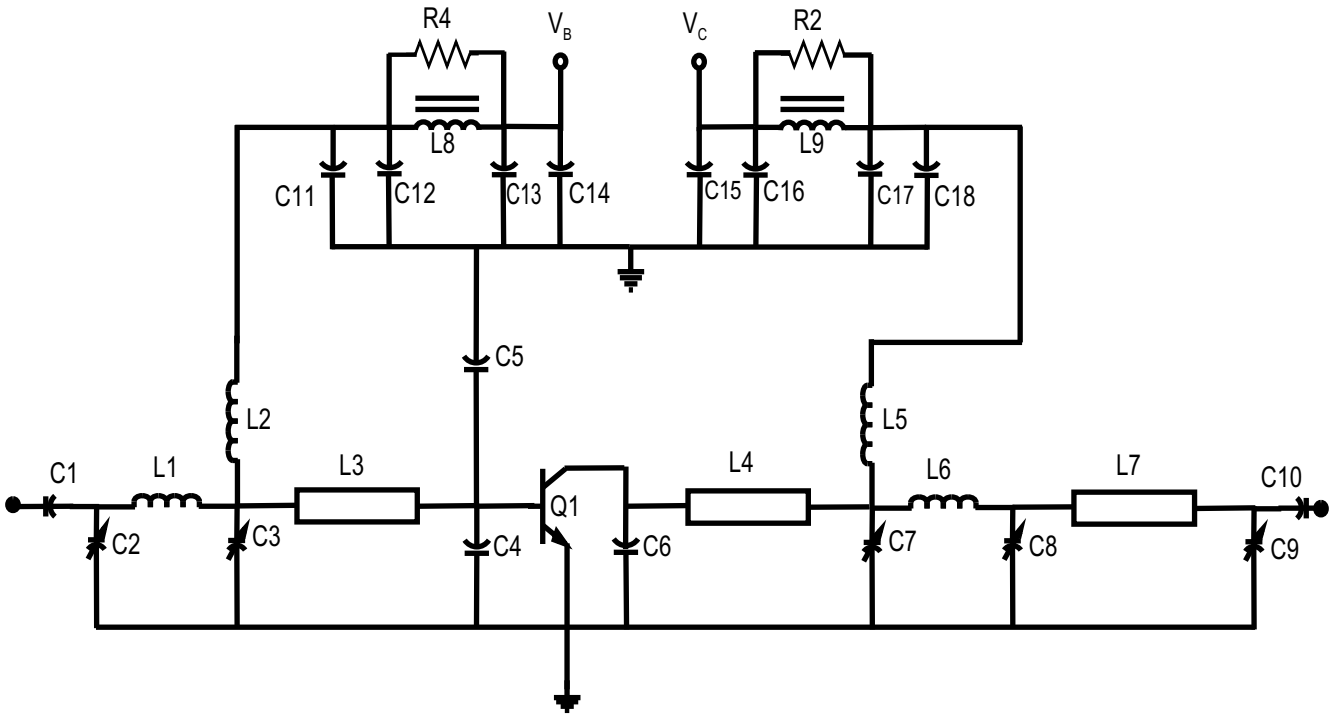
VTV- 300

VTV-300 RF Test Circuit (Tunable 175-225 MHz)
Recommended Bias: V_{CE}=25V, I_C=5.0 A (DC Bias not shown)



C1, C10, C11, C18..... 220pf ceramic chip
C2..... 5-70pf compression mica
C3, C7..... 11-170pf compression mica
C4, C5, C6..... 68 pf ceramic chip
C8, C9..... 4-40pf compression mica
C12, C17..... 390 ceramic chip
C13, C16..... 1mf electrolytic
C14, C15..... 50 mf electrolytic
L1..... Copper strap 1,20" x .10" x .025"

L2..... 0.1 nH wire wound
L3..... 50 W line .925" long
L4..... 50 W line .465" long
L5..... 5 turns #24 wire, .12" I.D.
L6..... Copper strap 1.10" x .15" x .075"
L7..... 50 W line .960" long
L8, L9..... 9 turns #22 wire on F627-8 Q1 torroid
R1, R2..... 15 W 1/2 watt carbon (10%)
Board Material is 1/16" Teflon Fiberglass.

August 1996