New Jersey Semi-Conductor Products, Inc.

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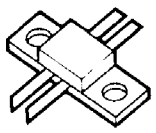
TPV595A

25 V — 470–860 MHz UHF LINEAR POWER TRANSISTOR

The RF Line
UHF Linear Power Transistor

. . . designed for driver and output stages in band IV and V TV transposers and transmitter amplifiers. The TPV595A uses gold metallized die with diffused emitter ballast resistors to enhance reliability, ruggedness and linearity.

- Band IV and V (470–860 MHz)
- 14 W — P_{ref} @ −47 dB IMD
- 25 V — V_{CC}
- High Gain — 9 dB Typ, Class A, f = 860 MHz
- Push-Pull Package



BMA2
CASE 395-01,

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	28	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	4	Vdc
Collector Current — Continuous	I_C	5	Adc
Total Device Dissipation @ T_C = 70°C Derate above 70°C	P_D	50 0.4	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−50 to +200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (T_C = 70°C)	$R_{\theta JC}$	2.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 60 mA, I_B = 0)	$V_{(BR)CEO}$	28	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 10 mA, I_E = 0)	$V_{(BR)CBO}$	45	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 3 mA, I_C = 0)	$V_{(BR)EBO}$	4	—	—	Vdc
Collector-Emitter Breakdown Voltage (I_C = 10 mA, R_{BE} = 51 Ω)	$V_{(BR)CER}$	40	—	—	Vdc
Collector Cutoff Current (V_{CB} = 20 V, I_E = 0)	I_{CBO}	—	—	5	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 500 mA, V_{CE} = 20 V)	h_{FE}	10	—	—	—

(continued)

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TPV595A

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
FUNCTIONAL TESTS					
Common-Emitter Amplifier Small-Signal Gain (V_{CE} = 25 V, I_C = 2 x 900 mA)	G_{SSE}	8.5	—	—	dB
Load Mismatch (V_{CC} = 25 V, P_{out} = 15 W, I_{CQ} = 2 x 900 mA, f = 470 MHz, 2 Tones, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			
Overdrive (no degradation) (f_o = 470 MHz, V_{CE} = 25 V, 2 Tones, I_{CQ} = 2 x 900 mA)	$P_{in_{over}}$	15	—	—	W
Intermodulation Distortion, 3 Tone (f = 860 MHz, V_{CE} = 25 V, I_{CQ} = 2 x 900 mA, P_{ref} = 14 W, Vision Carrier = −8 dB, Sound Carrier = −7 dB, Sideband Signal = −16 dB, Specification TV05001)	IMD_1	—	—	−47	dB
Intermodulation Distortion (IDEM) (f = 860 MHz, V_{CE} = 25 V, I_{CQ} = 2 x 900 mA, P_{ref} = 14 W, Vision Carrier = −8 dB, Sound Carrier = −10 dB, Sideband Carrier = −16 dB)	IMD_2	—	—	−50	dB

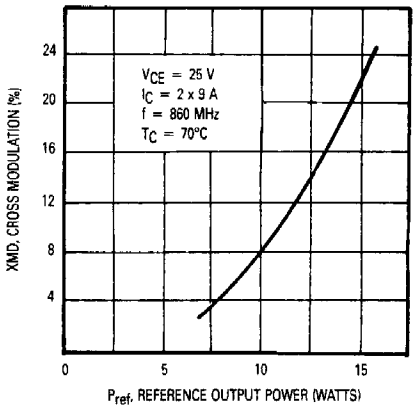

Figure 1. Cross-mod* versus Output Power

*Cross-mod: Δ% sound (−7 dB)
— vision O → PEAK

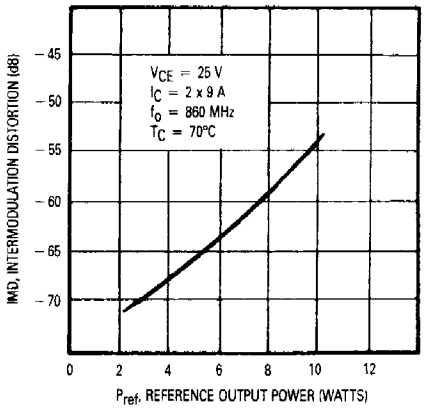

Figure 2. IMD* versus Output Power

*IMD: 3 tones −7 dB, −8 dB, −16 dB

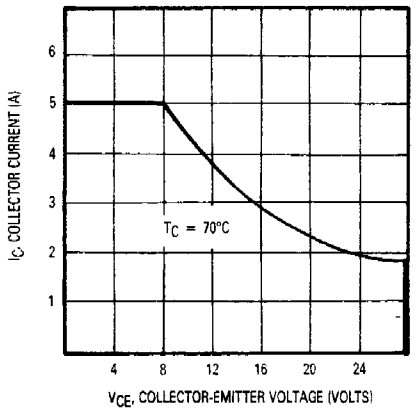

Figure 3. DC Safe Operating Area

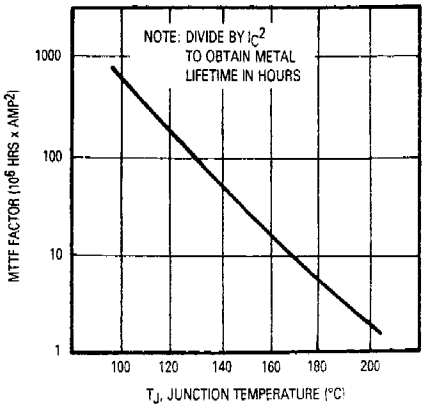

Figure 4. MTTF versus Junction Temperature