

TRW SEMICONDUCTORS

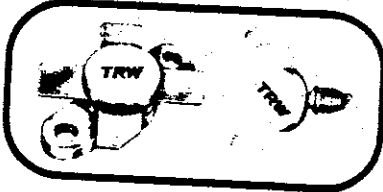
**HF - SSB
 28 V SERIES**

SSB Power Transistors

The PT 9780 SSB/VHF Series features both high gain and high power, providing the desired power output with fewer devices. These power transistors are ballasted for ruggedness and will withstand infinite VSWR at all phase angles. A unique emitter structure provides high gain with wider emitter and base fingers resulting in high reliability. Diffused ballast resistors design enables operation at Class A, AB, and C. These rugged units are suitable for both narrow band and broadband SSB and VHF communications and instrumentation service. They are suitable for the following applications:

2-30 MHz	SSB, FM, AM
2-76 MHz	SSB, FM, AM
2-100 MHz	Linear Class A, SSB, FM, AM

PT 9780/A - 100 W
 PT 9783/A - 50 W
 PT 9788/A - 20 W
 PT 9787/A - 8 W
 ∞ VSWR



Electrical Characteristics ($T_{flange} = 25^{\circ}C$)

SYMBOL	CHARACTERISTICS	CONDITIONS	PT 9787/A PT 9788/A PT 9783/A PT 9780/A				UNIT	
D C Tests	BV_{CBO}	Collector to Base Breakdown Voltage	$I_C = 100\text{ mA}$ $I_E = 0$	70	70	70	70	V Min
	BV_{CEO}	Collector to Emitter Breakdown Voltage	$I_C = 50\text{ mA}$ $I_E = 0$	40	40	40	40	V Min
	I_{CES}	Collector - Emitter Cutoff Current	$V_{CB} = 60\text{ V}$	25	50	100	100	mA Max
	I_{EBO}	Emitter - Base Leakage Current	$V_{BE} = 4\text{ V}$	1.0	1.0	2.5	5.0	mA Max
	H_{FE}	D.C Current Gain	$V_{CB} = 5\text{ V}$	10-100	10-100	10-100	10-100	
	ΔH_{FE}	Matched Pairs	$I_C = 1\text{ A}$	$\Delta 5$	$\Delta 5$	$\Delta 5$	$\Delta 5$	
R F Tests	G_P	Power Gain	$V_{CB} = 28\text{ V}$ $F = 28\text{ MHz}$ P.P.P. 8 W 20 W 50 W 100 W	14	14	14	14	dB Min
	IMD	Intermodulation Distortion	$V_{CE} = 28\text{ V}$ $F = 28\text{ MHz}$ P.E.P. 8 W 20 W 50 W 100 W	-32	-32	-32	-32	dB Max
	VSWR	Mismatch Tolerance	$V_{CE} = 28\text{ V}$ $F = 28\text{ MHz}$ P.E.P. 8 W 20 W 50 W 100 W	∞	∞	∞	∞	-

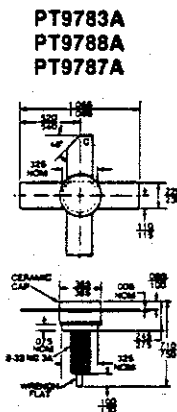
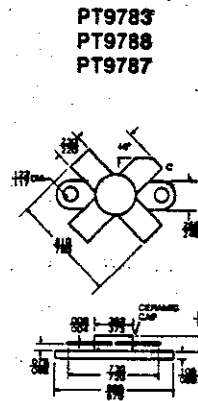
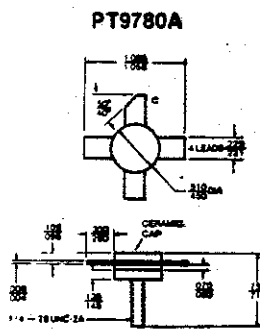
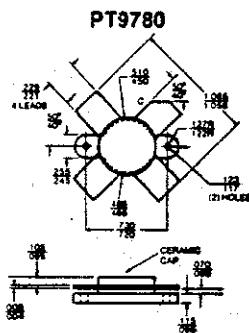
PT 9780 - PT 9783 - PT 9787 - PT 9788

Absolute Maximum Ratings (T_{case} = 25°C)

Part Number*	V _{CEO} Volts	V _{CE0} Volts	V _{EB0} Volts	I _C Max Ampe	P _T @ 25°C Watts	θ _{JC} °C/W	T _{STORAGE} °C
PT9780	70	40	4.0	20.0	350	0.50	-65 to 200
PT9780A	70	40	4.0	20.0	250	0.70	-65 to 200
PT9783	70	40	4.0	10.0	175	1.0	-65 to 200
PT9783A	70	40	4.0	10.0	100	1.75	-65 to 200
PT9788/A	70	40	4.0	4.0	70	2.5	-65 to 200
PT9787/A	60	40	4.0	2.0	25	7.0	-65 to 200

*The "A" suffix on part number denotes stud package.

Package Outlines



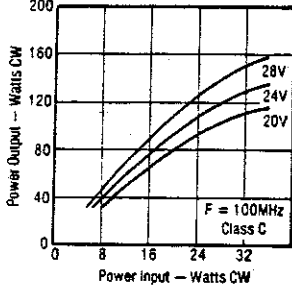
Mechanical Specifications

- Stud Torque, 10 in. lbs., max.
- Lead Fatigue, 3 bends @ 90°
- Lead Soldering, 300°C, 15 sec. max.
- Flange Flatness, 0.0008 in. typ.

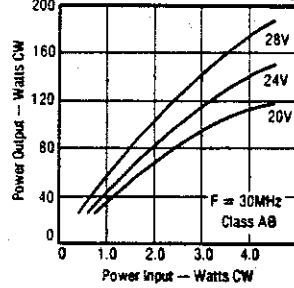
PT 9780

PT9780 and PT9780A

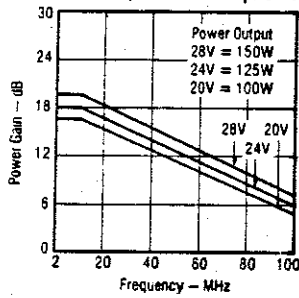
Power Output vs Power Input



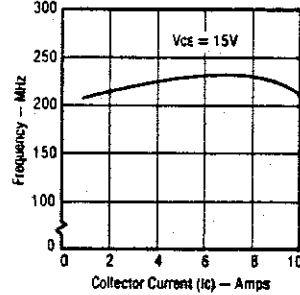
Power Output vs Power Input



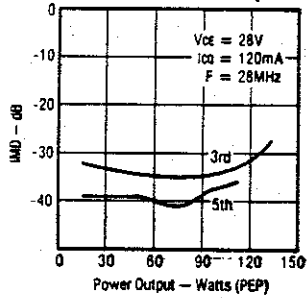
Power Gain vs Frequency



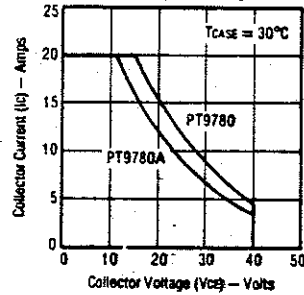
f_h vs I_c



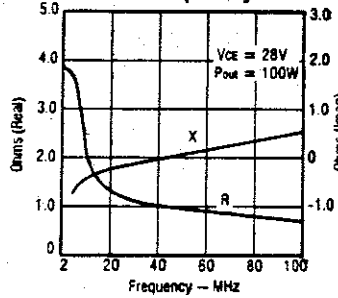
IMD vs Power Output



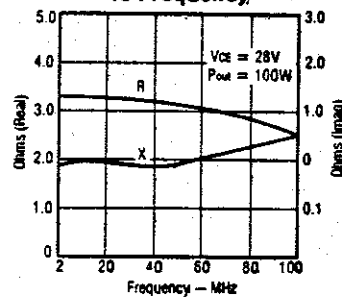
DC Safe Operating Area



Series Input Impedance vs Frequency

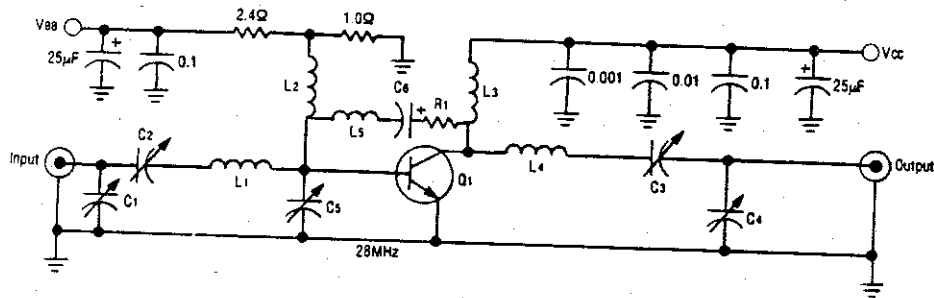


Series Load Impedance vs Frequency



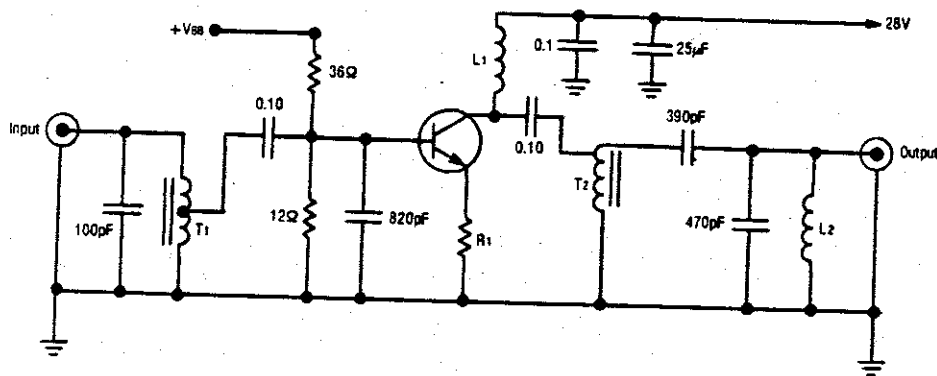
PT 9780 - PT 9783 - PT 9787 - PT 9788

28MHz Test Circuit for
 PT9780/A, PT9783/A, PT9788/A



- C1 ARCO #467, 110-580pF
- C2,3,4 ARCO #466, 80-480pF
- C5 ARCO #469, 170-780pF
- C6 5μF, 50V ELE
- R1 50Ω, 2W
- L1,4 5 turns #14 tinned copper, 0.5" mean diameter, 1 equals 1.0"
- L2 10 turns #18AWG, 0.5" mean diameter
- L3 4 turns #20AWG through two Stackpole #23-1838 cores
- L5 6.8μH molded
- Vcc 28V
- Vbe 1.6 volts (Iq[Quies] = 100mA)

28MHz Test Circuit for
 PT9787 and PT9787A



- R1 1.0Ω on each emitter (0.5Ω)
- T1 6 turns, #22 wire tapped 2 turns from ground, on Fairrite Products #43 bead.
- T2 4 turns, #20 wire tapped 3 1/2 turns from ground, on Fairrite Products #43 bead.
- L1 1.0μH
- L2 0.05μH

PT 9780 - PT 9783 - PT 9787 - PT 9788

MTTF Factor
 vs Junction Temperature

