

UHF POWER TRANSISTOR

The JO 2015 A is an internally matched NPN silicon UHF power transistor. Its multicell design allows optimum heat dissipation and operating efficiency. A slotted-grid finger structure assures uniform current injection. Ruggedability and long-term reliability is guaranteed by unique, diffused silicon ballasting resistors coupled with TRW's refractory-gold-passivated metalization system.

BROAD BAND
225 - 400 MHz
70 W - 28 V
 ∞ **VSWR**



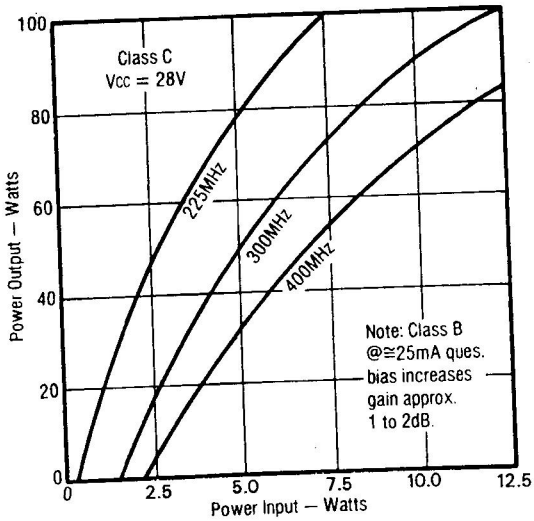
J-Zero-C

Electrical Characteristics (25 °C)

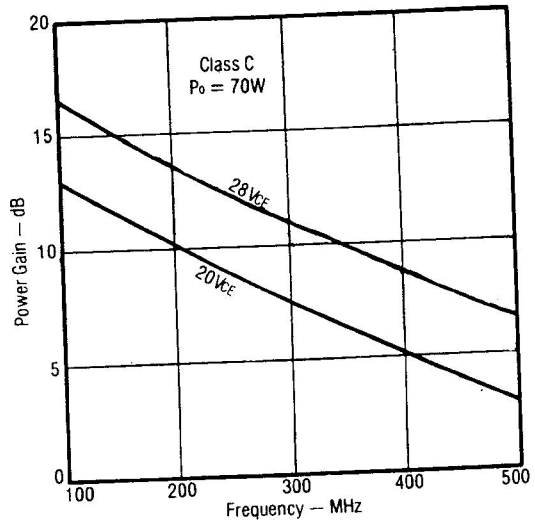
	Symbol	Characteristics	Condition	Value
D C Tests	BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100 \text{ mA}$	65 Vdc Min
	BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 5.0 \text{ mA}$	3.5 Vdc Min
	BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 50 \text{ mA}$	30 Vdc Min
	VSWR	Mismatch Tolerance	$V_{CE} = 28 \text{ V}, f = 400 \text{ MHz}, P_o = 70 \text{ W}$	∞ (All Angles)
	C_{ob}	Collector-Base Capacitance	$V_{CB} = 28 \text{ V}, f = 1 \text{ MHz}$	80 pF Max
	h_{FE}	DC Current Gain	$V_{CE} = 10 \text{ V}, I_C = 1 \text{ A}$	10-100
R F Tests	P_{gain}	Power Gain, CW Broadband	$V_{CE} = 28 \text{ V}, P_o = 70 \text{ W}$ $f = 225\text{-}400 \text{ MHz}$	8.4 dB Min
	P_{sat}	Saturated Power Output	$V_{CE} = 28 \text{ V}, f = 400 \text{ MHz}$	85 W Min
	η	Narrowband Collector Efficiency	$V_{CE} = 28, f = 400 \text{ MHz}, P_o = 70 \text{ W}$	55 % Min
Operating	T_{stg}	Max Storage Temperature		- 65 °C to + 200 °C
	θ_{jC}	Thermal Resistance	25 °C	1.25 °C/W
	I_C	Continuous Collector Current	$V_{CE} = 10 \text{ V}$	10 A Max



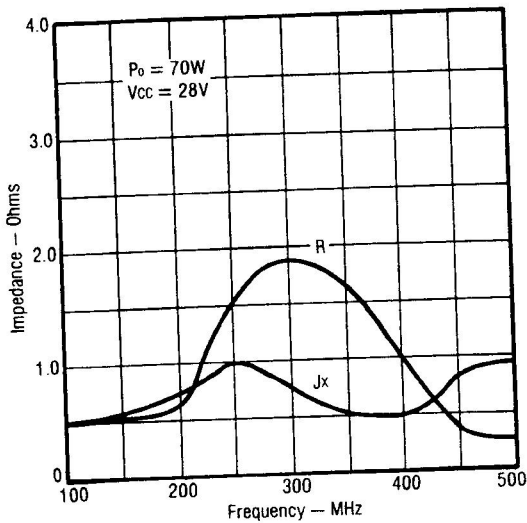
Power Output vs Power Input



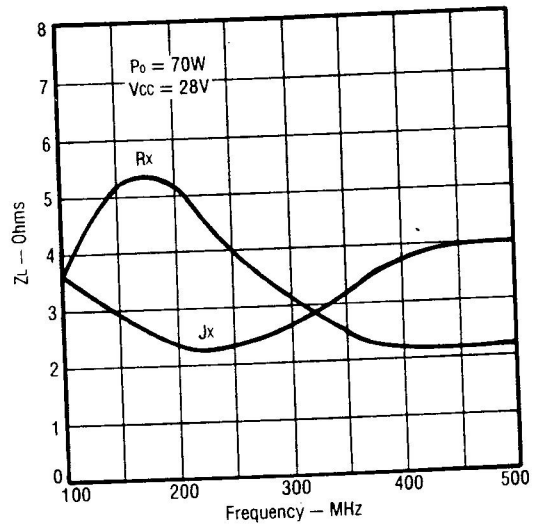
Power Gain vs Frequency



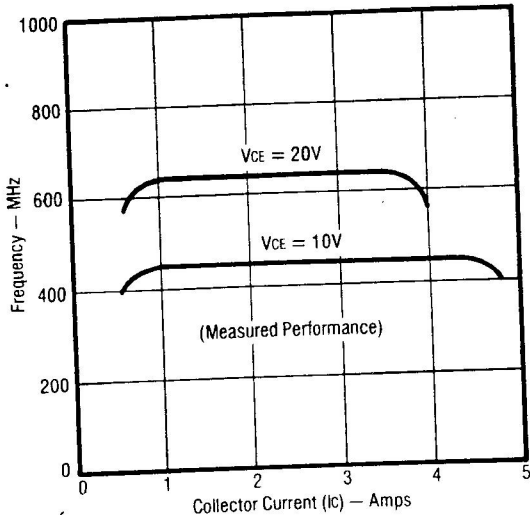
Series Input Impedance vs Frequency



Series Load Impedance vs Frequency



f_t vs I_c



Safe Operating Area

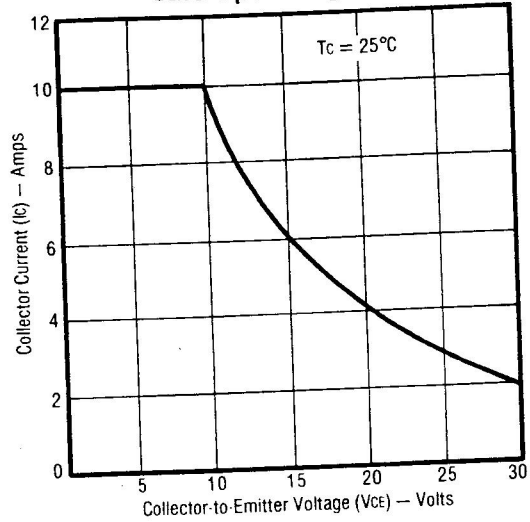
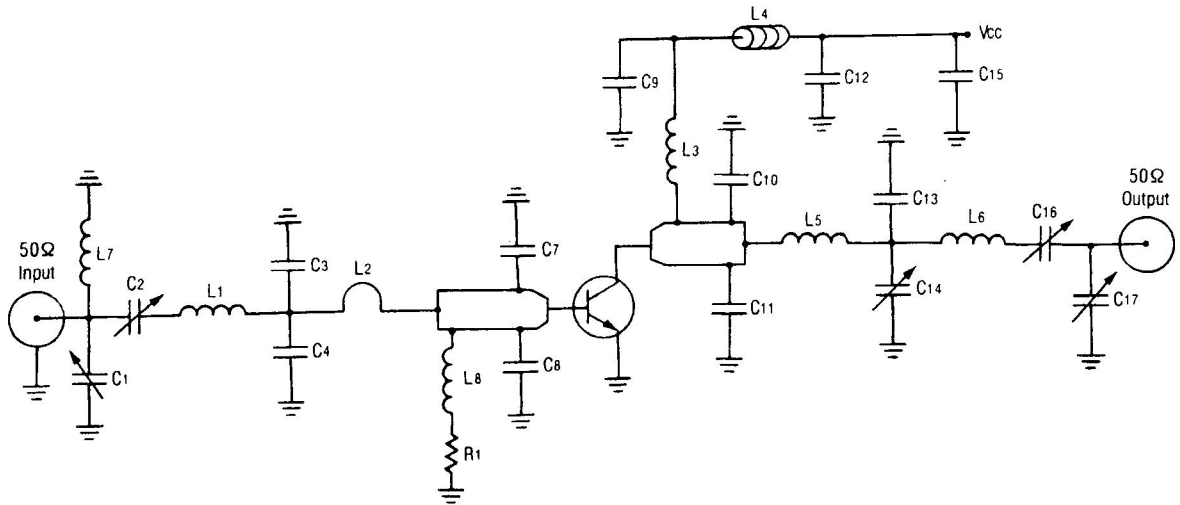


Figure 1. Narrowband Test Circuit



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|------------------------|--------------------|----------------|--------------------------------|
| C _{1,2,14,17} | 1.5-20pF ARCO #402 | L ₁ | 2 turns #22AWG, 0.1" form |
| C _{3,4} | 10pF UNELCO | L ₂ | 0.2" hairpin, 0.1" wide ribbon |
| C _{7,8} | 60pF UNELCO | L ₃ | #22AWG, 1" diameter |
| C _{10,11} | 40pF UNELCO | L ₄ | 3 Ferrite beads on #22AWG |
| C ₁₃ | 15pF UNELCO | L ₅ | #22AWG, 0.25" hairpin |
| C _{9,12} | 1000pF UNELCO | L ₆ | 1 turn #22AWG, 0.1" form |
| C ₁₅ | 5μF electrolytic | L ₇ | 6 turns #22AWG, 0.1" form |
| C ₁₆ | 8-60pF ARCO #404 | L ₈ | 8 turns #22AWG, 0.1" form |

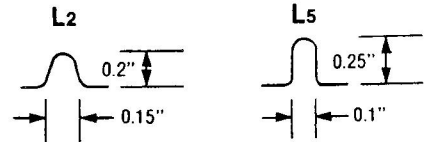
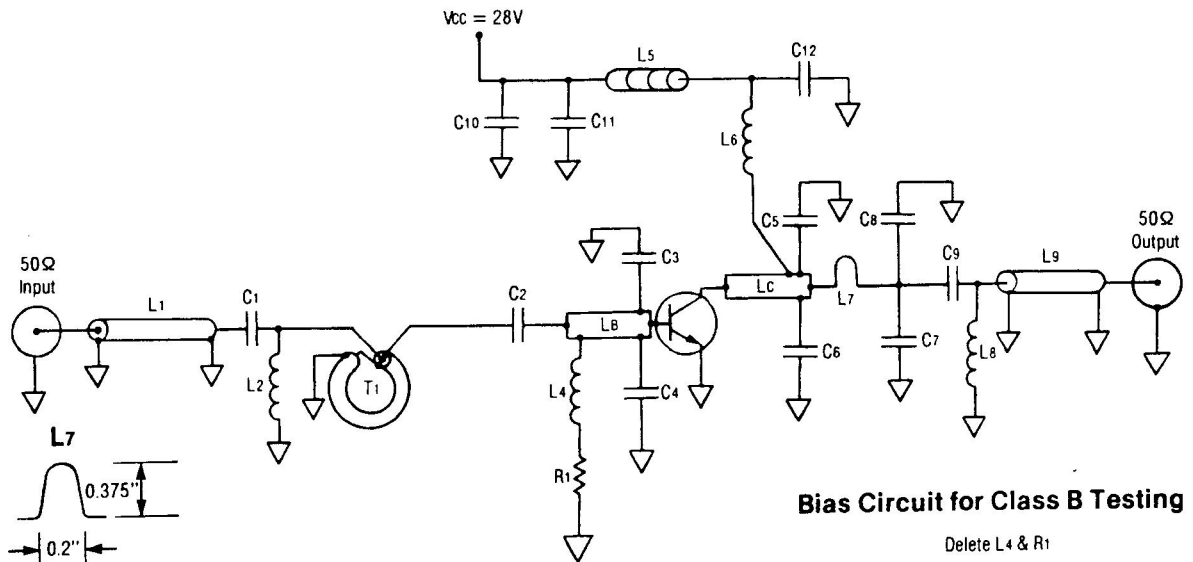
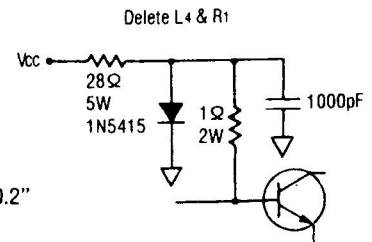


Figure 2. 70 Watt Broadband Test Circuit (225-400MHz)

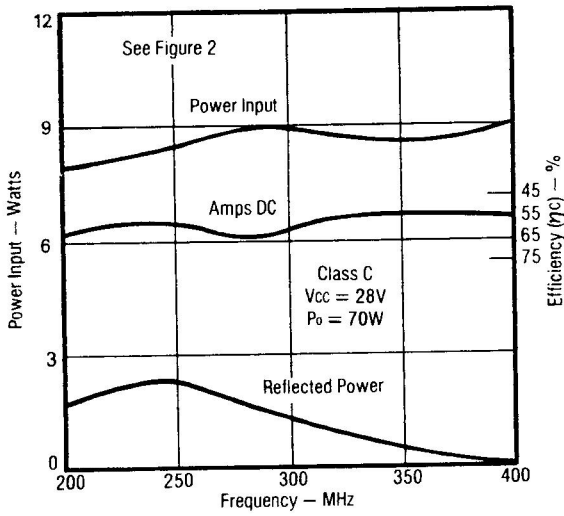


- | | | | |
|--------------------|--|------------------|---------------------------------------|
| C ₁ | 20pF JFD | L _{2,4} | 4 turns #20AWG, 0.125" form |
| C ₂ | 68pF JFD | L ₅ | 3 Ferrite beads |
| C _{3,4} | 60pF UNELCO | L ₆ | #20AWG, 1" diameter |
| C _{5,6} | 40pF UNELCO | L ₇ | 3/8" hairpin |
| C _{7,9} | 15pF UNELCO | L ₈ | 3 turns #20AWG, 0.125" form |
| C ₈ | 10pF UNELCO | L ₉ | Base Inductance Pad, 0.5" x 0.2" |
| C ₁₀ | 5μF electrolytic | L _C | Collector Inductance Pad, 0.5" x 0.2" |
| C _{11,12} | 1000pF UNELCO | R ₁ | 0.5Ω, 1W |
| L _{1,9} | 50Ω semirigid (length to suit circuit) | T ₁ | 1", 25Ω semirigid coax |

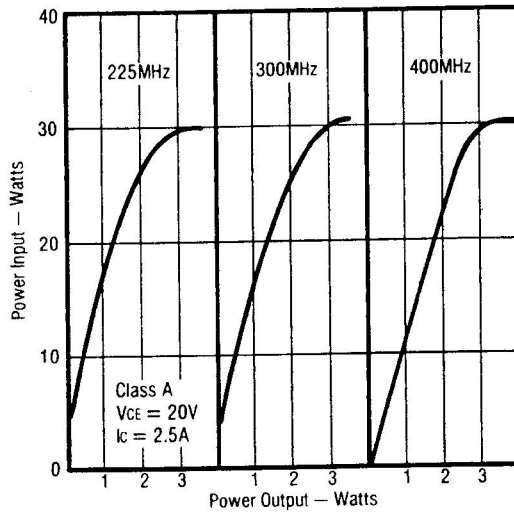
Bias Circuit for Class B Testing



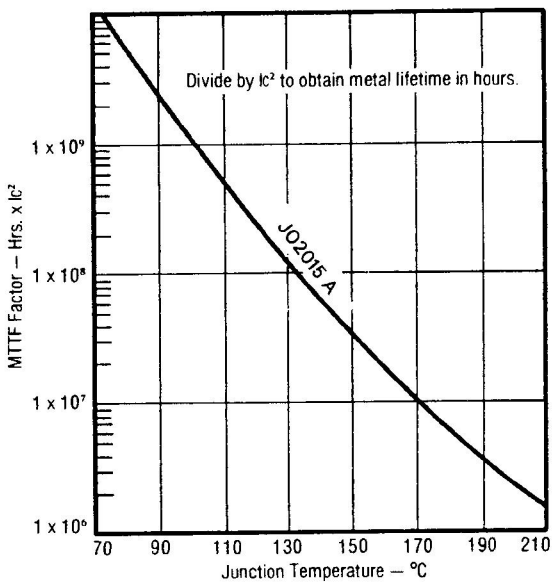
70W Broadband Performance



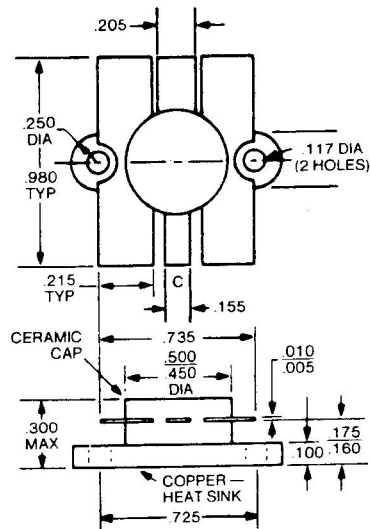
Typical Class A Linear Transfer Characteristics



MTTF Factor vs T_j



J-Zero-C Package Outline



Elect

DC Test

RF Test

Operating