

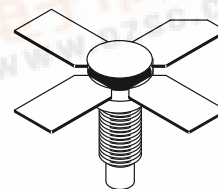
## The RF Line UHF Linear Power Transistor

Designed for 4.0 watt stages in Band V TV transposer amplifiers. Gold metallized dice and diffused emitter ballast resistors are used to enhance reliability, ruggedness and linearity.

- Band IV and V (470–860 MHz)
- 4.0 W —  $P_{ref}$  @ -60 dB IMD
- 25 V —  $V_{CC}$
- High Gain — 7.0 dB Min, Class A @  $f = 860$  MHz
- Gold Metallization for Reliability

**TPV598**

4.0 W, 470–860 MHz  
 UHF LINEAR  
 POWER TRANSISTOR



CASE 244-04, STYLE 1  
 (.280 SOE)

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	27	Vdc
Collector–Base Voltage	$V_{CBO}$	45	Vdc
Emitter–Base Voltage	$V_{EBO}$	4.0	Vdc
Operating Junction Temperature	$T_J$	200	°C
Storage Temperature Range	$T_{stg}$	-65 to +200	°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case ( $T_C = 70^\circ\text{C}$ )	$R_{\theta JC}$	6.2	°C/W
Thermal Resistance, Case to Heatsink	$R_{\theta CH}$	0.4 Typ	°C/W

### ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ( $I_C = 60$ mA, $I_B = 0$ )	$V_{(BR)CEO}$	27	—	—	Vdc
Collector–Base Breakdown Voltage ( $I_C = 10$ mA, $I_E = 0$ )	$V_{(BR)CBO}$	45	—	—	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 3.0$ mA, $I_C = 0$ )	$V_{(BR)EBO}$	4.0	—	—	Vdc
Collector–Emitter Leakage Current ( $V_{CE} = 20$ V)	$I_{CEO}$	—	—	5.0	mA

### ON CHARACTERISTICS

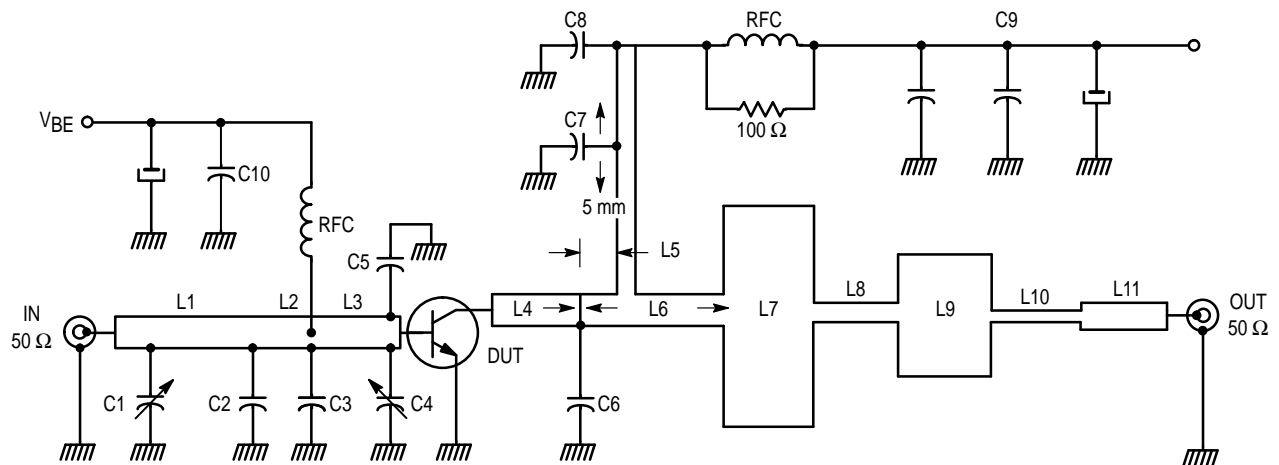
DC Current Gain ( $I_C = 500$ mA, $V_{CE} = 20$ V)	$h_{FE}$	10	—	—	—
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### DYNAMIC CHARACTERISTICS

Output Capacitance ( $V_{CB} = 25$ V, $I_E = 0$ , $f = 1.0$ MHz)	$C_{ob}$	—	—	20	pF
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### FUNCTIONAL TESTS

Common–Emitter Amplifier Power Gain ( $V_{CE} = 25$ V, $P_{out} = 4.0$ W, $f = 860$ MHz, $I_C = 850$ mA)	$G_{PE}$	7.0	—	—	dB
Intermodulation Distortion, 3 Tone ( $f = 860$ MHz, $V_{CE} = 25$ V, $I_E = 850$ mA, $P_{ref} = 4.0$ W, Vision Carrier = -8.0 dB, Sound Carrier = -7.0 dB, Sideband Signal = -16 dB, Specification TV05001)	$IMD_1$	—	—	-58	dB
Cutoff Frequency ( $V_{CE} = 25$ V, $I_C = 850$ mA)	$f_t$	—	2.0	—	GHz



- C1 — Variable 0.5–4.7 pF Airtronic
- C2, C3 — ATC 4.7 pF
- C4 — ATC 10 pF + Variable 0.5–4.7 pF Airtronic
- C5 — ATC 10 pF + ATC 5.6 pF
- C6 — ATC 18 pF + 0.5–4.7 pF Variable Airtronic
- C7 — 470 pF Chip Capacitor
- C8 — 1.0 nF + 10 nF Decoupling
- C9 — 1.0 nF + 10 nF + 0.1 μF + 10 μF
- C10 — 10 nF + 1.0 μF + 10 μF
- RFC = 8 turns, ID 2.5 mm, Wire = 0.5 mm

- L1 — 50 Ω line 6.2% λg at 860 MHz
- L2 — 50 Ω line 4.2% λg at 760 MHz
- L3 — 50 Ω line 4.9% λg at 860 MHz
- L4 — 20 Ω line 6.5% λg at 860 MHz
- L5 — 50 Ω line 5% λg at 860 MHz
- L6 — 20 Ω line 9.5% λg at 860 MHz
- L7 — 4.0 Ω line 8% λg at 860 MHz
- L8 — 55 Ω line 7.5% λg at 860 MHz
- L9 — 7.5 Ω line 8% λg at 860 MHz
- L10 — 100 Ω line 8% λg at 860 MHz
- L11 — 20 Ω line 8% λg at 860 MHz

Note: λg is the wavelength in the microstrip circuit

Figure 1. Broadband Test Circuit

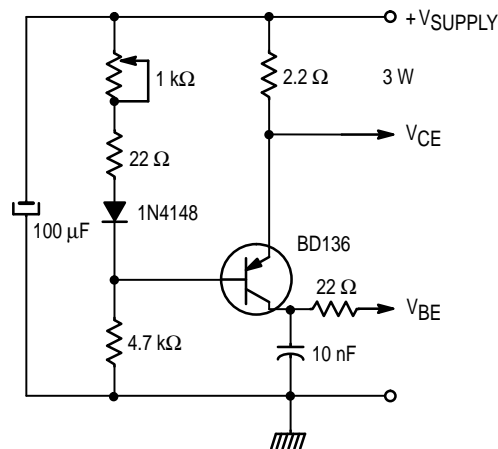
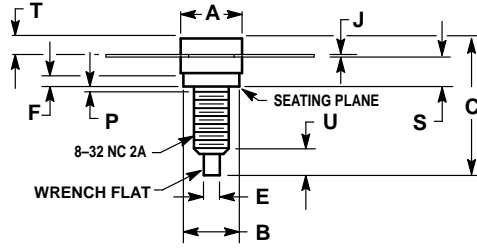
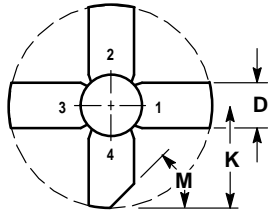


Figure 2. Class A Bias Circuit


## PACKAGE DIMENSIONS



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	7.06	7.26	0.278	0.286
B	6.20	6.50	0.244	0.256
C	14.99	16.51	0.590	0.650
D	5.46	5.96	0.215	0.235
E	1.40	1.65	0.055	0.065
G	1.52	—	0.060	—
J	0.08	0.17	0.003	0.007
K	11.05	—	0.435	—
M	45° NOM		45° NOM	
P	—	1.27	—	0.050
S	3.00	3.25	0.118	0.128
T	1.40	1.77	0.055	0.070
U	2.92	3.68	0.115	0.145

STYLE 1:  
 PIN 1. EMITTER  
 2. BASE  
 3. EMITTER  
 4. COLLECTOR

**CASE 244-04  
 ISSUE J**

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