



GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

UTV200

20 Watts, 26.5 Volts, Class A
UHF Television - Band IV & V

<p>GENERAL DESCRIPTION The UTV 200 is a COMMON Emitter transistor capable of providing 20 Watt Peak, Class A, RF Output Power over the band 470 - 860 MHz. The transistor includes double input prematching for full broadband capability. Gold Metalization and Diffused Ballasting are used to provide high reliability and supreme ruggedness.</p> <p>ABSOLUTE MAXIMUM RATINGS</p> <table border="0"> <tr> <td>Maximum Power Dissipation @ 25°C</td> <td>80 Watts</td> </tr> <tr> <td>Maximum Voltage and Current</td> <td></td> </tr> <tr> <td>BVces Collector to Emitter Voltage</td> <td>50 Volts</td> </tr> <tr> <td>BVceo Collector to Emitter Voltage</td> <td>28 Volts</td> </tr> <tr> <td>BVebo Emitter to Base Voltage</td> <td>4.0 Volts</td> </tr> <tr> <td>Ic Collector Current</td> <td>4.5 Amps</td> </tr> <tr> <td>Maximum Temperatures</td> <td></td> </tr> <tr> <td>Storage Temperature</td> <td>- 65 to + 200°C</td> </tr> <tr> <td>Operating Junction Temperature</td> <td>+ 200°C</td> </tr> </table>	Maximum Power Dissipation @ 25°C	80 Watts	Maximum Voltage and Current		BVces Collector to Emitter Voltage	50 Volts	BVceo Collector to Emitter Voltage	28 Volts	BVebo Emitter to Base Voltage	4.0 Volts	Ic Collector Current	4.5 Amps	Maximum Temperatures		Storage Temperature	- 65 to + 200°C	Operating Junction Temperature	+ 200°C	<p>CASE OUTLINE 55JV, STYLE 2</p>
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ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out - Pk Sync	F = 470 - 860 MHz	20			Watts
Pin	Power Input	Vcc = 26.5 Volts			2.8	Watts
Pg	Power Gain	Ic = 2.7 Amps	8.5	9.5		dB
IMD¹	Intermodulation Distortion	Pref = 20Watts		-48	-46	dB
VSWR₁	Load Mismatch Tolerance	F = 860 MHz			3:1	

LVceo²	Collector to Emitter Breakdown	Ic = 40 mA	28			Volts
BVces²	Collector to Base Breakdown	Ic = 20mA	50			Volts
BVebo²	Emitter to Base Breakdown	Ie = 10 mA	4			Volts
h_{FE}²	Current Gain	Vce = 5 V, 1 A	10		150	
Cob²	Output Capacitance	Vcb = 26 V, F = 1 MHz			36	pF
θjc	Thermal Resistance	Tc = 25°C			1.2	°C/W

Note 1: F1=860 MHz, F2=863.5 MHz, F3=864.5 MHz

European test method, Vision = - 8dB, Sideband = - 16dB, Sound = - 7 dB

Note 2: Per side

Initial Issue June, 1994

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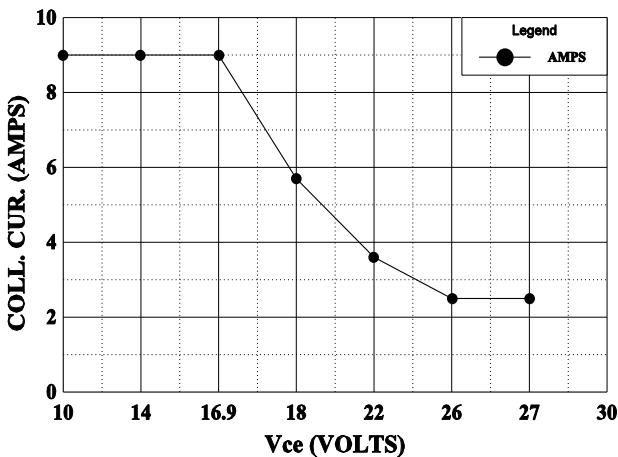
GHZ Technology Inc. 3000 Oakmead Village Drive, Santa Clara, CA 95051-0808 Tel. 408 / 986-8031 Fax 408 / 986-8120



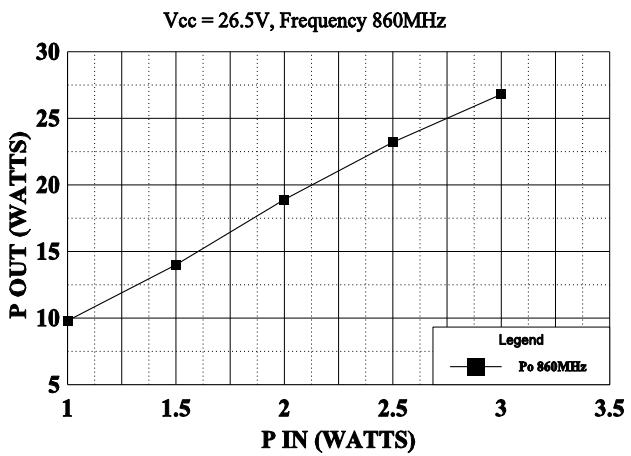
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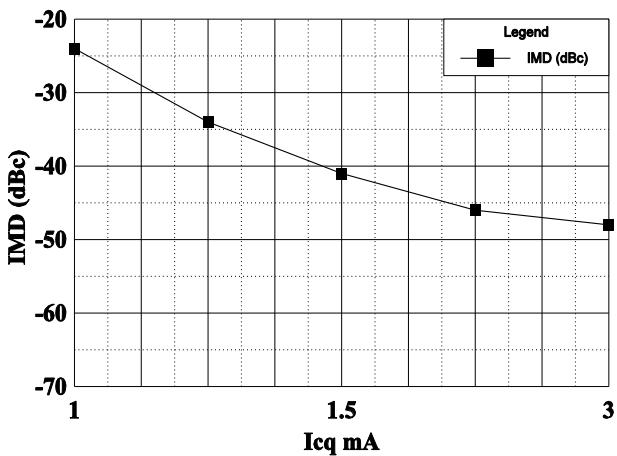
DC SAFE OPERATING AREA



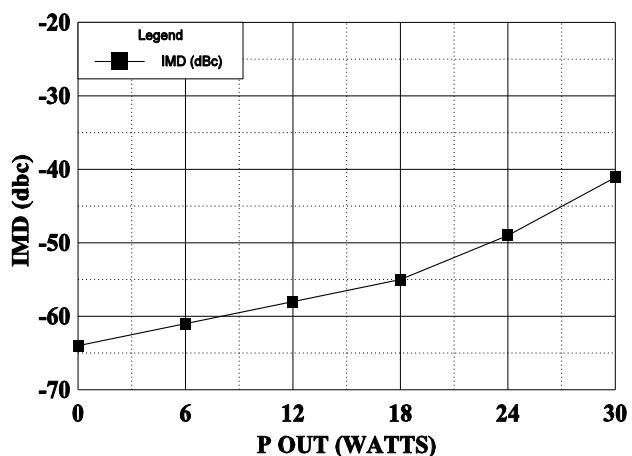
POWER OUTPUT vs POWER INPUT



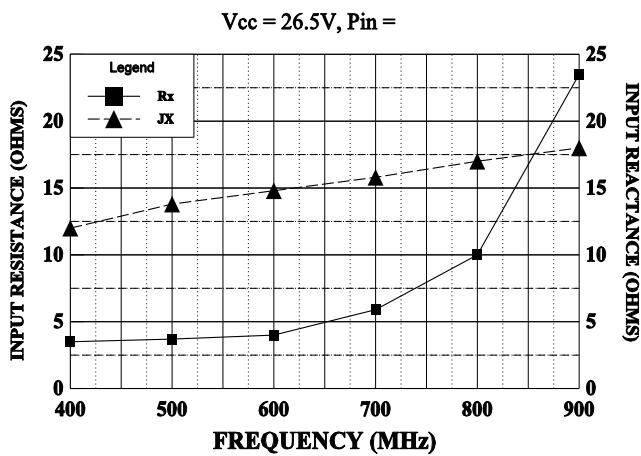
IMD vs Icq



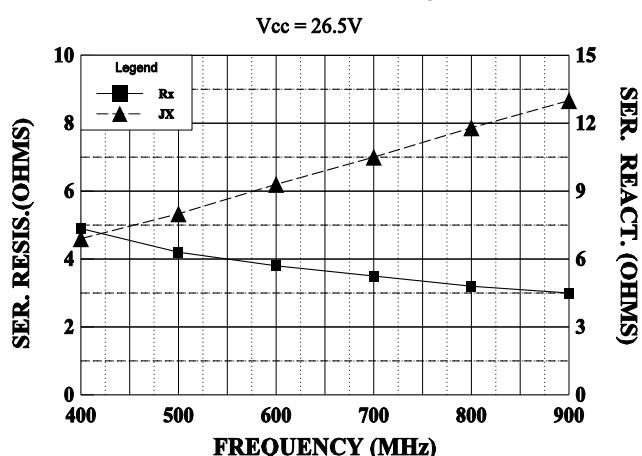
IMD vs P out



INPUT IMPEDANCE vs FREQUENCY



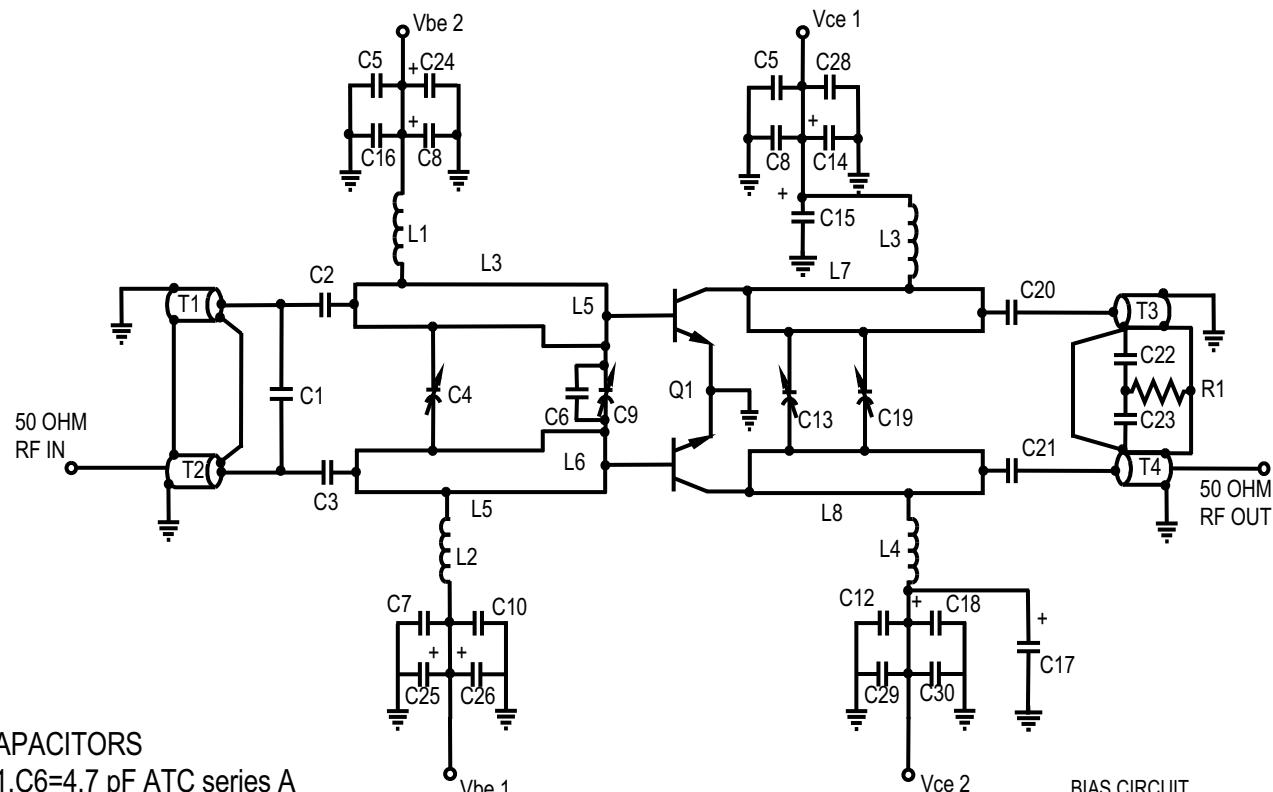
LOAD IMPEDANCE vs FREQUENCY





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CAPACITORS

C1,C6=4.7 pF ATC series A
 C2,C3,C20,C21=33 pF ATC series A
 C4,C9=1.2-3.5 pF film diel. trimmer
 C5,C7,C11,C12=0.01 mF, 50V Tantalum
 C8,C15,C17,C25=1 mF, 50 V Tantalum
 C10,C16,C27,C12=0.1 mF 50 V disc ceramic
 C13=0.6-6 pF piston trimmer
 C19=0.35-3.5 pF piston trimmer
 C18,C24,C14,C26=10 mF, 50 V
 C28,C30=0.001 mF, 50 V disc ceramic
 C31=100 mF, 50 V electrolytic

RESISTORS

R1=10 Ohm, 1/2 W Carbon
 R2,R6=500 Ohm potentiometer
 R3,R7=4.7K Ohm, 3W, 1% Carbon
 R4,R8=1 Ohm, 3W, 1% Carbon film
 R5,R9=47 Ohm, 1/4W Carbon film

INDUCTORS

L1,L2=0.46 microHenry molded
 L3,L4=1 turn #18 magnet wire on a 0.325" form

TRANSISTORS
 Q1=GHz UTV-200
 Q2,Q3=MJE172

TRANSFORMERS

T1,T2,T3,T4=50 Ohm semi-rigid coax cable
 (0.056" X 1.1") soldered to 0.035" X 1.1" microstrip

MICROSTRIPINES
 L3,L4=0.075" X 0.65"
 L5,L6=0.120" X 0.31"
 L7,L8=0.120" X 1.33"

DIODES
 CR1,CR2=IN4148

