GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

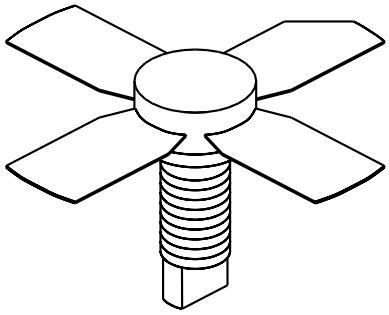
UTV010

1 Watt, 20 Volts, Class A
UHF Television - Band IV & V

GENERAL DESCRIPTION

The UTV 010 is a COMMON EMITTER transistor capable of providing 1 Watt Peak, Class A, RF Output Power over the band 470 - 860 MHz. Gold Metalization and Diffused Ballasting are used to provide high reliability and supreme ruggedness.

CASE OUTLINE
55FT, STYLE 2



ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25ºC		15 Watts
Maximum Voltage and Current		
BVces	Collector to Emitter Voltage	45 Volts
BVceo	Collector to Emitter Voltage	20 Volts
BVebo	Emitter to Base Voltage	3.5 Volts
Ic	Collector Current	1.25 Amps
Maximum Temperatures		
Storage Temperature		- 65 to + 150ºC
Operating Junction Temperature		+ 200ºC

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out - Pk Sync	F = 470 - 860 MHz		1.0		Watts
Pin	Power Input	Vcc = 20 Volts			0.09	Watts
Pg	Power Gain	Ic = 440 mA		11.5		dB
IMD[1]	Intermodulation Distortion	Pref = 1.0 Watts		-60		dB
$VSWR_1$	Load Mismatch Tolerance	F = 860 MHz			30:1	

LVceo	Collector to Emitter Breakdown	Ic = 20 mA	24			Volts
BVces	Collector to Base Breakdown	Ic = 10 mA	45			Volts
BVebo	Emitter to Base Breakdown	Ie = 1 mA	3.5			Volts
h_{FE}	Current Gain	Vce = 5 V, 200 mA	15			
Cob	Output Capacitance	Vcb = 20 V, F = 1 MHz		7.0		pF
θjc	Thermal Resistance	Tc = 25ºC			12	ºC/W

Note 1: F1=860 MHz, F2=863.5 MHz, F3=864.5 Mhz
European test method, Vision = - 8dB, Sideband= - 16dB, Sound = -7 dB

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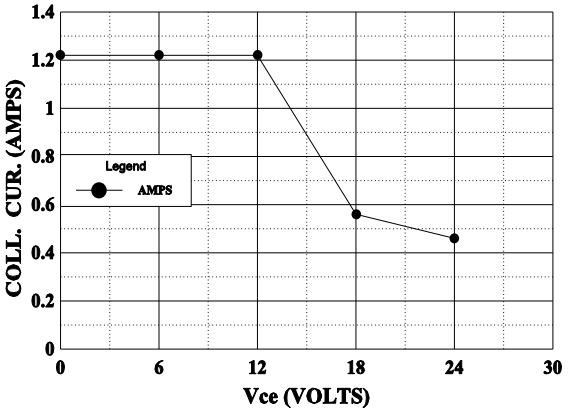
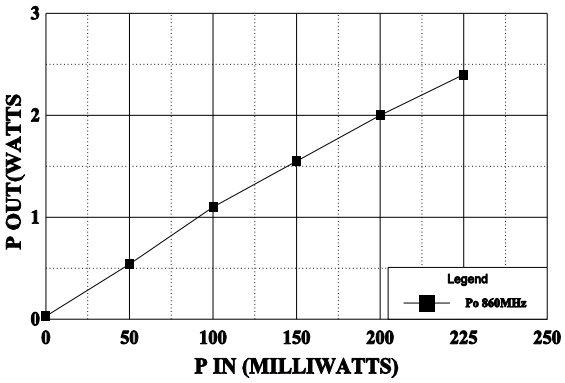
DC SAFE OPERATING AREA



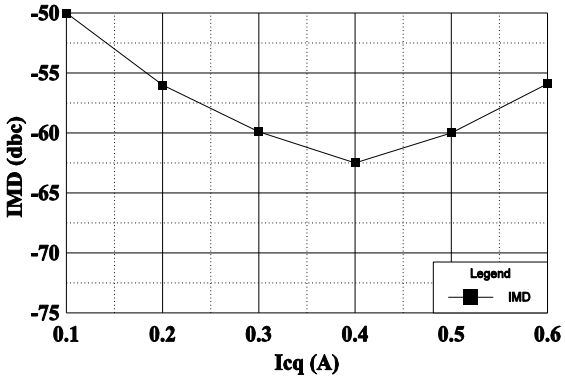
POWER OUTPUT vs POWER INPUT

Vcc - 20V, Frequency 860MHz



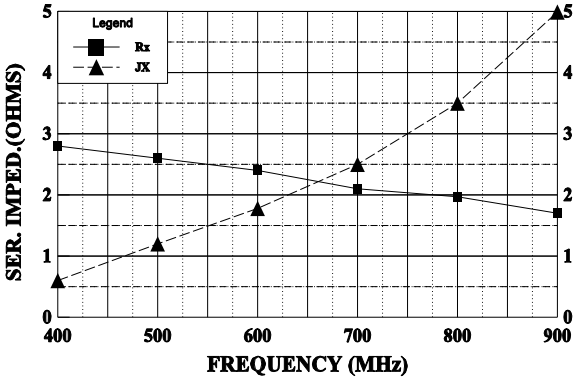
IMD vs Icq

P out = 1W PK, f = 860MHz, Vcc = 20V



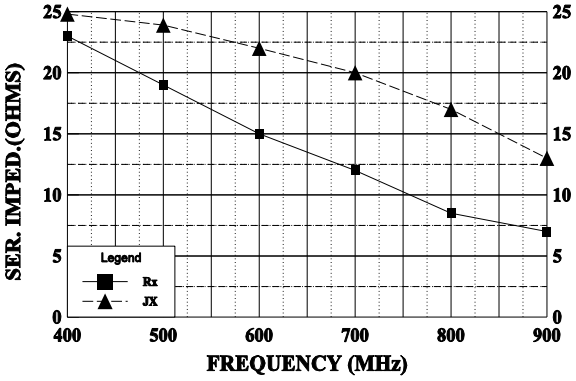
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 20V, Icq = 440mA



SERIES LOAD IMPEDANCE vs FREQUENCY

Vcc = 20V, Icq = 440mA



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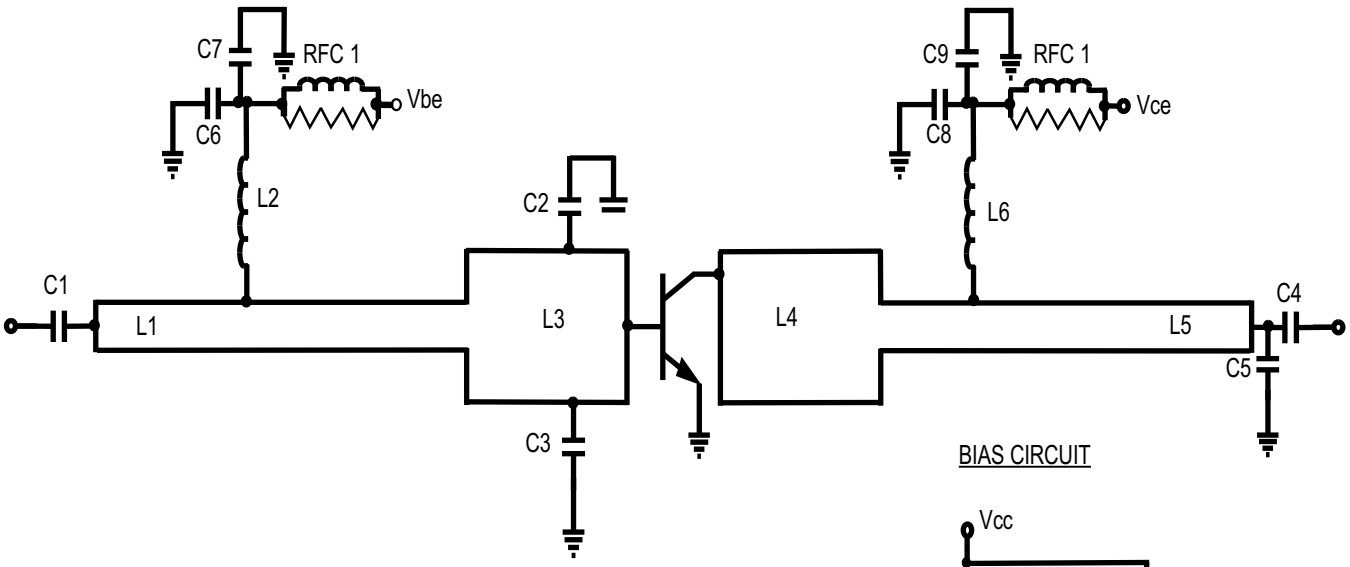
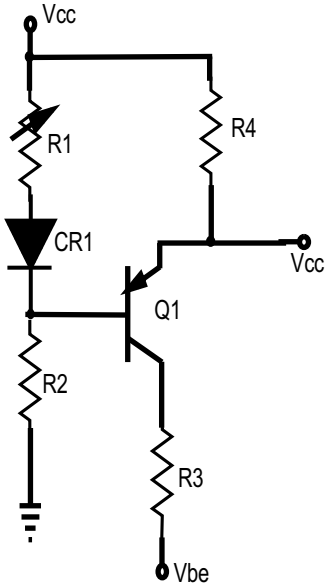


BIAS CIRCUIT



C1,C4=100 ATC "B"
C2,C3= 8.2 pf ATC
C5= 2.0 pf
C6,C8= 1mF TANT
C7,C9= 1mF 50V
L2=3.3mH molded Ind.
L6= 100W Stripline
RFC1=5 Turns, 24Awg on 125ml Toroid
RFC2 in parallel with 15 1/2 Resistor
L5,L1= 50W Stripline 2" long
L4,L3= 34W Stripline 300 mils long

R1= 500 ohm Pot
R2= 4.7 Kohm 1/4 W
R3= 47 ohm 1/4 W
R4= 1 ohm 3 Watt, 1%
Cr1= IN 4148
Q1= MJE 172

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