

# TRW

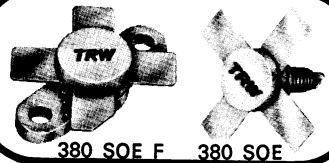
## SEMICONDUCTORS

# HF - SSB 13,5 V SERIES

## SSB Power Transistors

This 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. Ballast resistor design enables operation at Class A, AB and C. These rugged units are suitable for both narrow band and broadband HF communications and instrumentation service.

PT 9785 - 100 W  
 PT 9784/A - 75 W  
 PT 9797/A - 50 W  
 PT 9796/A - 30 W  
 PT 9795/A - 15 W  
 ∞ VSWR



### Electrical Characteristics ( $T_{case} = 25\text{ }^{\circ}\text{C}$ )

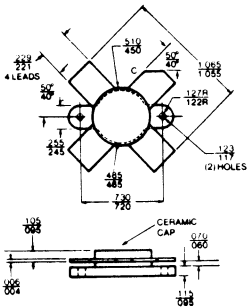
	SYMBOL	CHARACTERISTICS	TEST CONDITIONS	PT	PT	PT	PT	PT	UNIT
				9795/A	9796/A	9797/A	9784/A	9785	
D C TESTS	$BV_{CBO}$	Collector - Base Breakdown	$I_C = 100\text{ mA}$ $I_C = 200\text{ mA}$	50	50	50	50	50	V Min
	$BV_{EBO}$	Emitter - Base Breakdown	$I_E = 6\text{ mA}$ $I_E = 10\text{ mA}$	4.0	4.0	4.0	4.0	4.0	V Min
	$I_{CES}$	Collector - Emitter Cutoff Current	$V_{CE} = 13,5\text{ V}$	5	10	10	20	20	mA Max
	$HF_E$	DC Current Gain	$V_{CE} = 5\text{ V}$	25-150	25-150	25-150	20-100	20-100	—
	$\Delta HF_E$	Matched Pairs	$I_C = 1\text{ A}$	$\Delta 10$	$\Delta 10$	$\Delta 10$	$\Delta 5$	$\Delta 5$	—
R F TESTS	$P_{out}$	Output Power PEP	$V_{CE} = 13,5\text{ V}$ $P = 28\text{ MHz}$	15	30	50	75	100	W PEP
	$P_G$	Power Gain	$V_{CE} = 13,5\text{ V}$ $F = 28\text{ MHz}$ $P_{out} = \text{Rated PEP}$	15	15	15	15	13	dB Min
	IMD	Intermodulation Distorsion	$V_{CE} = 13,5\text{ V}$ $F = 28\text{ MHz}$ $P_{out} = \text{Rated PEP}$	-32	-32	-32	-32	-32	dB Max
	VSWR	Mismatch Tolerance	$V_{CE} = 13,5\text{ V}$ $F = 28\text{ MHz}$ $P_{out} = \text{Rated PEP}$	$\infty$	$\infty$	$\infty$	$\infty$	$\infty$	—
THERMAL	$R_{th}$	Thermal Resistance Jonction to Heatsink (Including Contact)	$V_{CE} = 13,5\text{ V}$ $P_d = 6\text{ W}$ $P_d = 18\text{ W}$ $t_h = 40\text{ }^{\circ}\text{C}$ $P_d = 30\text{ W}$ $P_d = 50\text{ W}$ $P_d = 60\text{ W}$	3,0	2,5	2,0	1,4	0,9	$^{\circ}\text{C/W}$

Absolute Maximum Ratings ( $T_{case} = 25\text{ }^{\circ}\text{C}$ )

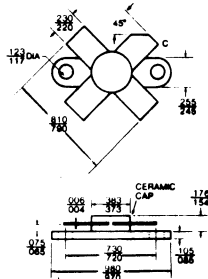
Part number	$V_{CBO}$ V	$V_{CEO}$ V	$V_{CBO}$ V	$T_{storage}$ $^{\circ}\text{C}$
PT 9795/A	50	20.0	4.0	- 65 to 200
PT 9796/A	50	20.0	4.0	- 65 to 200
PT 9797/A	50	20.0	4.0	- 65 to 200
PT 9784/A	50	20.0	4.0	- 65 to 200
PT 9785	50	20.0	4.0	- 65 to 200

The « A » suffix on part number denotes stud package

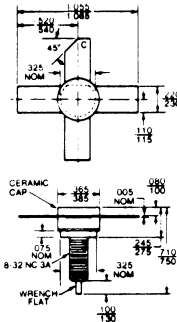
PT 9785



PT 9795  
PT 9796  
PT 9797  
PT 9784



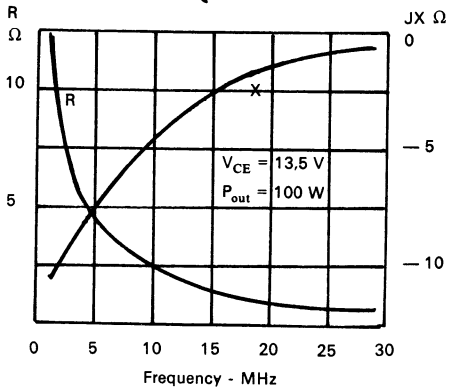
PT 9795 A  
PT 9796 A  
PT 9797 A  
PT 9784 A



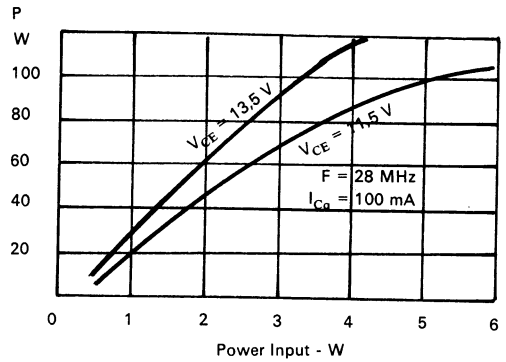
Mechanical Specifications

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

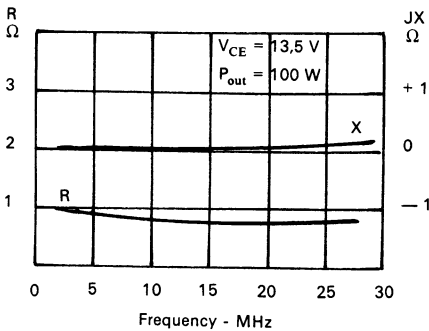
**Series Input Impedance vs Frequency**



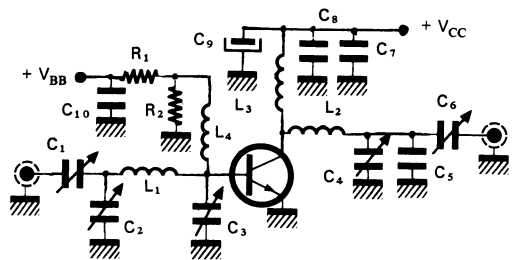
**Power Output vs Power Input**



**Series Load Impedances vs Frequency**



**28 MHz Test Circuit**



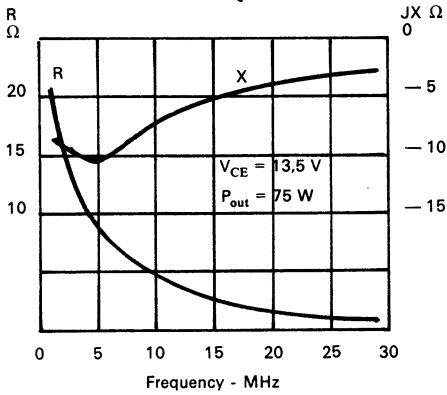
**Test Circuit Ports List**

- C<sub>1</sub> ARCO 423 7-100 pF
- C<sub>2</sub> ARCO 467 110-680 pF
- C<sub>3</sub> ARCO 469 170-780 pF
- C<sub>4</sub> ARCO 466 80-480 pF
- C<sub>5</sub> 400 pF UNELCO
- C<sub>6</sub> ARCO 423 7-100 pF
- C<sub>7</sub> 1000 pF UNELCO
- C<sub>8</sub> 0,1 μF
- C<sub>9</sub> 470 μF Electrolytic
- C<sub>10</sub> 0,1 μF

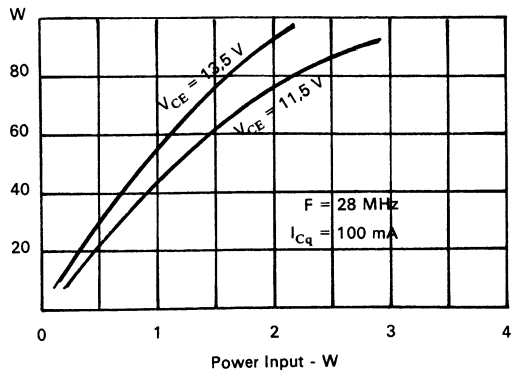
- L<sub>1</sub> 3 turns ∅ 11 mm 1 mm wire L = 15 mm
- L<sub>2</sub> 3 turns ∅ 15 mm 1,8 mm wire L = 20 mm
- L<sub>3</sub> Sturns ∅ 12 mm 1,8 mm wire
- L<sub>4</sub> VK 200 ferrite choke

- R<sub>1</sub> 1,5 Ω
- R<sub>2</sub> 10 Ω/5 W

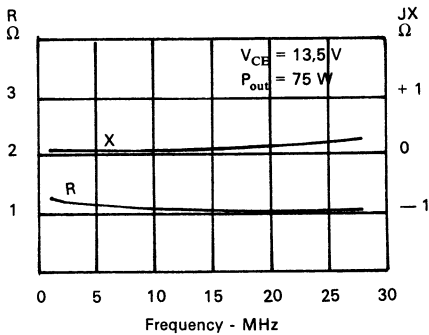
**Series Input Impedance vs Frequency**



**Power Output vs Power Input**



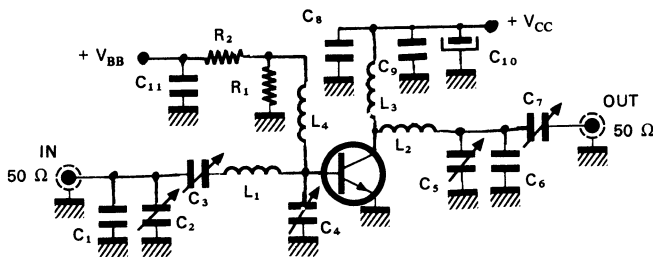
**Series Load Impedance vs Frequency**



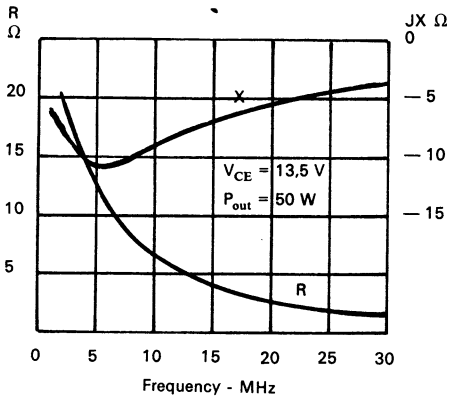
**Test Circuit Parts List**

- L<sub>1</sub> 3 turns  $\varnothing$  12 mm 1,4 mm wire
- L<sub>2</sub> 2 turns  $\varnothing$  13 mm 1,8 mm wire L = 10 mm
- L<sub>3</sub> 8 turns  $\varnothing$  12 mm 1,2 mm wire
- L<sub>3</sub> VK 200 ferrite choke
- C<sub>1</sub> 400 pF UNELCO
- C<sub>2</sub> ARCO 427 55-300 pF
- C<sub>3</sub> ARCO 469 170-780 pF
- C<sub>4</sub> ARCO 469 170-780 pF
- C<sub>5</sub> ARCO 427 55-300 pF
- C<sub>6</sub> 300 pF UNELCO
- C<sub>7</sub> ARCO 425 24-200 pF
- C<sub>8</sub> 1000 pF UNELCO
- C<sub>9</sub> 0,1  $\mu$ F
- C<sub>10</sub> 470  $\mu$ F Electrolytic
- C<sub>11</sub> 0,1  $\mu$ F
- R<sub>1</sub> 1,5  $\Omega$
- R<sub>2</sub> 10  $\Omega$ /5 W

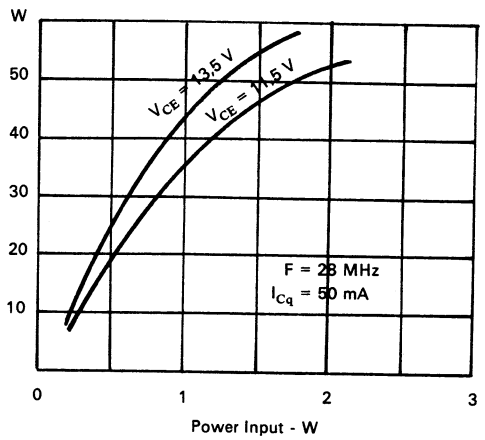
**28 MHz Test Circuit**



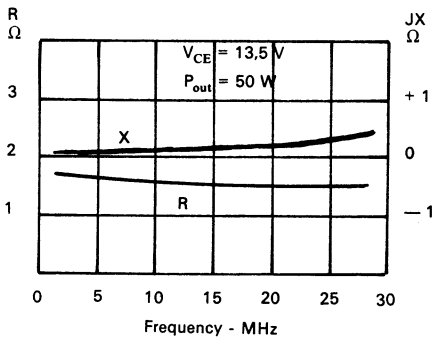
**Series Input Impedance vs Frequency**



**Power Output vs Power Input**



**Series Load Impedance vs Frequency**



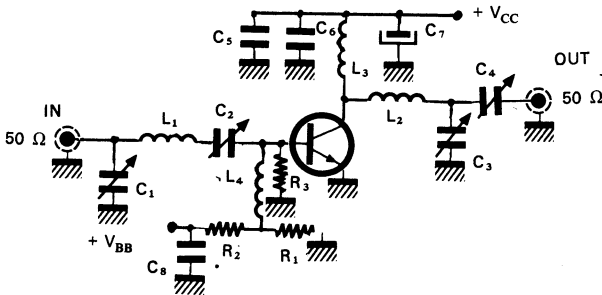
**Test Circuit Parts List**

- L<sub>1</sub> 3 turns  $\varnothing$  10 mm 1,4 mm wire
- L<sub>2</sub> 3 turns  $\varnothing$  10 mm 1,8 mm wire L = 13 mm
- L<sub>3</sub> 8 turns  $\varnothing$  12 mm 1,2 mm wire
- L<sub>4</sub> VK 200 ferrite choke

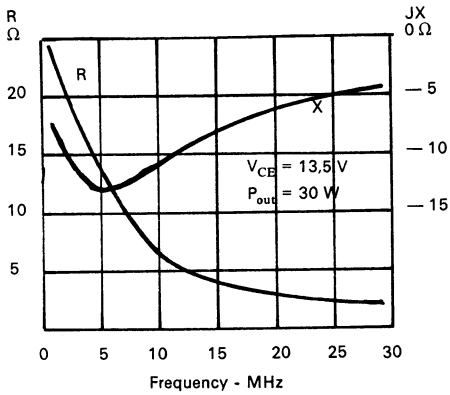
- C<sub>1</sub> ARCO 427 55-300 pF + 400 pF UNELCO
- C<sub>2</sub> ARCO 469 170-780 pF
- C<sub>3</sub> ARCO 427 55-300 pF
- C<sub>4</sub> ARCO 425 24-200 pF
- C<sub>5</sub> 1000 pF UNELCO
- C<sub>6</sub> 0,1  $\mu\text{F}$
- C<sub>7</sub> 470  $\mu\text{F}$  Electrolytic
- C<sub>8</sub> 0,1  $\mu\text{F}$

- R<sub>1</sub> 1,5  $\Omega$
- R<sub>2</sub> 10  $\Omega$ /5 W
- R<sub>3</sub> 39  $\Omega$

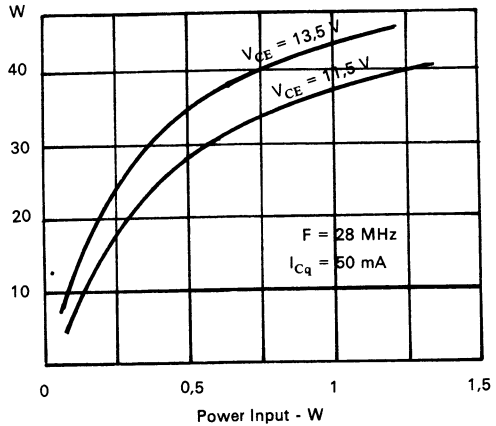
**28 MHz Test Circuit**



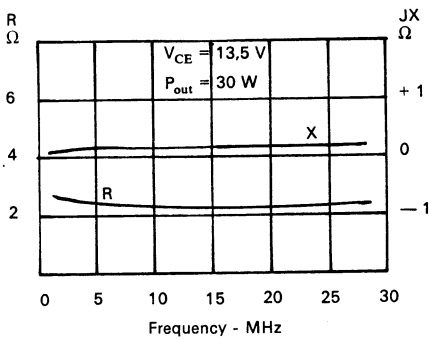
**Series Input Impedance vs Frequency**



**Power Output vs Power Input**



**Series Load Impedance vs Frequency**



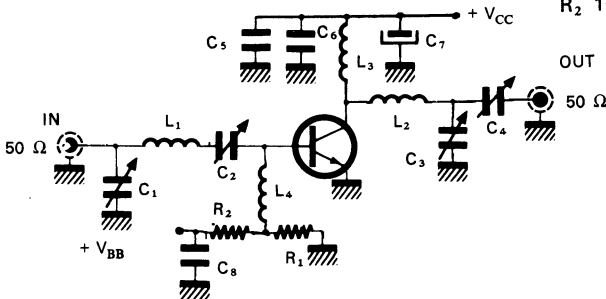
**Test Circuit Parts List**

- L<sub>1</sub> 4 turns  $\varnothing$  12 mm 1 mm wire
- L<sub>2</sub> 4 turns  $\varnothing$  12 mm wire L = 8 mm
- L<sub>3</sub> 10 turns  $\varnothing$  12 mm 1 mm wire
- L<sub>4</sub> VK 200 ferrite choke

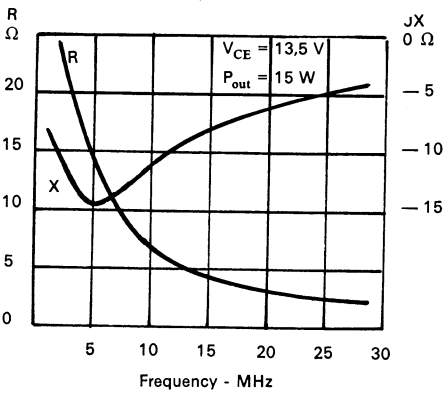
- C<sub>1</sub> ARCO 469 170-780 pF + 200 pF UNELCO
- C<sub>2</sub> ARCO 469 170-780 pF
- C<sub>3</sub> ARCO 427 55-300 pF
- C<sub>4</sub> ARCO 427 55-300 pF
- C<sub>5</sub> 1000 pF UNELCO
- C<sub>6</sub> 0,1  $\mu$ F
- C<sub>7</sub> 50  $\mu$ F Electrolytic
- C<sub>8</sub> 0,1  $\mu$ F

**28 MHz Test Circuit**

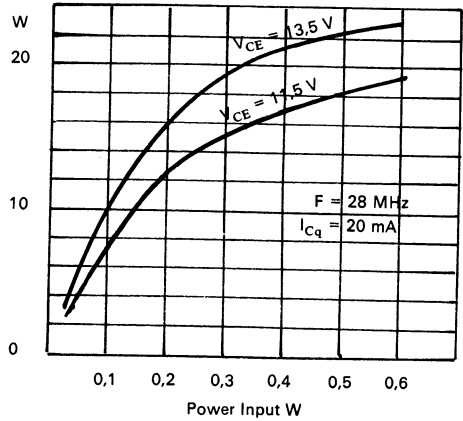
- R<sub>1</sub> 1,5  $\Omega$
- R<sub>2</sub> 10  $\Omega$ /5 W



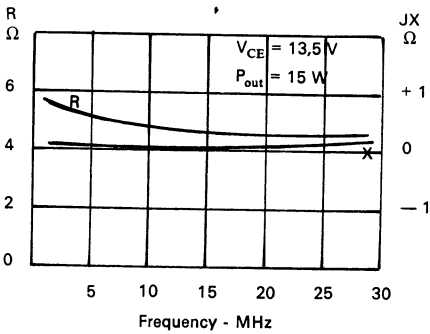
**Series Input Impedance vs Frequency**



**Power Output vs Power Input**



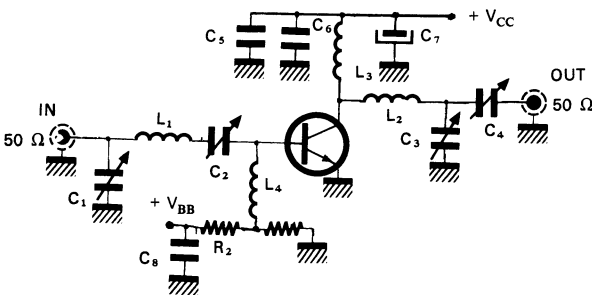
**Series Load Impedance vs Frequency**



**Test Circuit Parts List**

- C<sub>1</sub> ARCO 469 170-780 pF
- C<sub>2</sub> ARCO 427 55-300 pF
- C<sub>3</sub> ARCO 427 55-300 pF
- C<sub>4</sub> ARCO 427 55-300 pF
- C<sub>5</sub> 1000 pF UNELCO
- C<sub>6</sub> 0,1 μF Disc
- C<sub>7</sub> 50 μF Electrolytic
- C<sub>8</sub> 0,1 μF

**28 MHz Test Circuit**



- L<sub>1</sub> 6 turns ∅ 8 mm 1 mm wire
- L<sub>2</sub> 4 turns ∅ 11 mm 1,2 mm wire
- L<sub>3</sub> 10 turns ∅ 12 mm 1,2 mm wire
- L<sub>4</sub> VK 200 ferrite choke
- R<sub>1</sub> 1,5 Ω
- R<sub>2</sub> 10 Ω/5 W