

GENERAL DESCRIPTION

The UTV-120 is a balanced common emitter linear device. It is designed for Class A, UHF (Bands IV and V) TV service, rated at 12 Watts p-sync reference. Gold metalization and diffused emitter resistors provide ruggedness and reliability.

ABSOLUTE MAXIMUM RATINGS

Maximum Total Power Dissipation @ 25 C Case Temperature 80 W

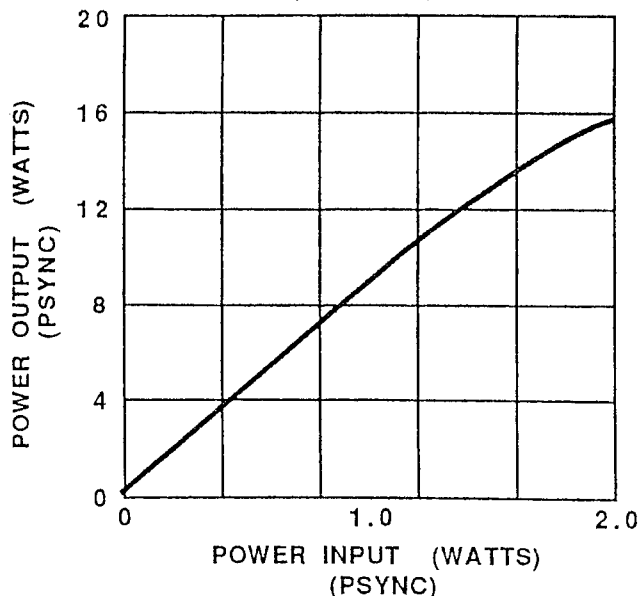
Maximum Voltage and Current

BVces	Collector to Emitter Voltage	50 V
BVebo	Emitter to Base Voltage	3.5 V
Ic	Collector Current (per side)	3.5 A

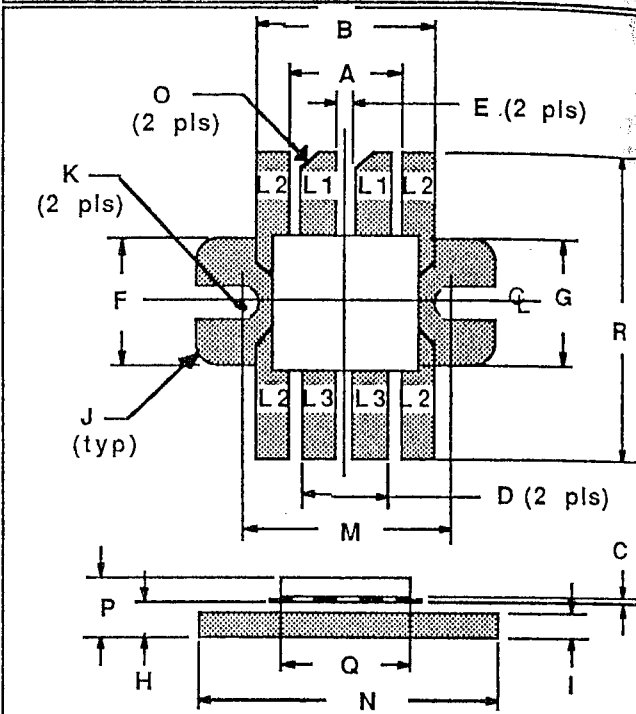
Maximum Temperatures

Storage Temperature	-65 to +150 °C
Operating Chip Temperature	+200 °C

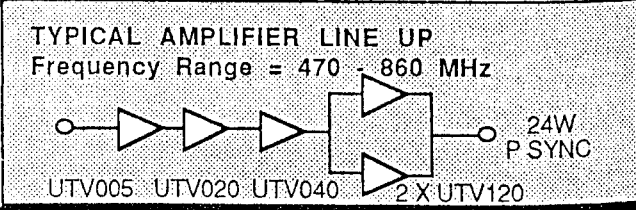
POWER OUTPUT VS POWER INPUT (TYPICAL)



UTV-120
12 WATTS - 26.5 VOLTS
470-860 MHz
UHF - TV LINEAR



DIM	Millimeter	TOL	Inches	TOL	
L1 : C					
L2 : E	A	9.14	.13	.360	.005
L3 : B	B	12.70	.13	.500	.005
	C	0.13	.02	.005	.001
	D	6.86	.13	.270	.005
	E	0.76	.13	.030	.005
	F	9.78	.13	.385	.005
	G	10.16	.13	.400	.005
	H	4.19	.13	.165	.005
	I	3.17	.13	.125	.005
	J	1.52 R	.13	.060 R	.005
	K	1.65 R	.13	.065 R	.005
	M	16.51	.13	.650	.005
	N	22.86	.13	.900	.005
	O	45 °	5 °	45 °	5 °
	P	6.35	REF	.250	REF
	Q	10.77	.13	.424	.005
	R	19.05	.25	.750	.010



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 PRINTED IN USA

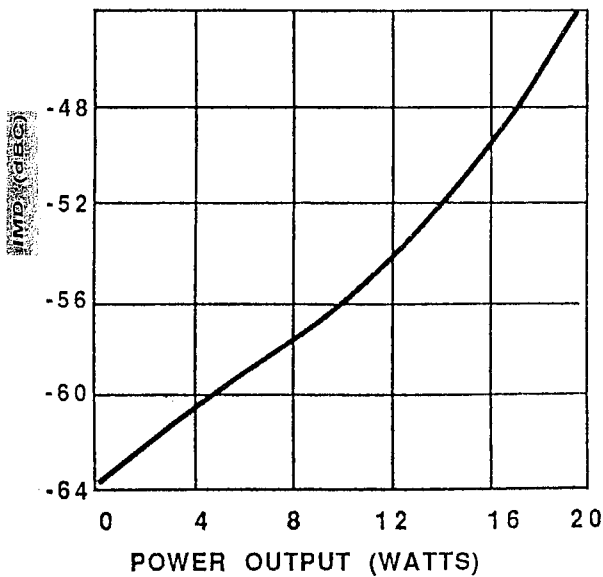
ELECTRICAL CHARACTERISTICS

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
P_{out}	Power Output	$f=470-960$ MHz, $V_{cc}=26.5$ Volts	12			Watts
P_{in}	Power Input	At Rated Power Out, $V_{cc}=26.5V$			1.55	Watts
P_g	Power Gain	$V_{ce}=26.5V$, $f=860MHz$	8.9	9.5		dB
BV_{ebo}^2	Voltage - Emitter to Base	$I_e=10mA$	4			Volts
BV_{ceo}^2	Voltage - Collector to Emitter	$I_c=65mA$	28			Volts
BV_{ces}^2	Voltage - Collector to Emitter	$I_c=25mA$	45			Volts
IMD^1	Intermodulation Distortion Level- 3 TONE(-8,-7,-16)	$I_c=850mA$ per side, $V_{ce}=26.5V$ $P_{ref}=12W$, $f=860MHz$.			-52	dB
VSWR	Load Mismatch Tolerance	$P_{out}=12W$, $f=860MHz$	3:1			
C_{cb}^2	Capacitance-Collector to Base	$V_{cb}=26.5V$, $f=1MHz$		23		pF
h_{FE}^2	DC-Current Gain	$V_{ce}=26.5V$, $I_c=500mA$	10			
θ_{jc}	Thermal Resistance	$T_c=25^\circ C$, $I_{cq}=0.85A$ per side			1.6	$^\circ C/W$

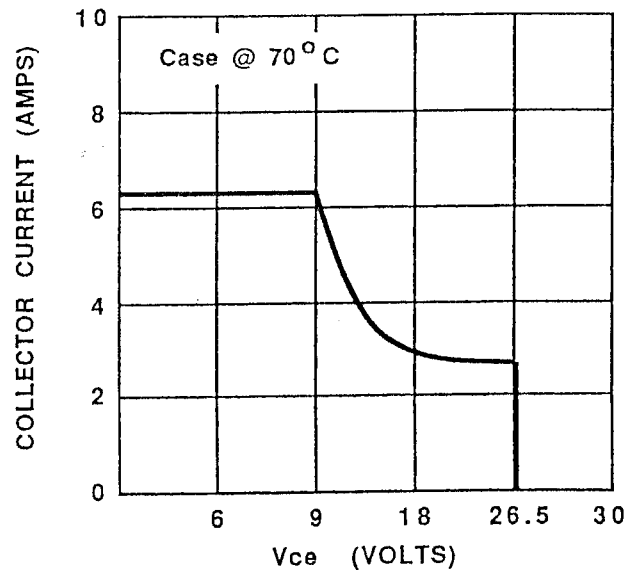
NOTE 1: $f_1=860MHz$, $f_2=863.5MHz$, $f_3=864.5MHz$.

NOTE 2: Per side.

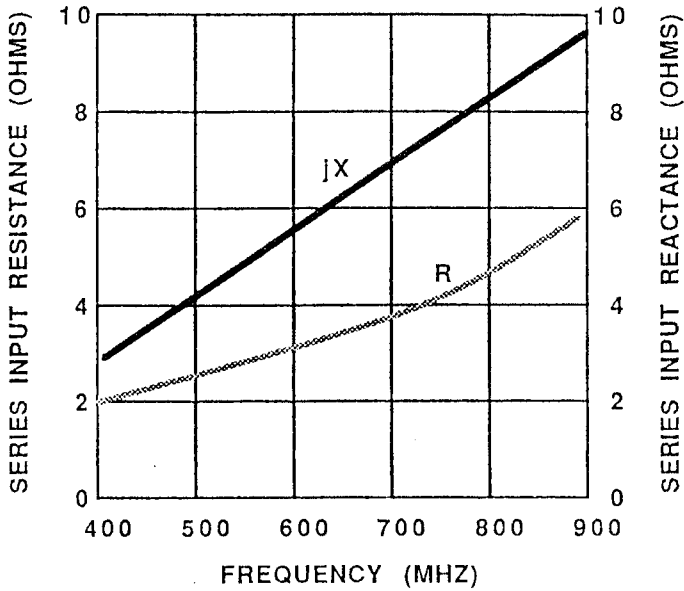
POWER OUTPUT VS IMD (TYPICAL)



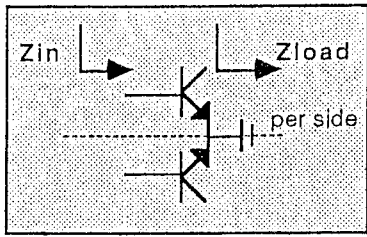
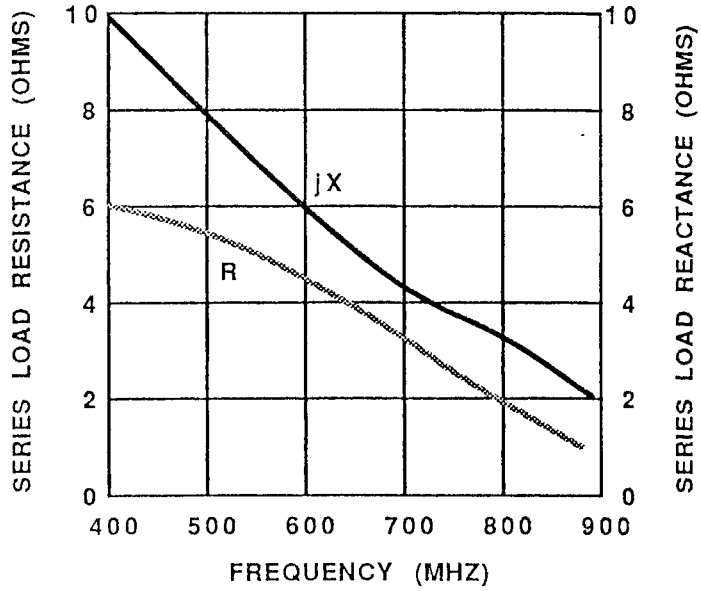
DC SAFE OPERATING AREA (TYPICAL)



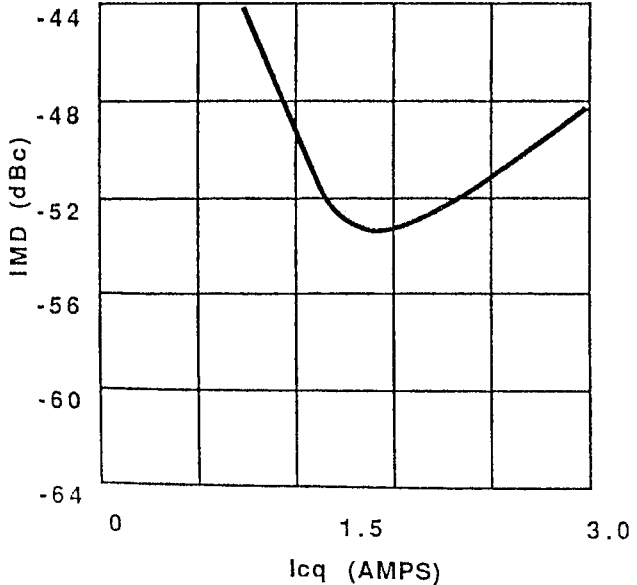
SERIES INPUT IMPEDANCE VS FREQUENCY (TYPICAL)



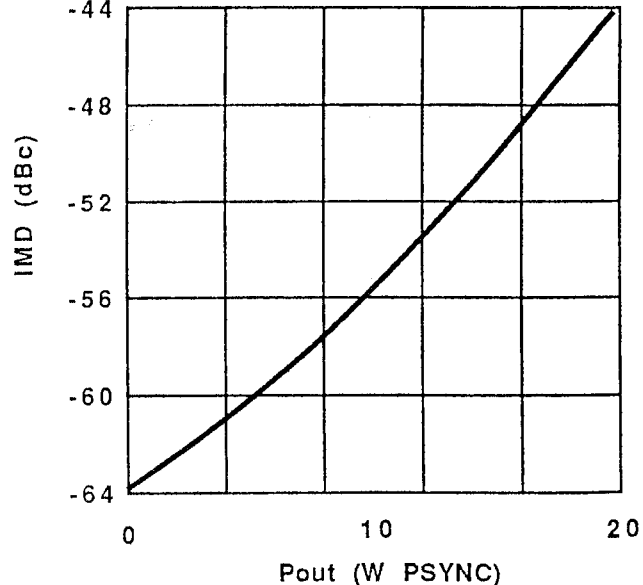
SERIES LOAD IMPEDANCE VS FREQUENCY (TYPICAL)



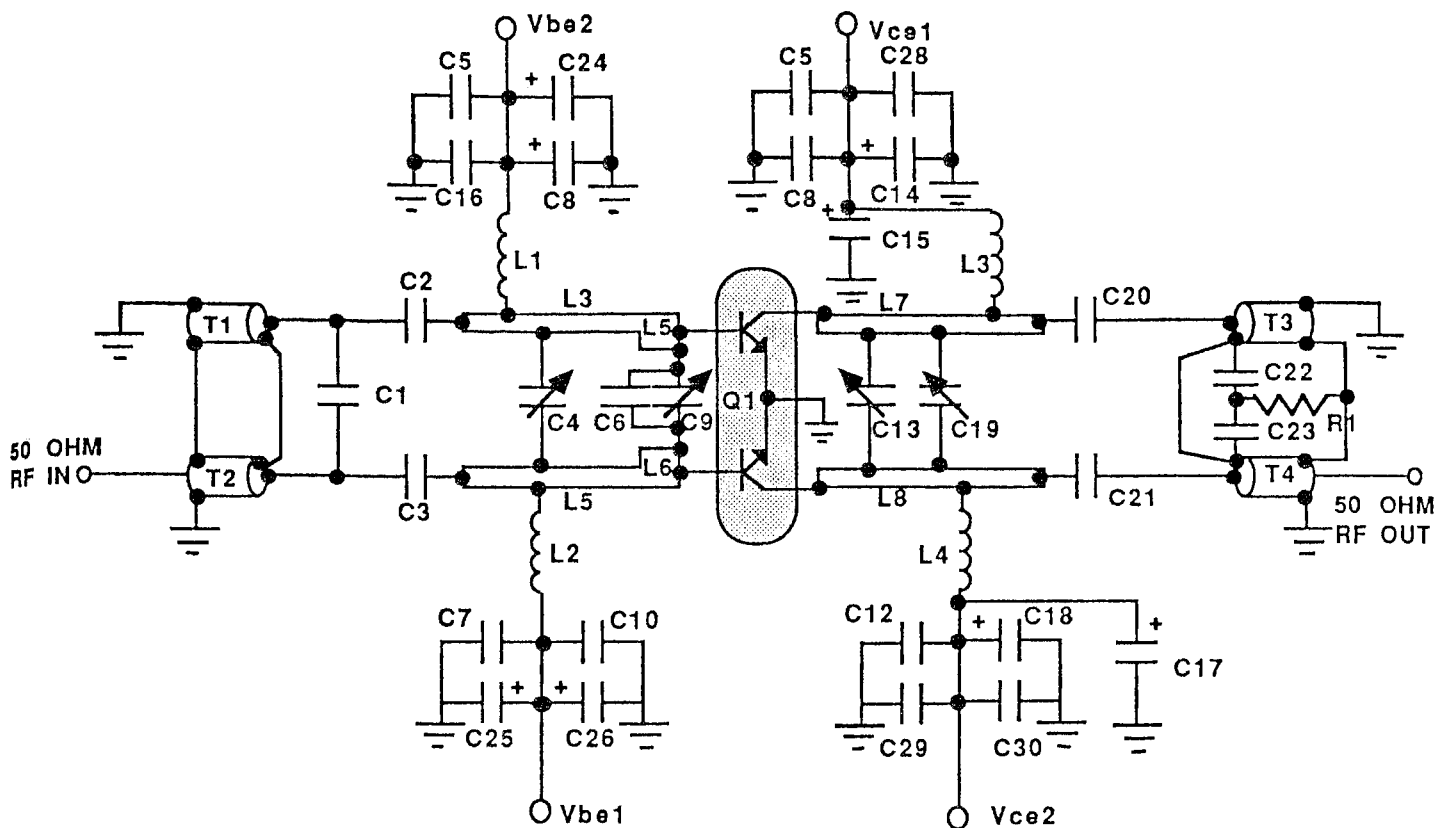
IMD VS Icq (TYPICAL)



IMD VS Pout (TYPICAL)



SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE



UTV TEST CIRCUIT

PARTS LIST: 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 μ F, 50 V Tantalum
C8,C15, C17,C25	1 μ F, 50 V Tantalum
C10,C16,C27,C12	0.1 μ F, 50 V disc ceramic
C13	0.6-6 pF piston trimmer
C19	0.35-3.5 pF piston trimmer
C18,C24,C14,C26	10 μ F, 50 V
C28,C30	0.001 μ F, 50 V disc ceramic
C31	100 μ F, 50 V electrolytic

RESISTORS

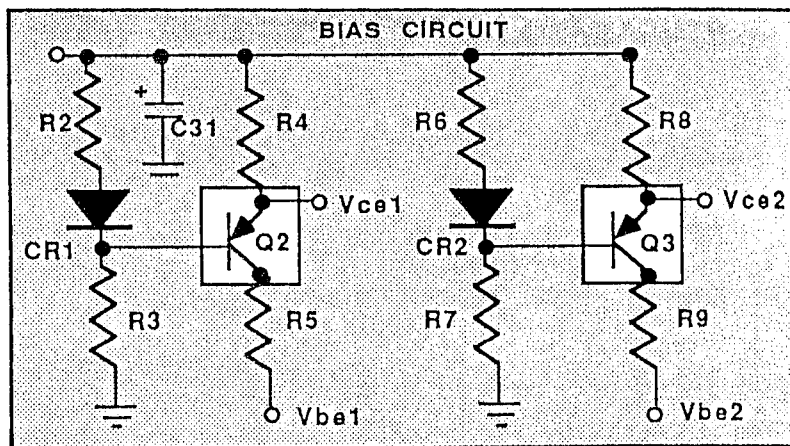
R1	10 Ohm, 1/2 W Carbon
R2,R6	500 Ohm potentiometer
R3,R7	4.7K Ohm, 3 W, 1% Carbon
R4,R8	1 Ohm, 3W, 1% Carbon film
R5,R9	47 Ohm, 1/4W Carbon film

DIODES

CR1, CR2	IN4148
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TRANSISTORS

Q1	ACRIAN 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
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INDUCTORS

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

MICROSTRIP LINES

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

Microstrip material is 1/32" dielectric Teflon glass substrate with 2 oz. copper cladding ($\epsilon_r=2.575$).

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