

VHF LINEAR TRANSISTOR

TV TRANSPOSER
BAND 3
1.5 W AT - 60 DB
17 DB GAIN

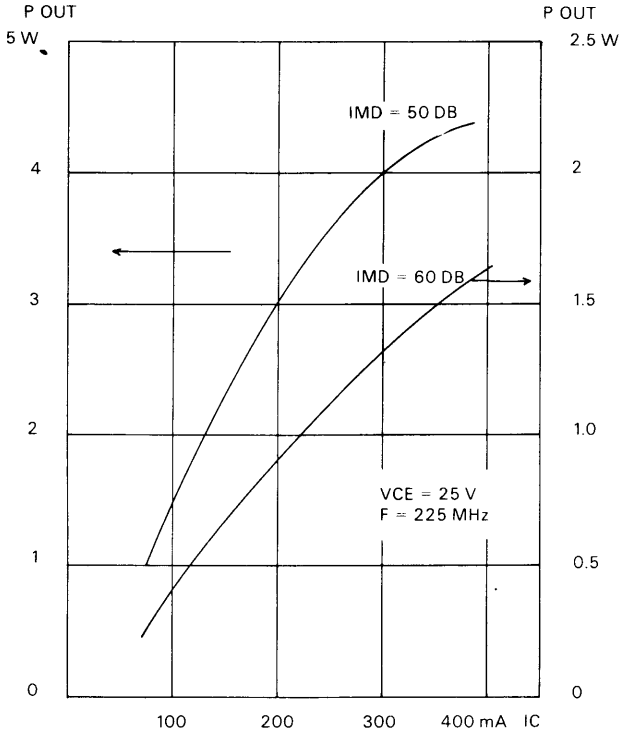
The TPV 366 is a NPN gold metallized transistor using diffused emitter ballast resistors for super linearity. This transistor is designed for **low power band 3 TV transposers** amplifiers. Its **super high gain** makes it an ideal choice for driver stages.

280 SOE

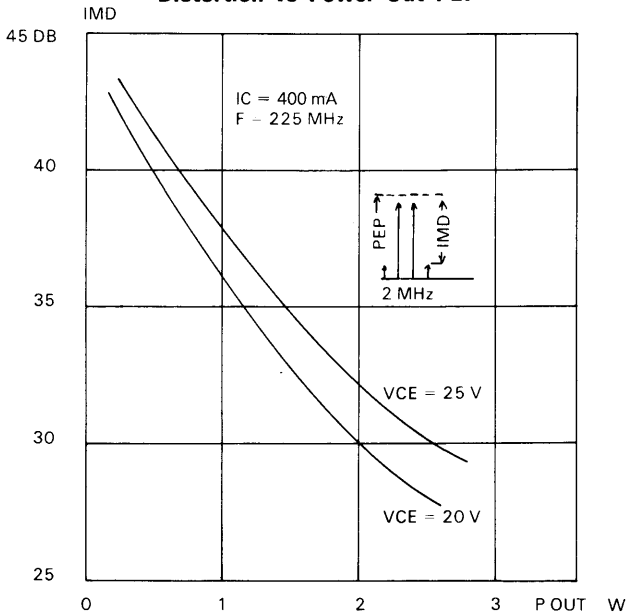
Electrical Characteristics (T_{case} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{EBO}	Emitter - Base Breakdown Voltage	I _E = 1 mA	4			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 50 mA	30			V
	BV _{CER}	Collector - Emitter Breakdown Voltage	I _C = 50 mA R _{BE} = 10 ohms	55			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 10 mA	55			V
	h _{FE}	D.C. Current Gain	V _{CE} = 5 V I _C = 100 mA	10		150	
RF Test	IMD 1	Intermodulation Distortion - 3 Tone Vision Carrier = Reference - 8 dB Sound Carrier = Reference - 7 dB Sideband Carrier = Reference - 16 dB	F = 225 MHz V _{CE} = 25 V I _E = 0.4 A P _{REF} = 1.5 W			- 60	dB
	IMD 2	Intermodulation Distortion 2 Tone F + (F + 2 MHz)	F = 225 MHz V _{CE} = 25 V I _E = 0.4 A P _{PEP} = 2 W			- 30	dB
	P _G	Power Gain	F = 225 MHz V _{CE} = 25 V I _E = 0.4 A P _{REF} = 1.5 W	16	17.5		dB
	VSWR	Mismatch Tolerance	F = 225 MHz V _{CE} = 25 V I _E = 0.4 A P _{REF} = 1 W		∞		
	C _{OB}	Collector - Base Capacitance	V _{CB} = 28 V F = 1 MHz			12	pF
	Thermal	I _C	Maximum Collector Current				0.75
θ _{JC}		Thermal Resistance Junction - Case	T _{CASE} = 70 °C			8.0	°C/W
θ _{CH}		Thermal Resistance Case - Heatsink				1.0	°C/W
P _T		Dissipated Power	T _{HEATSINK} = 25 °C			19	W
T _{STG}		Storage Temperature		- 65		+ 200	°C
T _J		Junction Temperature					

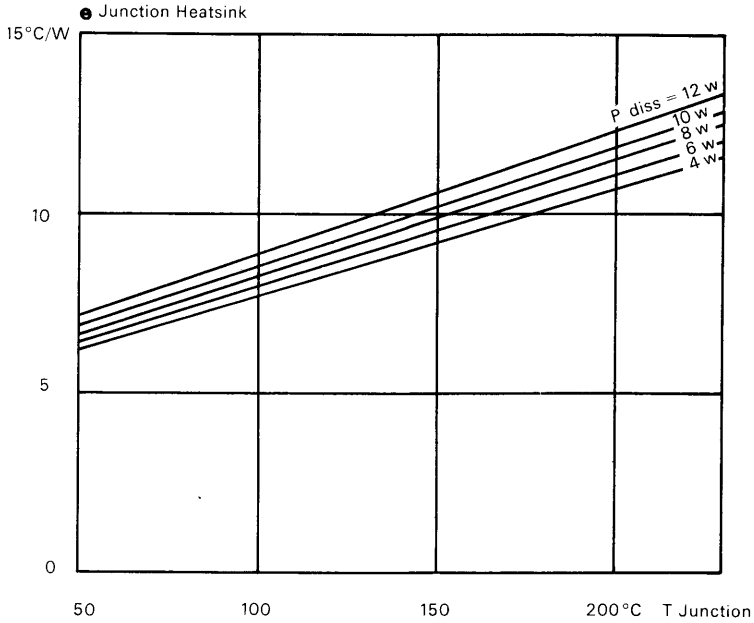
**Peak Sync Output Power vs
Collector current for IMD = -50 and -60 DB**



**2 Tones Intermodulation
Distortion vs Power Out PEP**

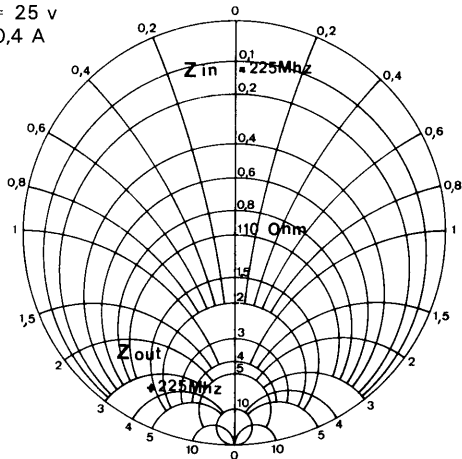


Thermal Resistance Junction Heatsink vs Temperature of Junction for Various Power Dissipated

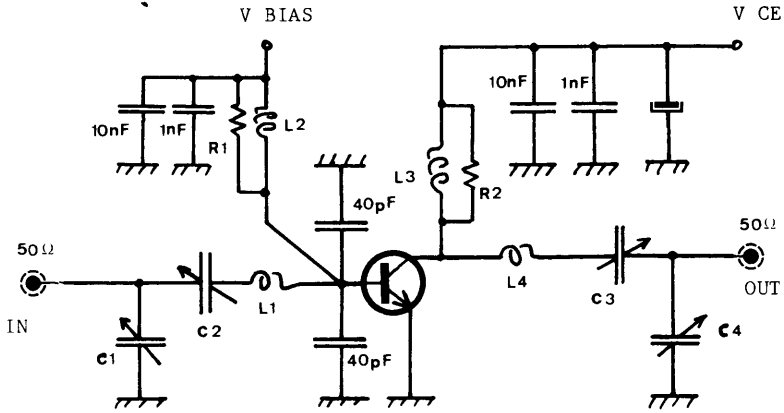


large signal impedances

VCE = 25 v
IE = 0,4 A

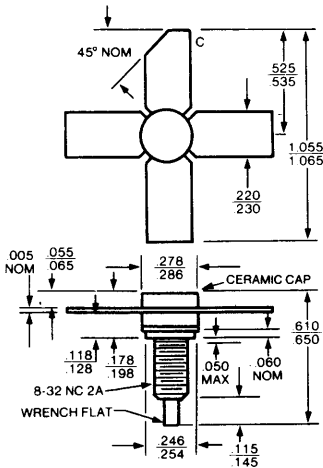


TEST CIRCUIT AT F = 225 MHz



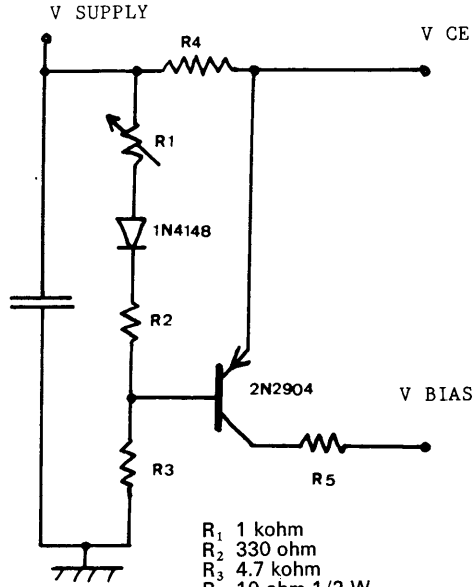
- C_{1,2,5,6} ARCO 404
- L₁ 2 turns I.D. = 5 mm 6/10 wire
- L₄ 3 turns I.D. = 5 mm 6/10 wire
- L₂ 0.22 H molded RFC
- L₃ 8 turns I.D. = 5 mm 6/10 wire
- R₁ 560 ohm 1/4 W
- R₂ 1000 ohm 1/4 W

SOE 280
Package Outline



To convert inches to millimeters multiply by 2.54.

CLASS A BIAS CIRCUIT



- R₁ 1 kohm
- R₂ 330 ohm
- R₃ 4.7 kohm
- R₄ 10 ohm 1/2 W
- R₅ 470 ohm

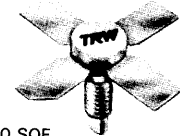
PRELIMINARY

The TPV 502 is a NPN gold metallized transistor using diffused emitter ballast resistor for super linearity.

The chip design using microwave techniques provides typical gain in excess of 10 dB at 860 MHz.

The TPV 502 is an ideal candidate for medium power band V TV transposer applications.

**TV TRANSPOSER
BAND V
10 dB GAIN
2 W**



280 SOE

Electrical Characteristics ($T_{case} = 25^{\circ}C$)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC TEST	BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 80 \text{ mA}$	24			V
	BV_{CER}	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}$ $R_{BE} = 10 \Omega$	45			V
	BV_{EBO}	Emitter - Base Breakdown Voltage	$I_E = 1 \text{ mA}$	3.5			V
	BV_{CBO}	Collector - Base Breakdown Voltage	$I_C = 4 \text{ mA}$	50			V
	H_{FE}	DC Current Gain	$V_{CE} = 5 \text{ V}$ $I_C = 400 \text{ mA}$	20		120	
RF TEST	IMD	Intermodulation distortion — 8 dB — 16 dB — 7 dB	$F = 860 \text{ MHz}$ $V_{CE} = 20 \text{ V}$ $I_C = 880 \text{ mA}$ $P_{sync} = 2 \text{ W}$			— 58	dB
	P_G	Power Gain CW		10	10.5		dB
	VSWR	Mismatch Tolerance			∞		
	C_{OB}	Collector - Base Capacitance	$V_{CB} = 24 \text{ V}$ $F = 1 \text{ MHz}$			12	pF
	F_T	Cutoff Frequency	$V_{CE} = 20 \text{ V}$ $I_C = 880 \text{ mA}$	2.2			GHz
THERMAL	I_C	Maximum Collector current				3	A
	θ_{j-F}	Thermal Resistance Junction Heatsink	$T^{\circ} \text{ Heatsink} = 70^{\circ}C$			6.3	$^{\circ}C/W$
	T_j	Max. Junction and Storage Temperature		— 65		+ 200	$^{\circ}C$

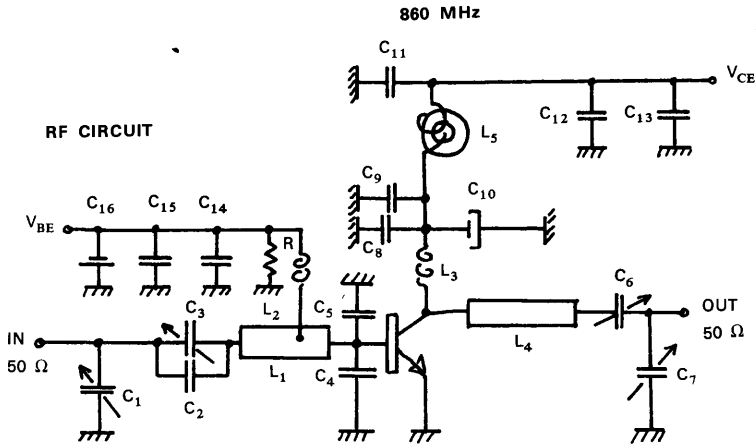
POLAR S-PARAMETERS IN 50 OHM SYSTEM

F	S 11		S 21		S 12		S 22	
MHz	Magn	Angl°	Magn	Angl°	Magn	Angl°	Magn	Angl°
900	0.954	165°	0.785	54°	0.040	54°	0.724	180°
800	0.952	168°	0.851	56°	0.035	54°	0.724	180°
700	0.954	169°	0.954	60°	0.032	54°	0.737	180°
600	0.954	171°	1.089	68°	0.028	54°	0.724	180°
500	0.954	171°	1.33	70°	0.025	49°	0.724	181°
400	0.954	173°	1.585	72°	0.020	41°	0.707	182°
300	0.954	175°	2.11	77°	0.018	37°	0.707	182°
200	0.954	177°	2.82	86°	0.015	30°	0.707	182°
100	0.954	180°	5.3	95°	0.014	22.5°	0.688	188°

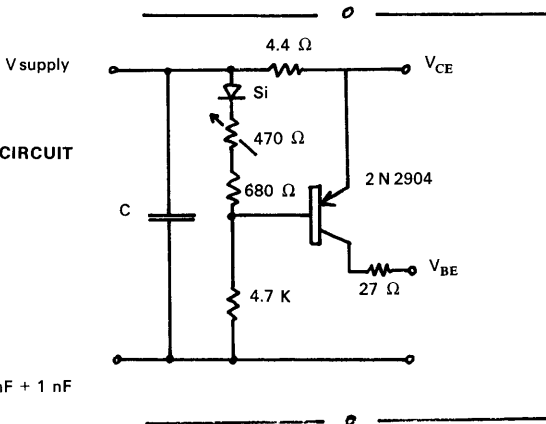
*LARGE SIGNAL IMPEDANCES - $V_{CE} = 20 \text{ V}$ - $I_C = 880 \text{ mA}$

Z_{in}	Z_{out}
$(0.7 + j 4.5) \Omega$	$(4 - j 7.5) \Omega$

* For best input and output return loss at 860 MHz.



BIAS CIRCUIT



C = 100 μ F + 10 nF + 1 nF

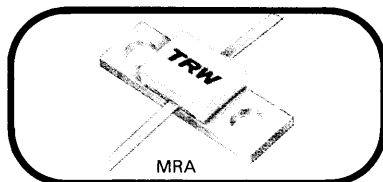
- C₁ = AIR TRIMMER AT 5201 0.8 - 10 pF TEKELEC
- C₂ = CHIP ATC 4.7 pF
- C₃ = AIR TRIMMER AT 5751 0.6 - 6 pF TEKELEC
- C₄ = C₅ = CHIP ATC 3.3 pF
- C₆ = C₇ = AIR TRIMMER AT 5501 1 - 20 pF TEKELEC
- C₈ = C₁₃ = C₁₄ = 1 nF CHIP CAPACITOR
- C₉ = C₁₁ = C₁₅ = 10 nF RTC
- C₁₂ = 0.1 μ F RTC
- C₁₀ = C₁₆ = 10 μ F 63 V electrolytic

- L₁ = 30 Ω line l = 6.5 % λ g
- L₂ = choke 0.47 μ H
- L₃ = 1 turn - ID 6 mm - wire 10/10
- L₄ = 30 Ω line l = 19 % λ g
- L₅ = 8 turns on a CN 20 FERRITE BEAD - CERAMICS - MAGNETICS
- R = 43 Ω 1/4 Watt

UHF LINEAR TRANSISTOR (PRELIMINARY)

The TPV 599 is a NPN gold metallized transistor using diffused emitter ballast resistors for super linearity. The chip design using microwave techniques provides over 6.5 dB gain at 860 MHz. Broadbandability of the TPV 599 is insured by the insertion of input matching network inside the MRA package. The TPV 599 is specifically designed for **high power band 4-5 TV transposers** and solid state transmitters.

TV TRANSPOSER
BAND 4 - 5
7,5 W
6,5 DB GAIN
GOLD



Electrical Characteristics (T_{CASE} = 25 °C)

	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Test	BV _{EBO}	Emitter - Base Breakdown Voltage	I _E = 2 mA	4			V
	BV _{CEO}	Collector - Emitter Breakdown Voltage	I _C = 40 mA	25			V
	BV _{CBO}	Collector - Base Breakdown Voltage	I _C = 20 mA	45			V
	h _{FE}	D.C. Current Gain	V _{CE} = 5 V I _C = 500 mA	15	30		
RF Test	IMD	Intermodulation Distortion 3 Tone Vision Carrier = Reference - 8 dB Sound Carrier = Reference - 7 dB Sideband Carrier = Reference - 16 dB	F = 860 MHz V _{CE} = 20 V I _E = 2 A P _{REF} = 7.5 W			- 60	dB
	P _G	Power Gain	F = 860 MHz V _{CE} = 20 V I _E = 2 A P _{REF} = 7.5 W	6.5	7		dB
	C _{OB}	Collector - Base Capacitance	V _{CB} = 20 V F = 0.1 MHz		40		pF
	f _T	Cutoff Frequency	V _{CE} = 20 V I _E = 2 A				GHz
Thermal	θ _{JC}	Thermal Resistance Junction - Case	T _{CASE} = 40 °C			2.5	°C/W
	T _{STG}	Storage Temperature		- 65		+ 200	°C
	T _J	Junction Temperature		- 65		+ 200	°C