UTV-020
2 WATT - 25 VOLT
470-860 MHz
UHF - TV LINEAR

GENERAL DESCRIPTION

The UTV-020 is specifically designed for Class A UHF TV (Band IV & V) applications providing 2 Watts power output at 860MHz with 10db power gain. Key features include improved intermodulation distortion, higher gain, higher efficiency, gold metalization and diffused emitter ballast resistors. All Acrian devices utilize the most advanced design and process technologies such as:

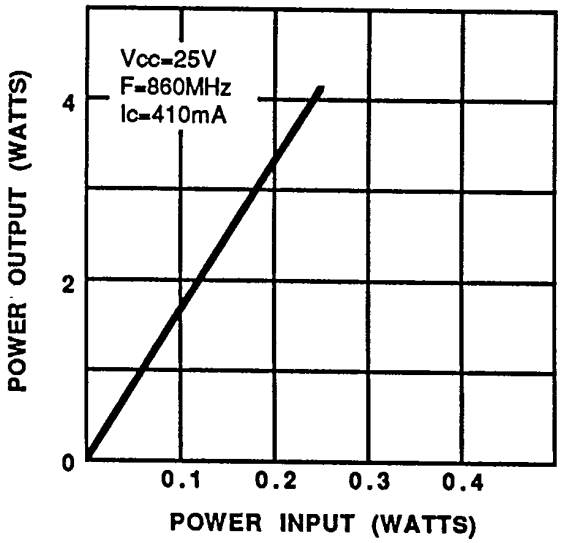
- Surface passivation--eliminates contamination and extends life.
- Eutectic die attach--reduces junction temperature and extends MTTF.
- Gold controlled-loop wire bonding--consistent RF performance.
- Low thermal-resistance packages-reduce junction temperature and extend life.

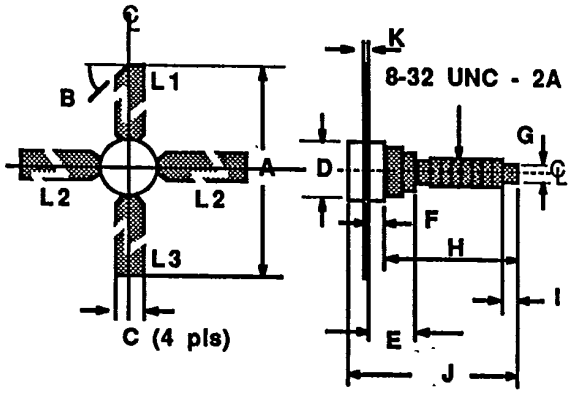
These features provide the most consistent and reliable chip and package combination designed, built and tested specifically for use in Class A UHF TV applications.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25 C Case Temperature	17 W
Maximum Voltage and Current	
BVces Collector to Emitter Voltage	45 V
BVebo Emitter to Base Voltage	4.0 V
Ic Collector Current	1.2 A
Maximum Temperatures	
Storage Temperature	-65 to 150°C
Operating Junction Temperature	+200°C

POWER OUTPUT VS POWER INPUT

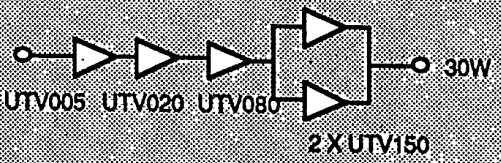




L1 : C
L2 : E
L3 : B

DIM	Millimeter	TOL	Inches	TOL
A	25.40	.25	1.000	.010
B	45°	5°	45°	5°
C	5.71	.13	.225	.005
D	6.99 DIA	.13	.275 DIA	.005
E	4.44	.13	.175	.005
F	1.52	.13	.060	.005
G	3.05	.13	.120	.005
H	12.95	.25	.510	.010
I	3.30	.13	.130	.005
J	16.64	REF	.655	REF
K	0.13	.02	.005	.001

TYPICAL AMPLIFIER LINE UP
Frequency Range = 470-860 MHz



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UTV-020-2

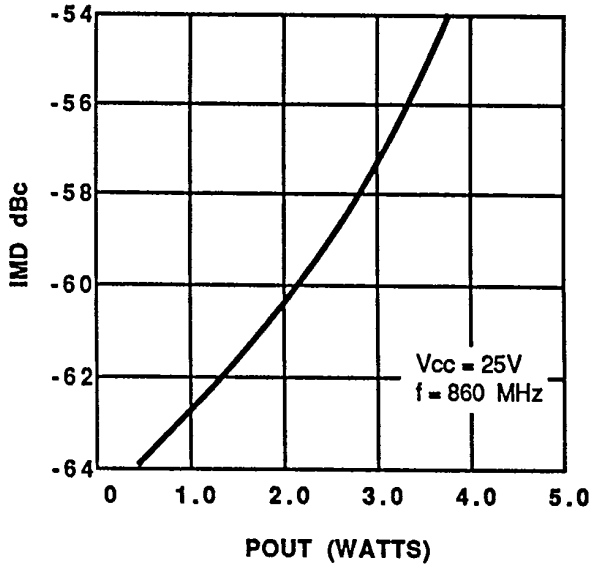
ELECTRICAL CHARACTERISTICS[1]

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
P_{out}[2]	Power Output	Vcc=25V	2.0			P-sync Watts
P_{in}[2]	Power Input	Icq= 410mA			0.2	P-sync Watts
P_g[2]	Power Gain	PSYNC = 2.0W		12		dB
IMD[2]	Intermodulation Distortion			-60		dBc
VSWR	Load Mismatch Tolerance				∞:1	
BVebo	Voltage - Emitter to Base	Ie= 1mA	4.0			Volts
BVces	Voltage - Collector to Emitter	Ic= 10mA	45			Volts
BVceo	Voltage - Collector to Emitter	Ic= 40mA	26			Volts
Cob	Capacitance Collector to Base	Vcb = 28 Volts, f = 1MHz		8.0		pF
h_{FE}	DC-Current Gain	Ic = 250mA, Vcc = 5V	10			
θ_{jc}	Thermal Resistance				10	°C/W

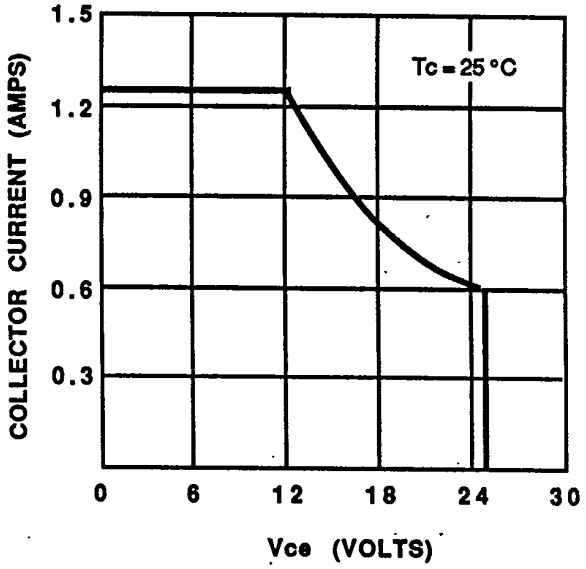
Note 1: T_C = 25°C unless otherwise specified.

Note 2: f1 = 860 MHz Vision = -8dB = f_1
f2 = 863.5 MHz Sideband = - 16dB = f_2
f3 = 864.5 MHz Sound = -7dB = f_3

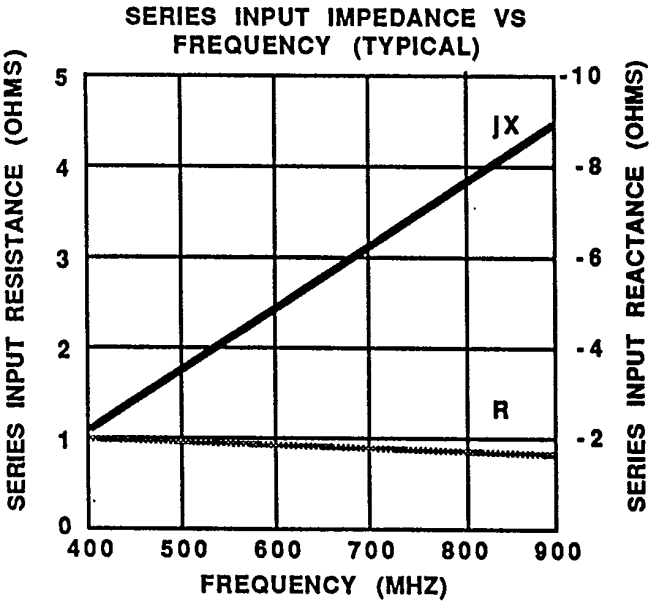
IMD VS Pout (TYPICAL)

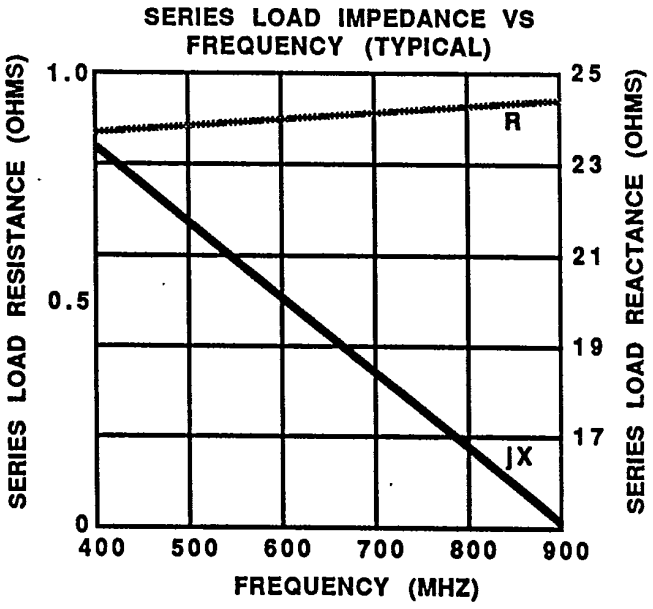


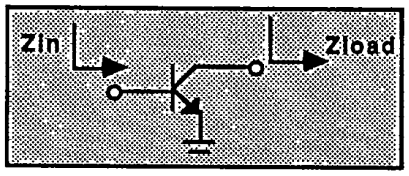
DC SAFE OPERATING AREA

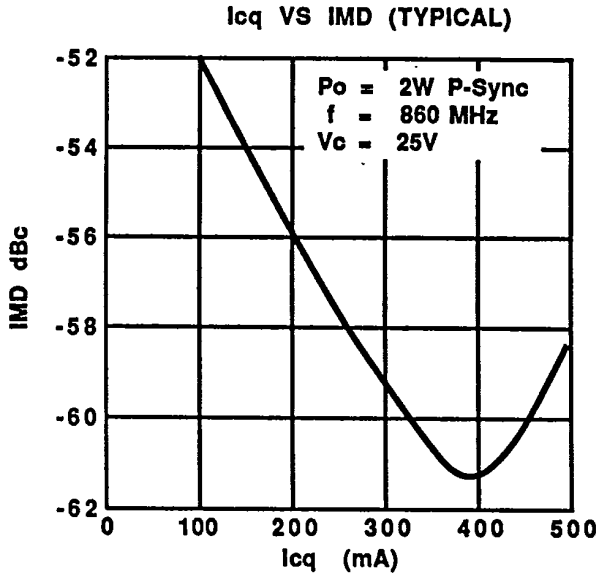


SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE









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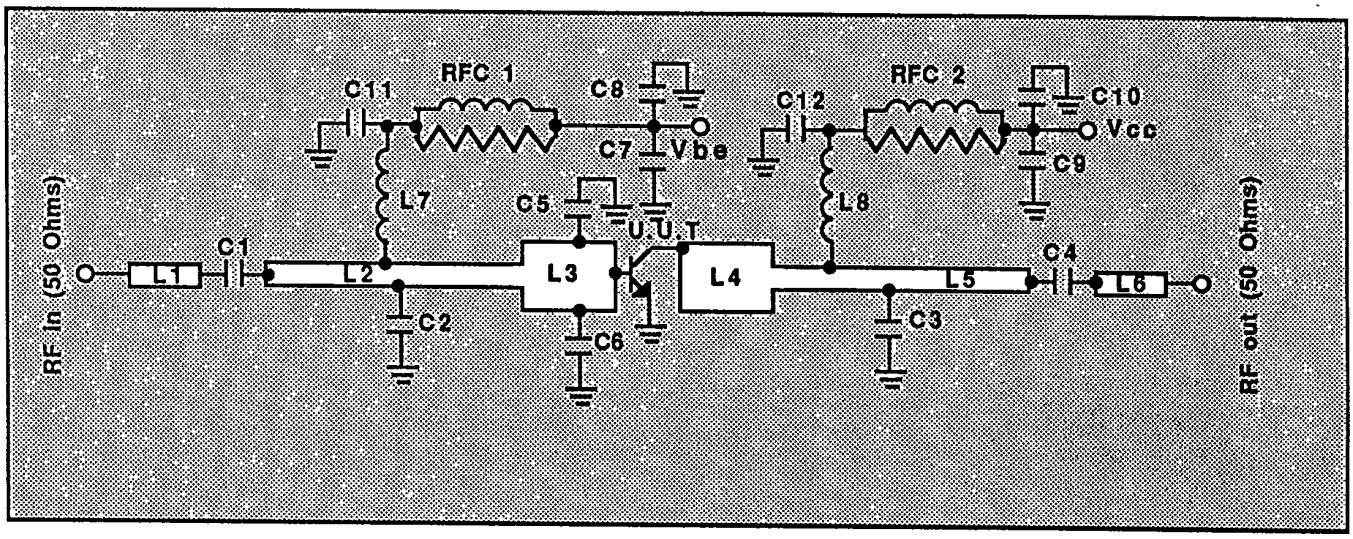
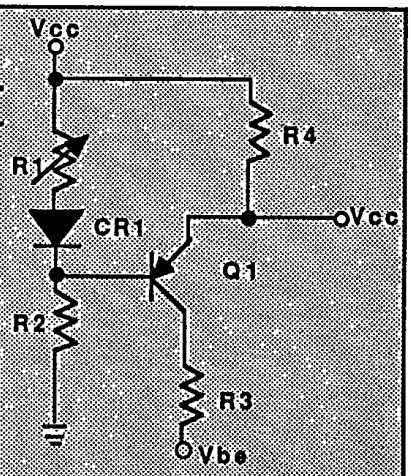
UTV 020 CIRCUIT

860 MHz Test fixture



BIAS CIRCUIT



R1 --- 500 ohm Pot
R2 --- 4.7 Kohm 1/4 W
R3 --- 47 ohm 1/4 W
R4 --- 1 ohm 3 Watt, 1%
CR_1 --- IN 4148
Q1 --- MJE 172

C1, C4 ---- 100 pf ATC "B"
C2 ---- 10 pf ATC
C3 ---- 2.0 pf
C5, C6 9pF
C7, C9 — 1μF TANT 50V
C8, C10 --- 10μF 50V electrolytic
C12,C11--- 300 pF SIMCO
C5--- 8.4 pF SIMCO
C6---9.0 pF SIMCO
L1--- 50 ohm microstripline .16" long
L2 --- 50 ohm microstripline 1.7" long
L3,L4--- 38 ohm microstripline 300 mils long.
L6 --- 50 ohm microstripline
RFC1, RFC2 --- 5 Turns, 24 Awg on 125 μTorroid in parallel with 15 1/2 W Resistor
L5, L1 --- 50 ohm microstripline 2" long
L4, L3 --- 34 ohm microstripline 300 mils long
L5 --- 50 ohm microstripline 1.725"
L6 --- 200 mils long 50 ohm microstripline
L7 --- 1μ H Inductor

Substrate = 20 mil teflon glass
Er = 2.55, 1 oz. copper

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