MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

PT9790

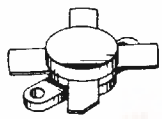
2

The RF Line
SSB Power Transistor

. . . designed primarily for wideband, large-signal output and driver amplifier stages in the 2 to 30 MHz frequency range.

- Designed for Class A, AB or C Power Amplifiers
- Specified 50 Volt, 28 MHz Characteristics:
  Output Power — 150 Watts PEP
  Power Gain — 15 dB Min, Class AB
- 100% Tested for Load Mismatch at all Phase Angles with ∞:1 VSWR
- Gold Metallization for Improved Reliability
- Diffused Ballast Resistors

2–30 MHz
150 WATTS PEP
50 VOLTS
SSB POWER
TRANSISTOR
NPN SILICON



CASE 211-11, STYLE 1
(.500 SOE F)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	55	Vdc
Collector-Base Voltage	V_{CBO}	110	Vdc
Emitter-Base Voltage	V_{EBO}	4	Vdc
Collector Current — Continuous	I_C	15	Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	300 2	Watts W/°C
Operating Junction Temperature	T_J	200	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 50 mA, I_B = 0)	$V_{(BR)CEO}$	55	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 100 mA, I_E = 0)	$V_{(BR)CBO}$	110	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 5 mA, I_C = 0)	$V_{(BR)EBO}$	4	—	—	Vdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1 A, V_{CE} = 5 V)	h_{FE}	10	—	60	—
DYNAMIC CHARACTERISTCS					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1 MHz)	C_{ob}	—	200	—	pF

(continued)

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain (V_{CE} = 50 V, P_{out} = 150 W PEP, f = 28 MHz, I_{CQ} = 50 mA)	G_{PE}	15	—	—	dB
Load Mismatch (V_{CE} = 50 V, I_Q = 50 mA, P_{out} = 150 W PEP, f = 28 MHz, Load VSWR = ∞:1, All Phase Angles)	ψ	No Degradation in Output Power			
Intermodulation Distortion (V_{CE} = 50 Vdc, P_{out} = 150 W PEP, I_{CQ} = 50 mA, f = 28 MHz)	IMD	—	—	−32	dB

2

TYPICAL CHARACTERISTICS

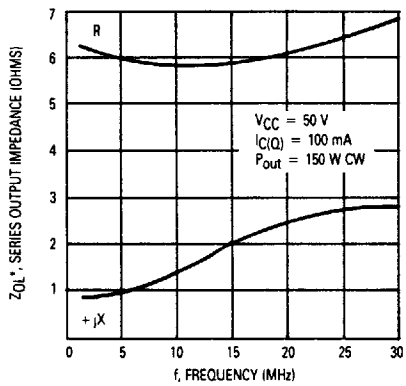


Figure 1. Series Output Impedance versus Frequency

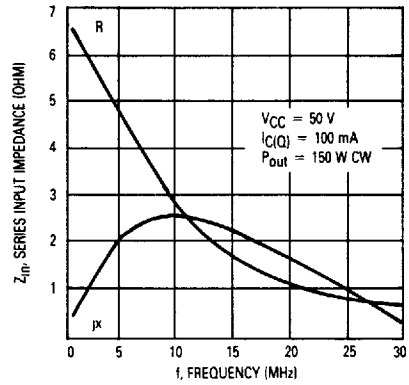


Figure 2. Series Input Impedance versus Frequency

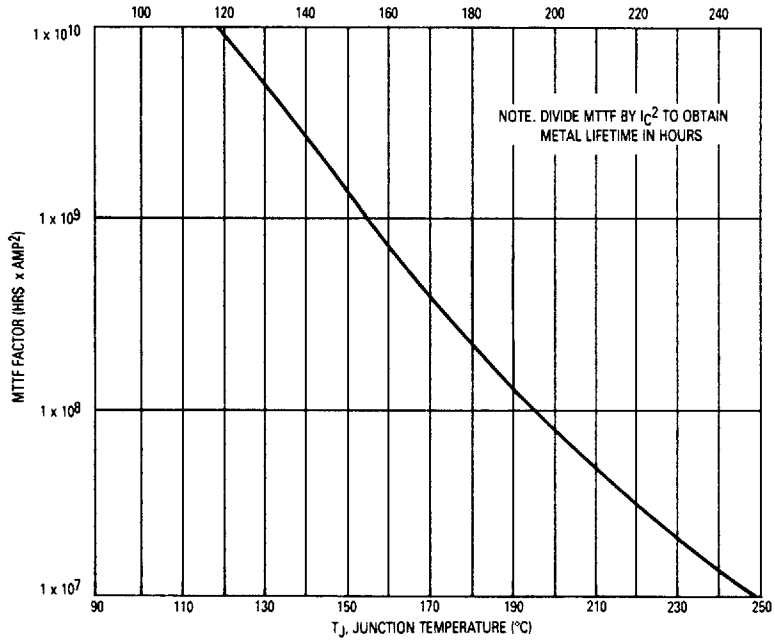
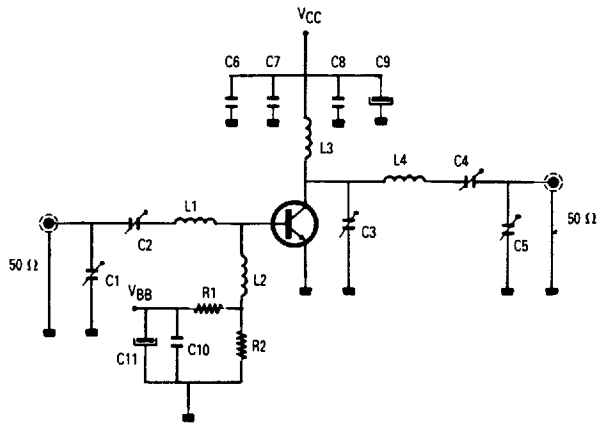


Figure 3. MTTF Factor versus Junction Temperature



C1, C5 — 170–780 pF, ARCO 469 Trimmer capacitor
C2, C4 — 80–480 pF, ARCO 466 Trimmer capacitor
C3 — 55–300 pF, ARCO 427 Trimmer capacitor
C6 — 1000 pF Mica Capacitor UNELCO
C7 — 10 μF Ceramic Disc
C8, C10 — 0.1 μF Ceramic Disc
C9, C11 — 470 μF/63 V Electrolytic

L1 — 5 turns 15/10 mm Silvered wire, 10 mm ID, 25 mm length
L2 — 10 turns 8/10 mm Enameled wire, 10 mm ID
L3 — 4 turns 12/10 mm Enameled wire, 10 mm ID, 10 mm length
L4 — 7 turns 15/10 mm Enameled wire, 10 mm ID, 20 mm length

R1 — 1 Ω, 2 W
R2 — 2.7 Ω, 2 W

Figure 4. 28 MHz Test Circuit