

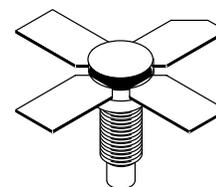
The RF Line UHF Linear Power Transistor

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

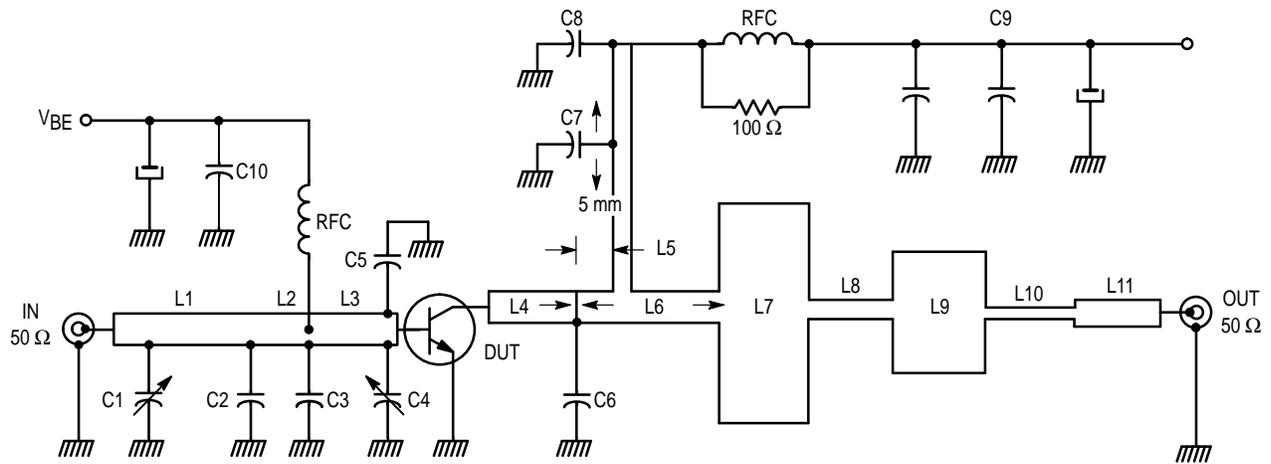
DC Current Gain ($I_C = 500$ mA, $V_{CE} = 20$ V)	h_{FE}	10	—	—	—
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DYNAMIC CHARACTERISTICS

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

Note: λ_g is the wavelength in the microstrip circuit

Figure 1. Broadband Test Circuit

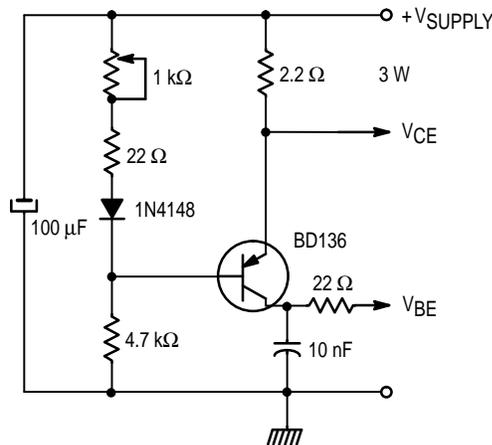
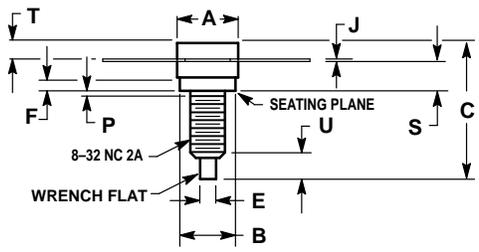
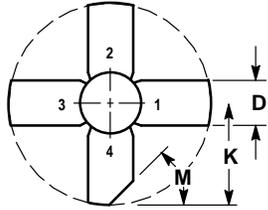


Figure 2. Class A Bias Circuit

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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