GHz TECHNOLOGY
RF·MICROWAVE SILICON POWER TRANSISTORS

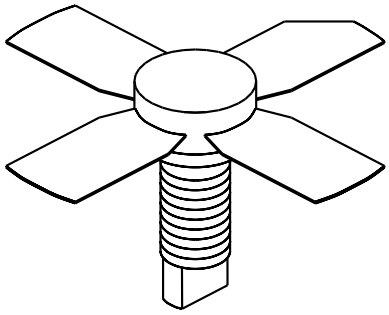
UTV005

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

GENERAL DESCRIPTION

The UTV 005 is a COMMON EMITTER transistor capable of providing 0.5 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 @ 25°C	8.0 Watts
Maximum Voltage and Current	
BVces Collector to Emitter Voltage	45 Volts
BVceo Collector to Emitter Voltage	3.5 Volts
BVebo Emitter to Base Voltage	4 Volts
Ic Collector Current	0.75 Amps
Maximum Temperatures	
Storage Temperature	- 65 to + 150°C
Operating Junction Temperature	+ 200°C

ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out - Pk Sync	F = 470 - 860 MHz	0.5			Watts
Pin	Power Input	Vcc = 20 Volts			.05	Watts
Pg	Power Gain	Ic = 220 mA		11		dB
IMD[1]	Intermodulation Distortion	Pref = 0.5 Watts		-60		dB
$VSWR_1$	Load Mismatch Tolerance	F = 860 MHz			30:1	

BVceo	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, 100 mA	20			
Cob	Output Capacitance	Vcb = 20 V, F = 1 MHz		5.0		pF
θjc	Thermal Resistance	Tc = 25°C			22	°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

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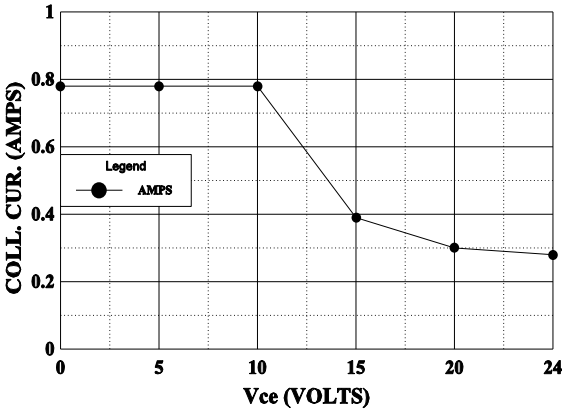
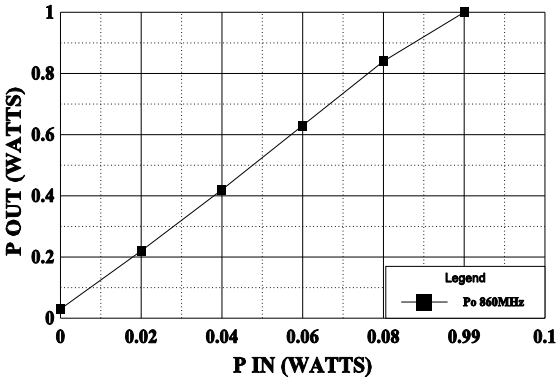
DC SAFE OPERATING AREA



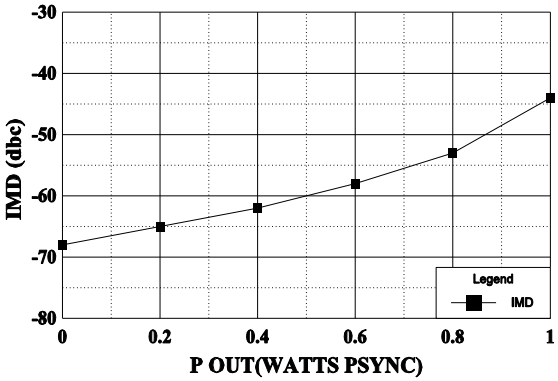
POWER OUTPUT vs POWER INPUT

Vcc = 20, Frequency 860MHz



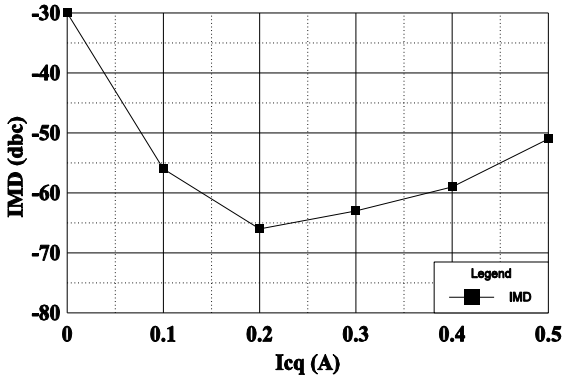
IMD vs Pout

Vcc = 20V, Ic = 220mA



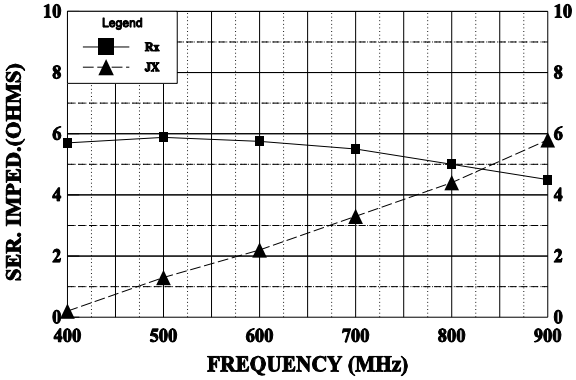
IMD vs Icq

Vcc = 20V, Ic = 220 mA



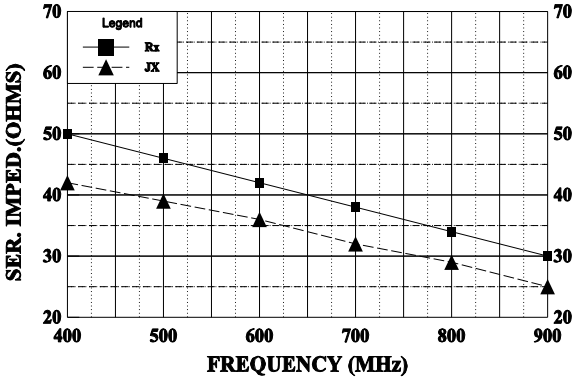
SERIES INPUT IMPEDANCE vs FREQUENCY

Vcc = 20V, Icq = 220 mA



SERIES LOAD IMPEDANCE vs FREQUENCY

Vcc = 20V, Icq = 220 mA



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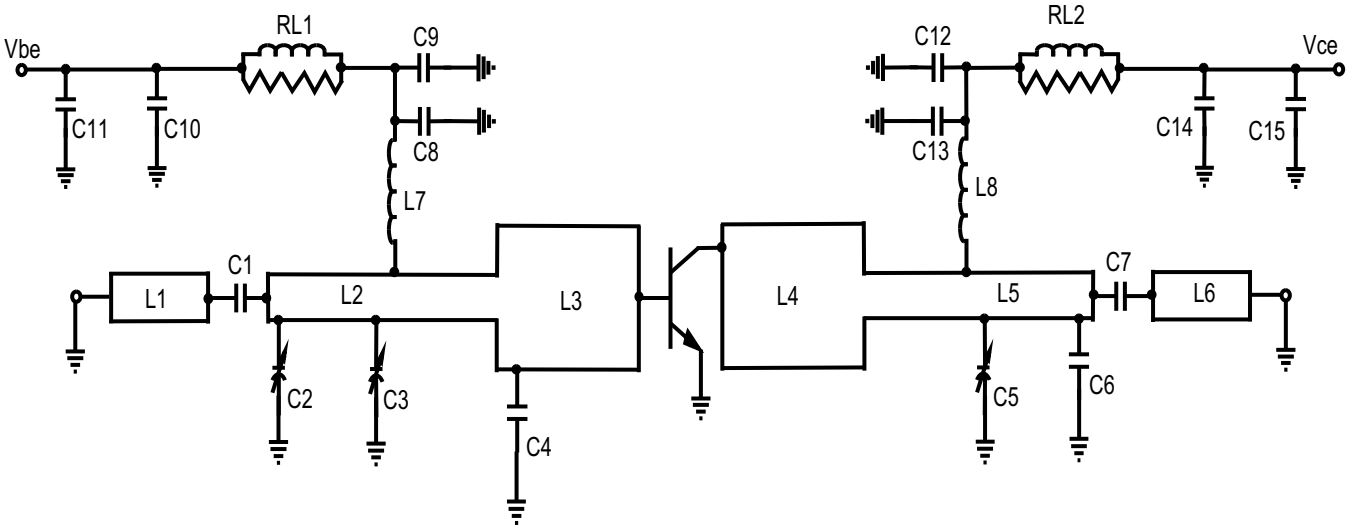
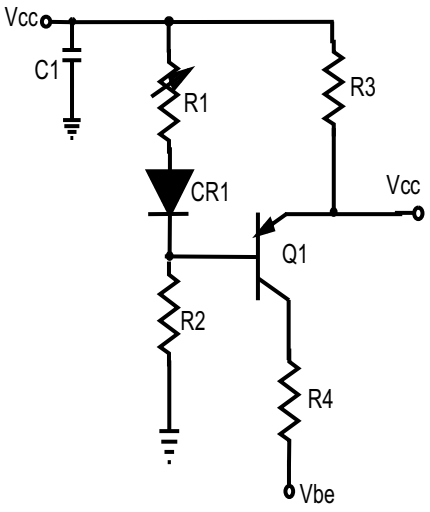


BIAS CIRCUIT



L1=.435" X .150"
L2=.435" X 1.1480"
L3=.270" X .300"
L4=.300" X .310"
L5=1.525" X .150"
L6=.365" X .150"
L7=.4 mH Molded Inc.
L8=4T, .91" 1D 24 AWG.

C1=8.2 pF ATC
C2,C3=.8-8 pF adj
C4=6.2 pF ATC
C5=.6-6pF adj
C6=1pF ATC
C7=22pF ATC
C8,C13=220 pF ATC
C9,C12=390 pF ATC
C10,C14=1 mF Tantalum
C11,C15=10 MF, 50V Electro
RL1,RL2=5 turns #2 gauge wire on a 0.125" toroid in parallel with a 1W, 15 OHM resistor.

C1=100 MF, 50 V Electrolytic
R1=500 OHM Pot
R2=4.7 KOHM, 1/4 W
R3= 47 OHM 1/4 W
R4=1 OHM, 3 Watt, 1%
CR1=IN4148
Q1=MJE172

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