

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA
The RF Line
VHF Power Transistors

... designed for 12.5 Volt low band VHF large-signal power amplifier applications in commercial and industrial FM equipment.

- Specified 12.5 V, 50 MHz Characteristics:
 - Output Power — 20 W
 - Minimum Gain — 11.2 dB
 - Efficiency — 60%
- Load Mismatch Capability at High Line and RF Overdrive
- Diffused Ballast Resistors

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	16	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4	Vdc
Collector Current — Continuous	I_C	5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.286	Watts W/ $^\circ\text{C}$
Operating Junction Temperature	T_J	200	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.5	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

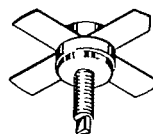
Collector-Emitter Breakdown Voltage ($I_C = 40\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	16	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 5\text{ mA}$, $I_E = 0$)	$V_{(BR)CBO}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10\text{ mA}$, $I_C = 0$)	$V_{(BR)EBO}$	4	—	—	Vdc

ON CHARACTERISTICS

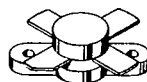
DC Current Gain ($I_C = 100\text{ mA}$, $V_{CE} = 10\text{ V}$)	h_{FE}	10	—	200	—
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FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ($V_{CE} = 12.5\text{ V}$, $P_{out} = 20\text{ W}$, $f = 50\text{ MHz}$)	G_{PE}	11.2	—	—	dB
Collector Efficiency ($V_{CE} = 12.5\text{ V}$, $P_{out} = 20\text{ W}$)	η_c	60	—	—	%
Load Mismatch ($V_{CE} = 15.5\text{ V}$, $P_{in} = 1.5\text{ W}$, $f = 50\text{ MHz}$, Load VSWR = 20:1, All Phase Angles)	ψ	No Degradation in Output Power			

PT8852
PT8852A
11 dB
50 MHz
20 WATTS
VHF POWER
TRANSISTORS


.380 SOE
CASE 145D-01, STYLE 1
PT8852A



.380 SOE F
CASE 211-07, STYLE 1
PT8852

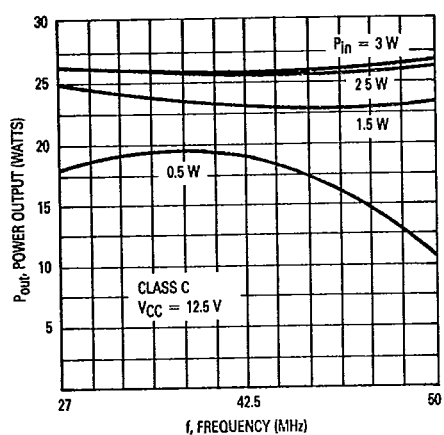


Figure 1. Output Power versus Frequency

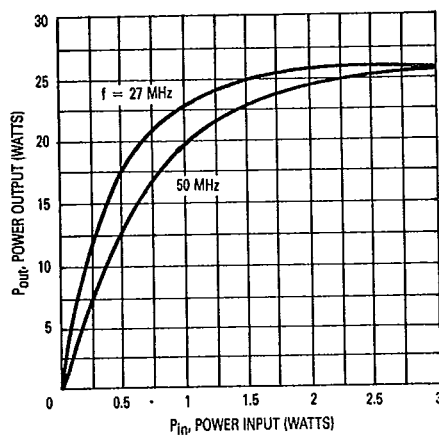


Figure 2. Output Power versus Input Power

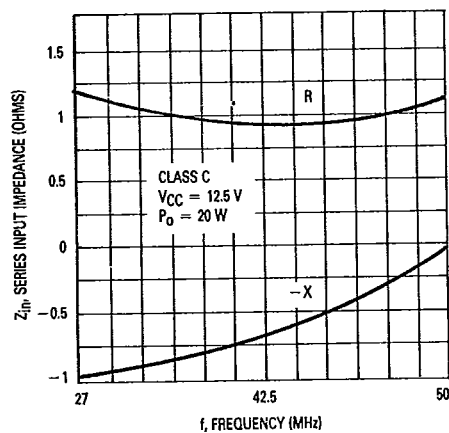


Figure 3. Series Input Impedance versus Frequency

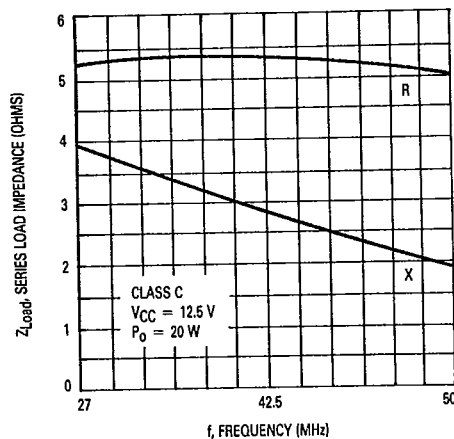


Figure 4. Series Load Impedance versus Frequency

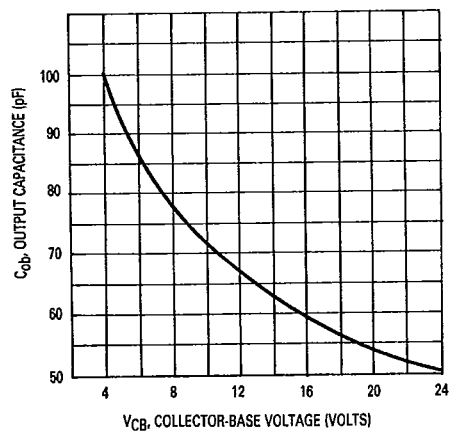
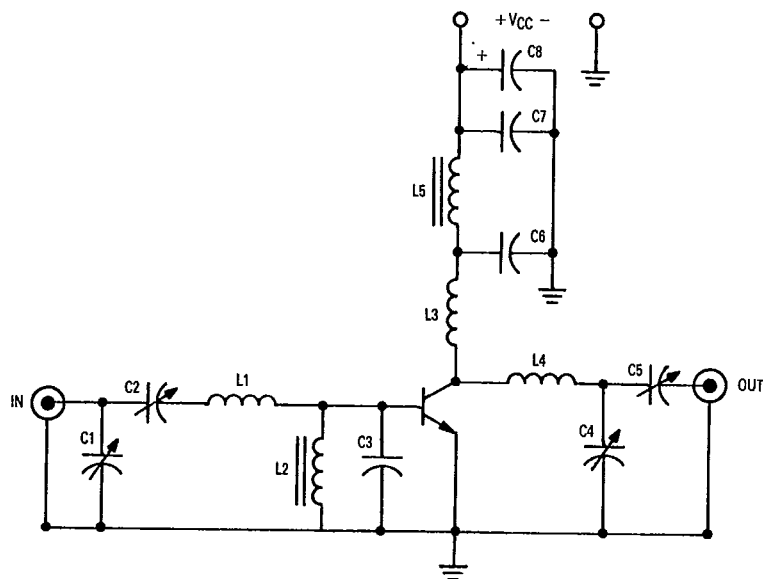


Figure 5. Output Capacitance versus Voltage

T-33-11



C1, C2 — 467 ARCO
 C3, C6 — 1000 pF UNELCO
 C4, C5 — 466 ARCO
 C7 — 0.1 MFD
 C8 — 5 MFD
 L1 — 2 T. #18 AWG, 0.35 in. I.D.
 L2 — 2-1/2 T. #22 AWG on Ferroxcube VK211-073B axial core
 L3 — 3 T. #18 AWG, 0.35 in. I.D.
 L4 — 2 T. #14 AWG, 0.35 in. I.D.
 L5 — 2-1/2 T. #18 AWG on stackpole 9500-D0 A7 23-1838 core

Figure 6. Test Circuit