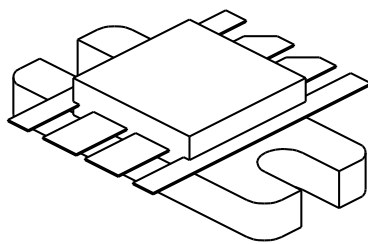


UTV120

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

<p>GENERAL DESCRIPTION The UTV 120 is a COMMON EMITTER transistor capable of providing 12 Watts 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>CASE OUTLINE 55JT, STYLE 2</p> 
<p>ABSOLUTE MAXIMUM RATINGS</p> <p>Maximum Power Dissipation @ 25°C 80 Watts</p> <p>Maximum Voltage and Current</p> <p>BVces Collector to Emitter Voltage 45 Volts BVceo Collector to Emitter Voltage 28 Volts BVebo Emitter to Base Voltage 4 Volts Ic Collector Current 3.5 Amps</p> <p>Maximum Temperatures</p> <p>Storage Temperature - 65 to + 150°C Operating Junction Temperature + 200°C</p>	

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out - Pk Sync	F = 470 - 860 MHz	12			Watts
Pin	Power Input	Vcc = 26.5 Volts			1.55	Watts
Pg	Power Gain	Ic = 1.7 Amps	8.9	9.5		dB
IMD¹	Intermodulation Distortion	Pref = 12 Watts			-52	dB
VSWR₁	Load Mismatch Tolerance	F = 860 MHz			3:1	

LVceo²	Collector to Emitter	Ic = 65 mA	28			Volts
BVces²	Breakdown	Ic = 25 mA	45			Volts
BVebo²	Collector to Base Breakdown	Ie = 10 mA	4			Volts
h_{FE}²	Emitter to Base Breakdown	Vce = 5 V, 500 mA	10			
Cob²	Current Gain	Vcb = 26 V, F = 1		23		pF
θjc	Output Capacitance	MHz			1.6	°C/W
	Thermal Resistance	Tc = 25°C				

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

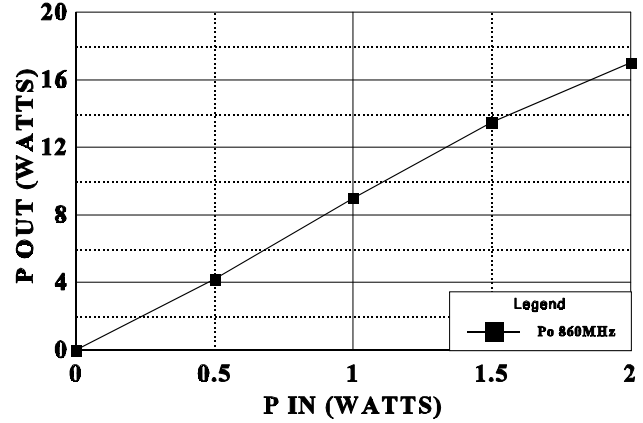
Initial Issue June, 1994

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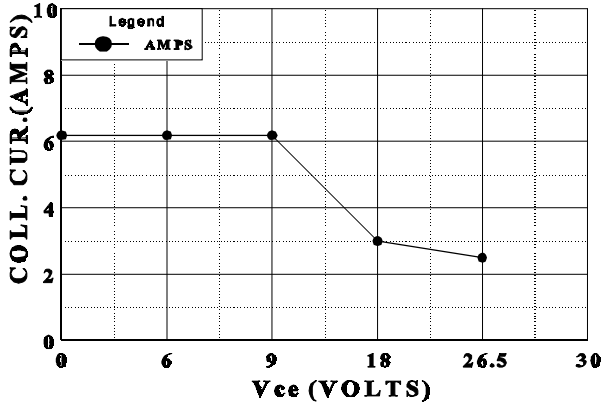


POWER OUTPUT vs POWER INPUT

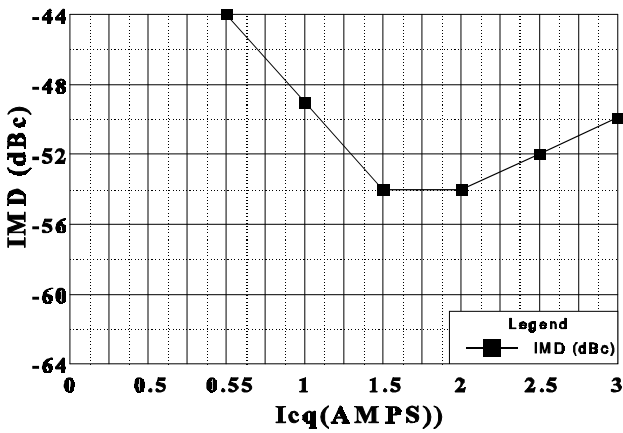
Vcc = 26.5 Frequency 860MHz



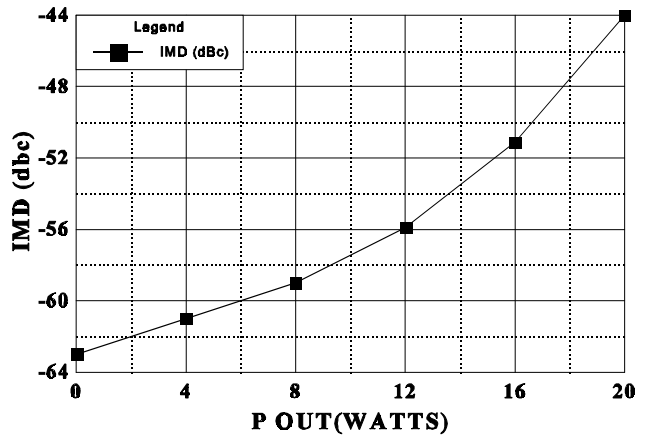
DC SAFE OPERATING AREA



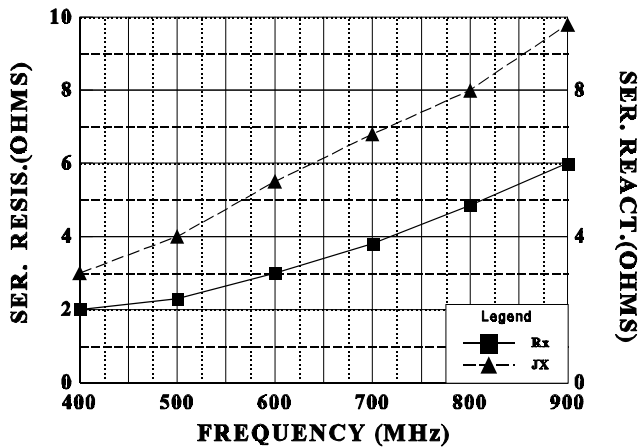
IMD vs Icq



IMD vs P out

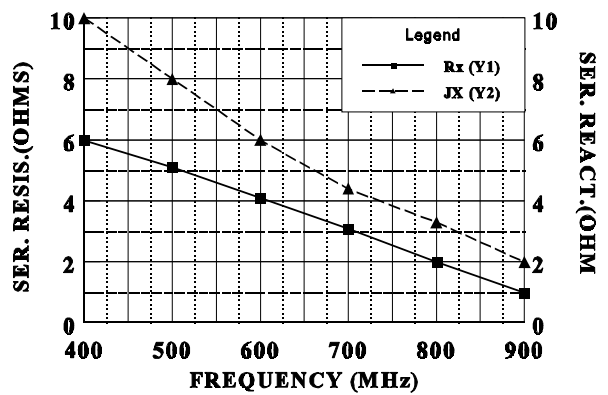


SERIES INPUT IMPEDANCE vs FREQUENCY

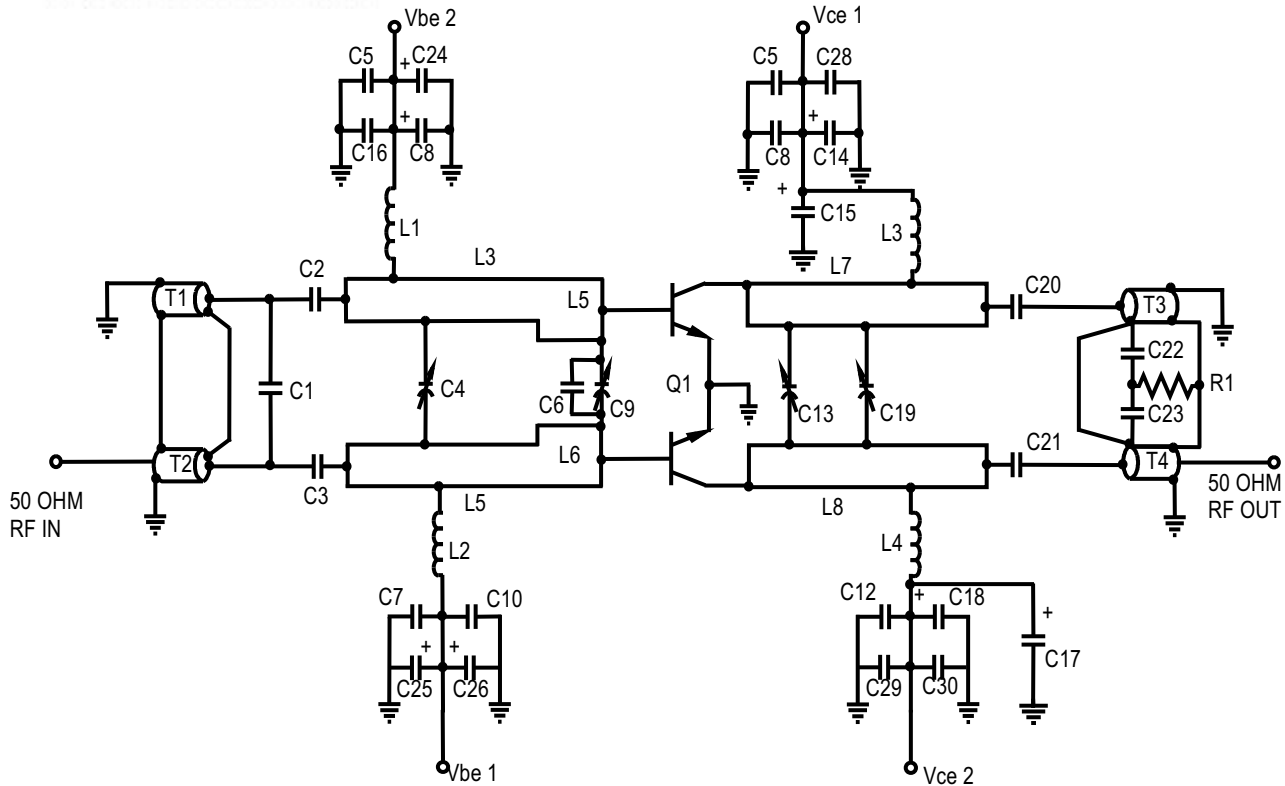


SERIES LOAD IMPEDANCE vs FREQUENCY

Vcc = 26.5V



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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

DIODES

CR1,CR2=IN4148

INDUCTORS

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

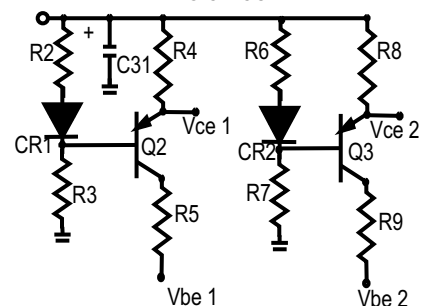
TRANSISTORS

Q1=GHz UTV-120
 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

BIAS CIRCUIT



MICROSTRIPLINES

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