

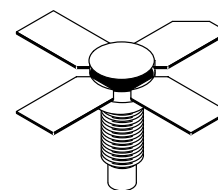
The RF Line UHF Linear Power Transistor

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
----------------	--------	-----	-----	-----	------

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

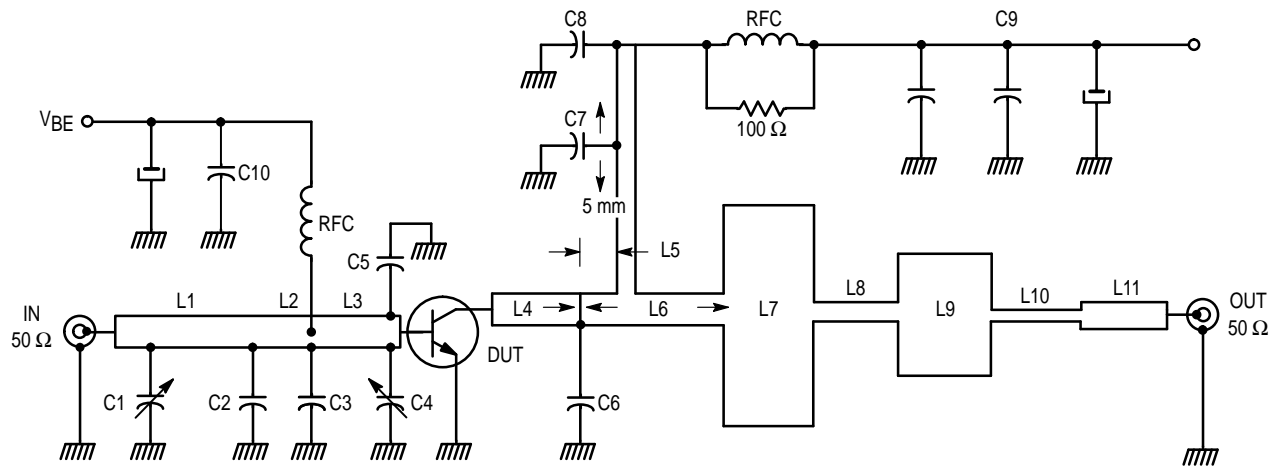
DC Current Gain ($I_C = 500$ mA, $V_{CE} = 20$ V)	h_{FE}	10	—	—	—
--	----------	----	---	---	---

DYNAMIC CHARACTERISTICS

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

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

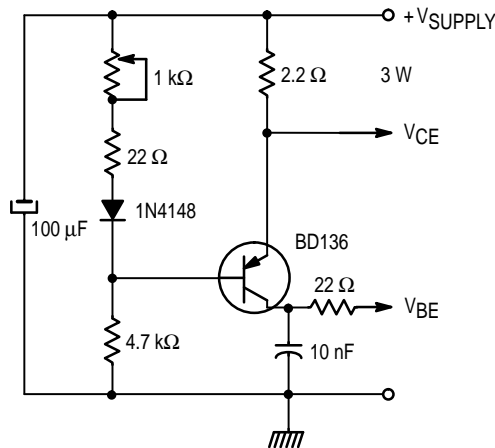
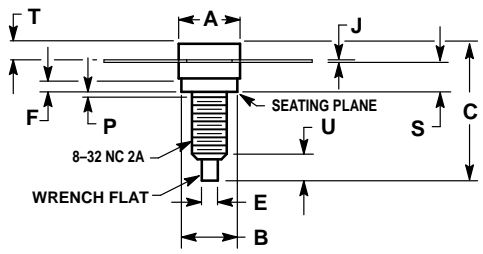
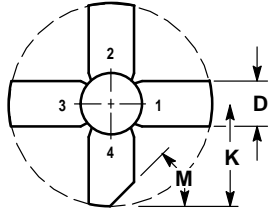


Figure 2. Class A Bias Circuit


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**

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters can and do vary in different applications. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

How to reach us:

USA / EUROPE: Motorola Literature Distribution;
P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, Toshikatsu Otsuki,
6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-3521-8315

MFAX: RMFAX0@email.sps.mot.com - TOUCHTONE (602) 244-6609
INTERNET: <http://Design-NET.com>

HONG KONG: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298



MOTOROLA



TPV598/D

