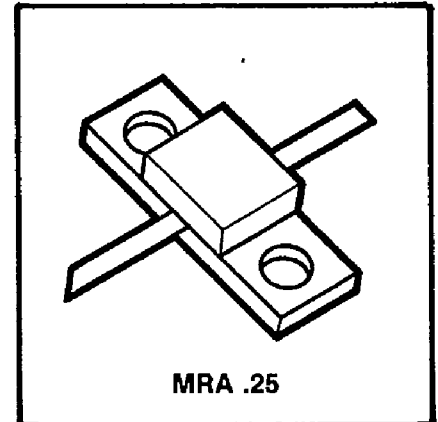


MRA0610-3, MRA0610-9, MRA0610-18A, MRA0610-40A

MICROAMP® P-Band Class C Power Transistors

- 3 to 40 Watts
- Broadband 600-1000 MHz
- Internally Compensated*
- Gold Metalized
- Diffused Ballast Resistors
- MTTF Data
- Common Base

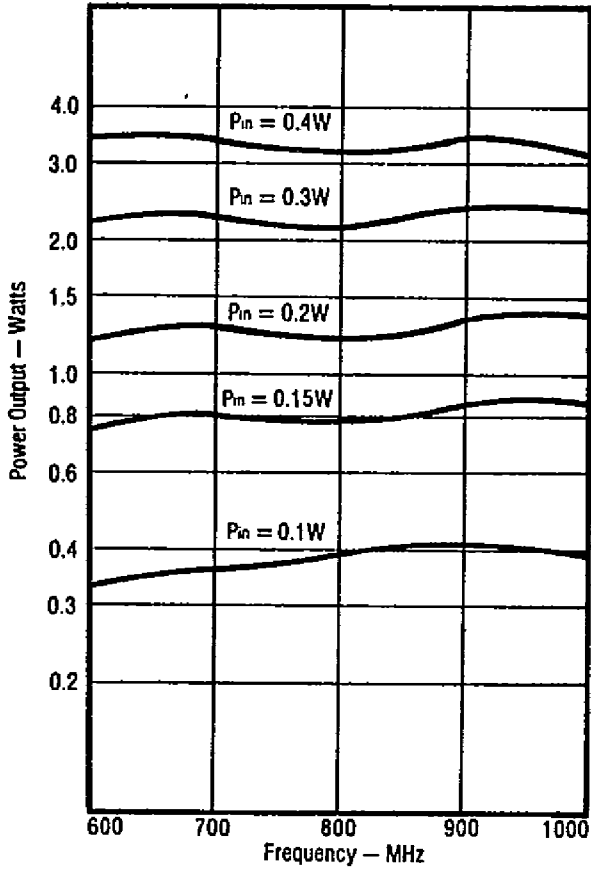


Electrical Characteristics ($T_{\text{case}} = 25\text{ }^{\circ}\text{C}$)

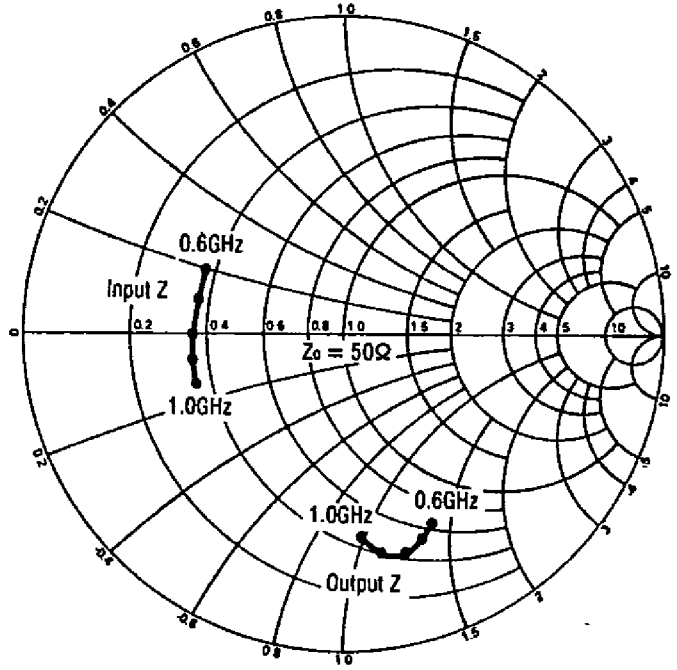
Symbol	Characteristic	MRA0610-3	MRA0610-9	MRA0610-18A	MRA0610-40A
BV_{CES}	Collector-Base Breakdown Voltage	$I_C = 20\text{ mA}$ 50 V Min	$I_C = 60\text{ mA}$ 50 V Min	$I_C = 100\text{ mA}$ 50 V Min	$I_C = 200\text{ mA}$ 50 V Min
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 0.25\text{ mA}$ 3.5 V Min	$I_B = 0.75\text{ mA}$ 3.5 V Min	$I_B = 1.25\text{ mA}$ 3.5 V Min	$I_E = 2.5\text{ mA}$ 3.5 V Min
I_{CBO}	Collector Cutoff Current $I_E = 0$	$V_{CB} = 28\text{ V}$ 0.5 mA	$V_{CB} = 28\text{ V}$ 1.5 mA	$V_{CB} = 28\text{ V}$ 2.5 mA	$V_{CB} = 28\text{ V}$ 5.0 mA
I_C	Max Continuous Collector Current $V_{CE} = 4\text{ V}$	0.5 A	1.5 A	2.5A	5A
h_{FE}	Forward Current Transfer Ratio $V_{CE} = 5\text{ V}$	$I_C = 0.1\text{ A}$ 10-100	$I_C = 0.3\text{ A}$ 10-100	$I_C = 0.5\text{ A}$ 10-100	$I_C = 1.0\text{ A}$ 10-100
θ_{JF}	Thermal Resistance Junction to Flange (at rated RF output)	15 $^{\circ}\text{C}/\text{W}$	6 $^{\circ}\text{C}/\text{W}$	4 $^{\circ}\text{C}/\text{W}$	2.5 $^{\circ}\text{C}/\text{W}$
P_o	Min Broadband Power Output	3.0 W	9.0 W	18.0 W	40.0 W
C_{ob}	Max Collector-Base Capacitance $V_{CB} = 28\text{ V}$, $f = 1\text{ MHz}$	4.5 pF	10 pF	14 pF	28 pF
$P_{G(dB)}$	Min Power Gain in dB $V_{CB} = 28\text{ V}$	$P_o = 3.0\text{ W}$ 7.8 dB	$P_o = 9.0\text{ W}$ 7.8 dB	$P_o = 18.0\text{ W}$ 7.8 dB	$P_o = 40.0\text{ W}$ 7.0 dB
η_c	Min Broadband Collector Efficiency	$P_o = 3.0\text{ W}$ 50 %	$P_o = 9.0\text{ W}$ 55 %	$P_o = 18.0\text{ W}$ 50 %	$P_o = 40.0\text{ W}$ 50 %
T_J		-65 to +200 $^{\circ}\text{C}$			
T_{SRG}		-65 to +150 $^{\circ}\text{C}$			
* The concept of input and/or output matching using MOS capacitors, wire bonds and other techniques is patented by TRW, Inc. (US # 3,713,006).					

MRA0610-3 — 3 WATTS BROADBAND

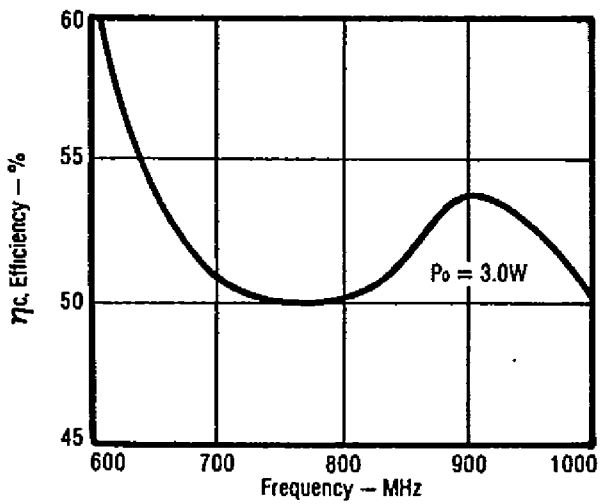
Typical Power Output vs Frequency



Impedance Data $V_{CC} = 28V$

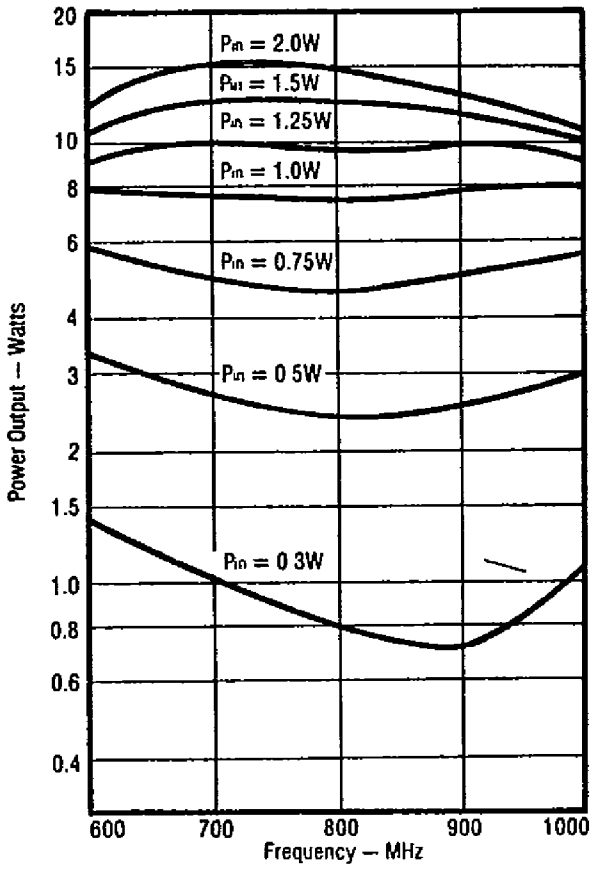


Typical Efficiency vs Frequency

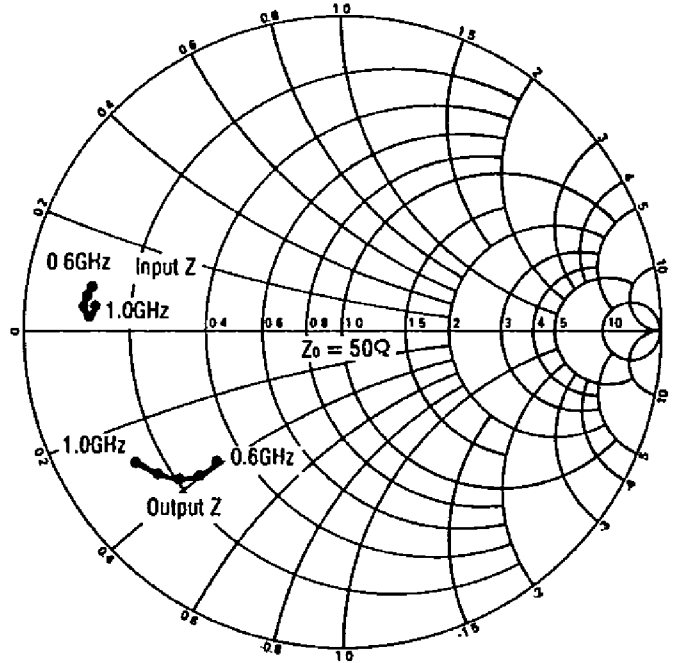


MRA0610-9 — 9 WATTS BROADBAND

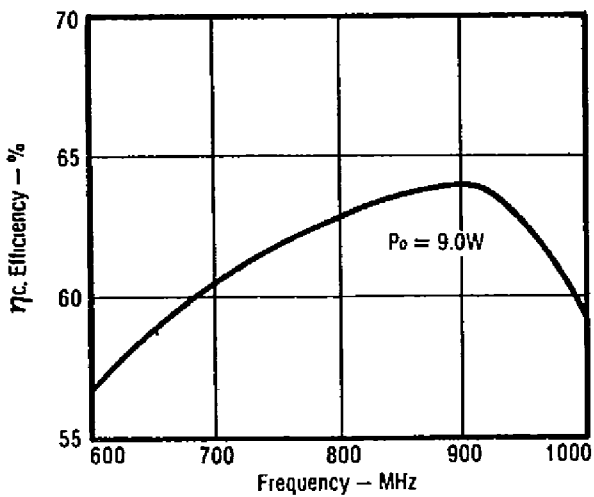
Typical Power Output vs Frequency



Impedance Data $V_{cc} = 28V$

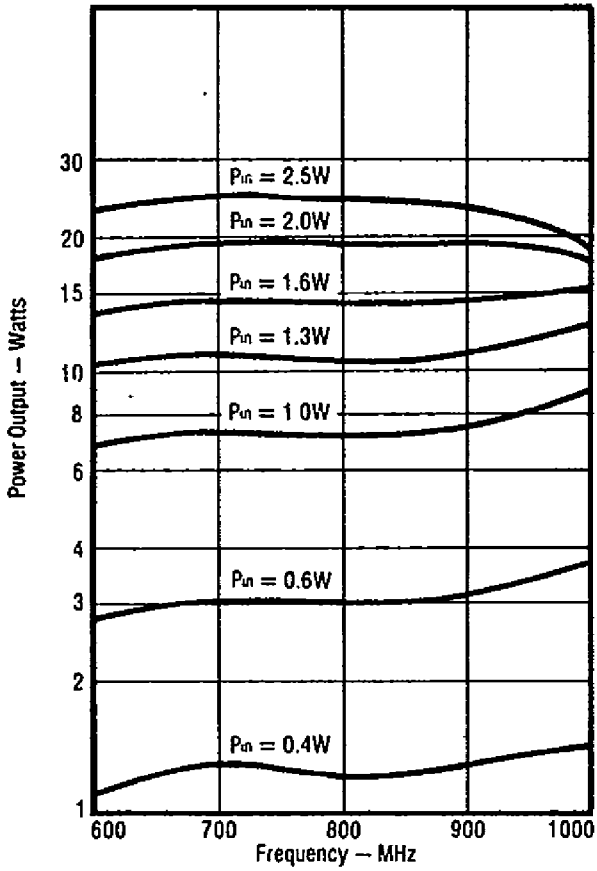


Typical Efficiency vs Frequency

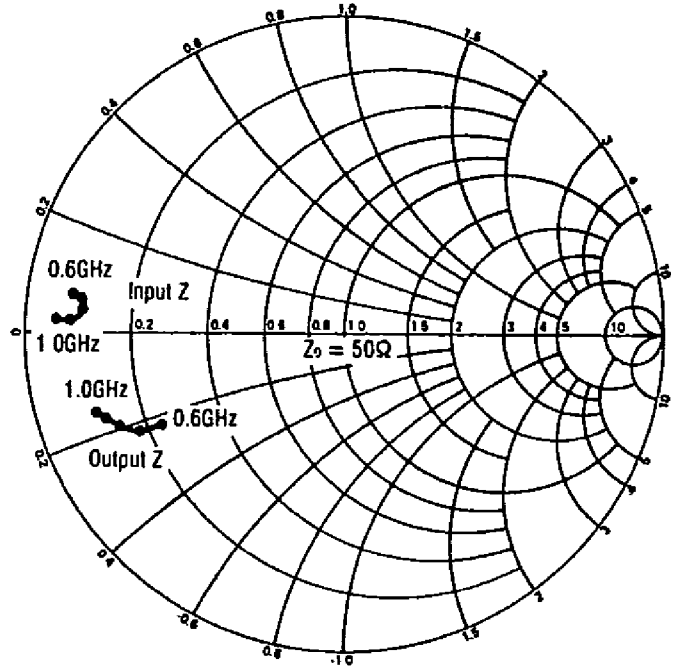


MRA0610-18A – 18 WATTS BROADBAND

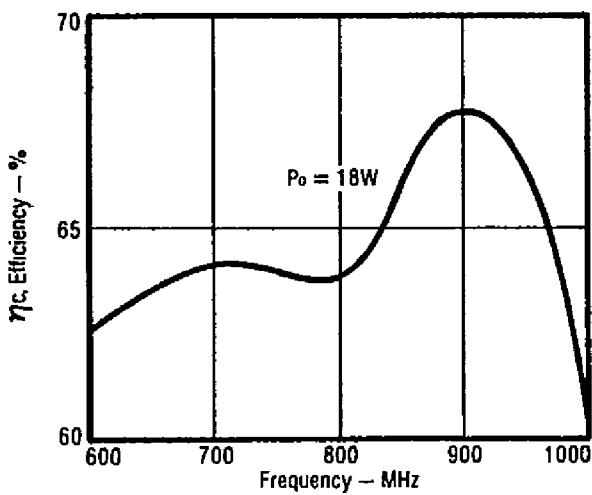
Typical Power Output vs Frequency



Impedance Data
 $V_{CC} = 28V$

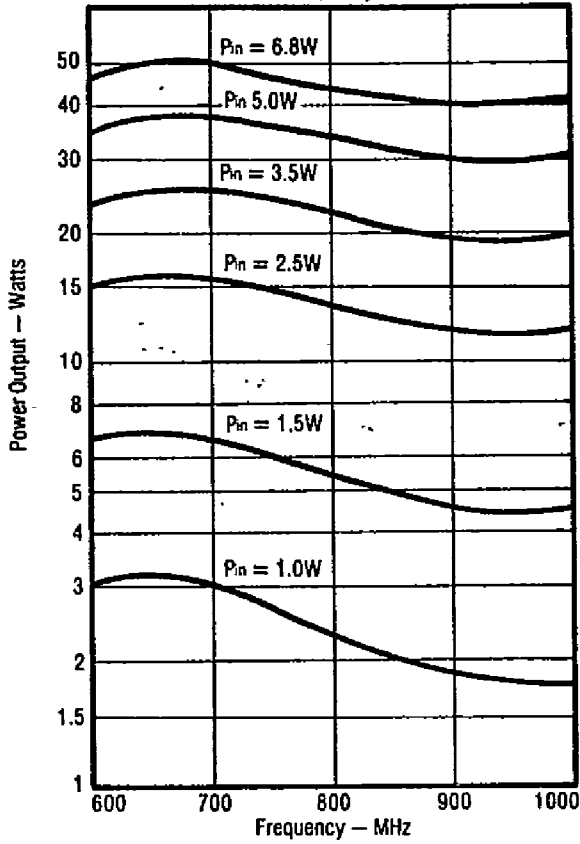


Typical Efficiency vs Frequency

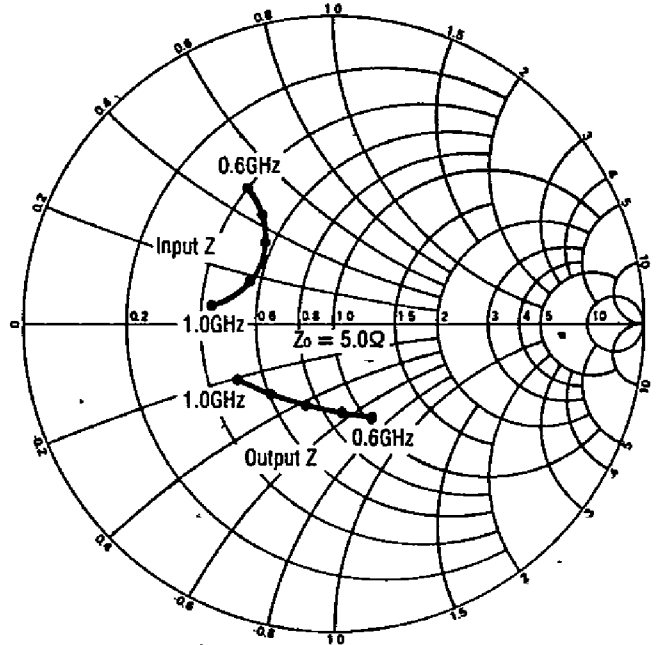


MRA0610-40A – 40 WATTS BROADBAND

Typical Power Output vs Frequency

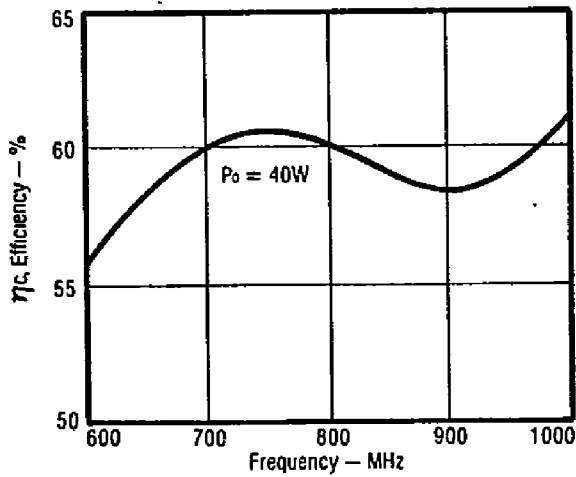


Impedance Data
 $V_{cc} = 28V$
 (5Ω Center)

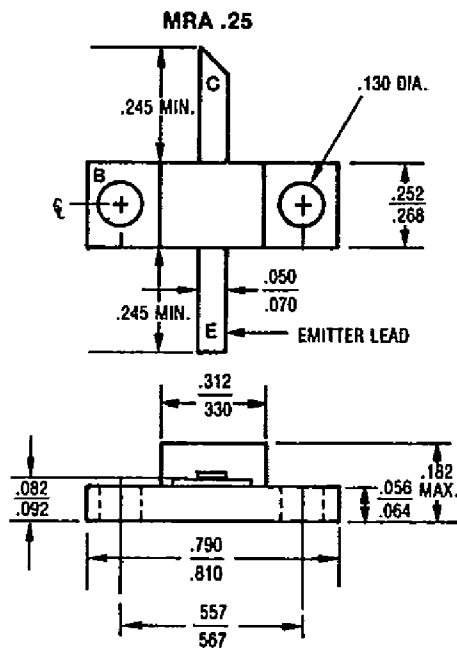
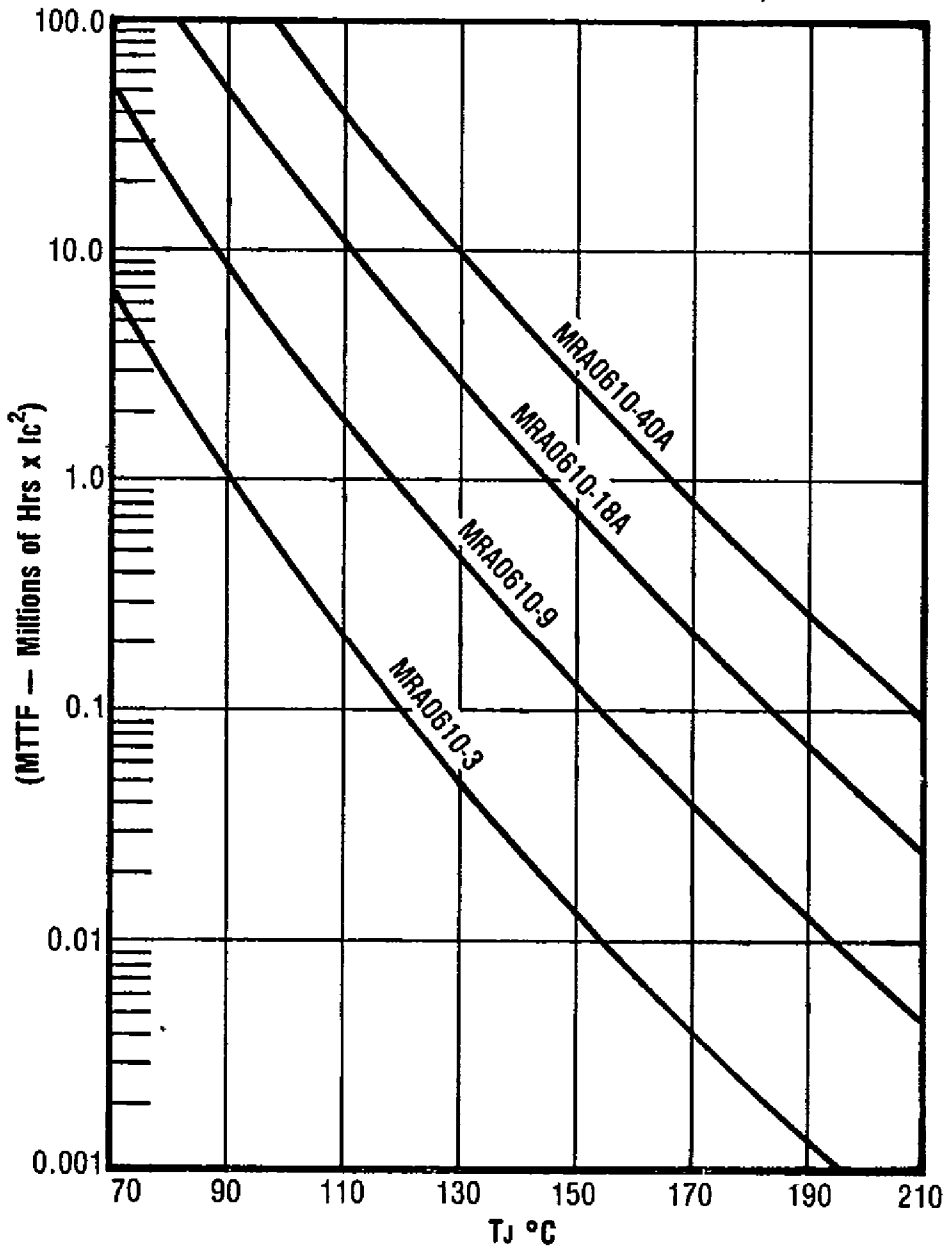


Test Circuit Details available from TRW Semiconductors.

Typical Efficiency vs Frequency



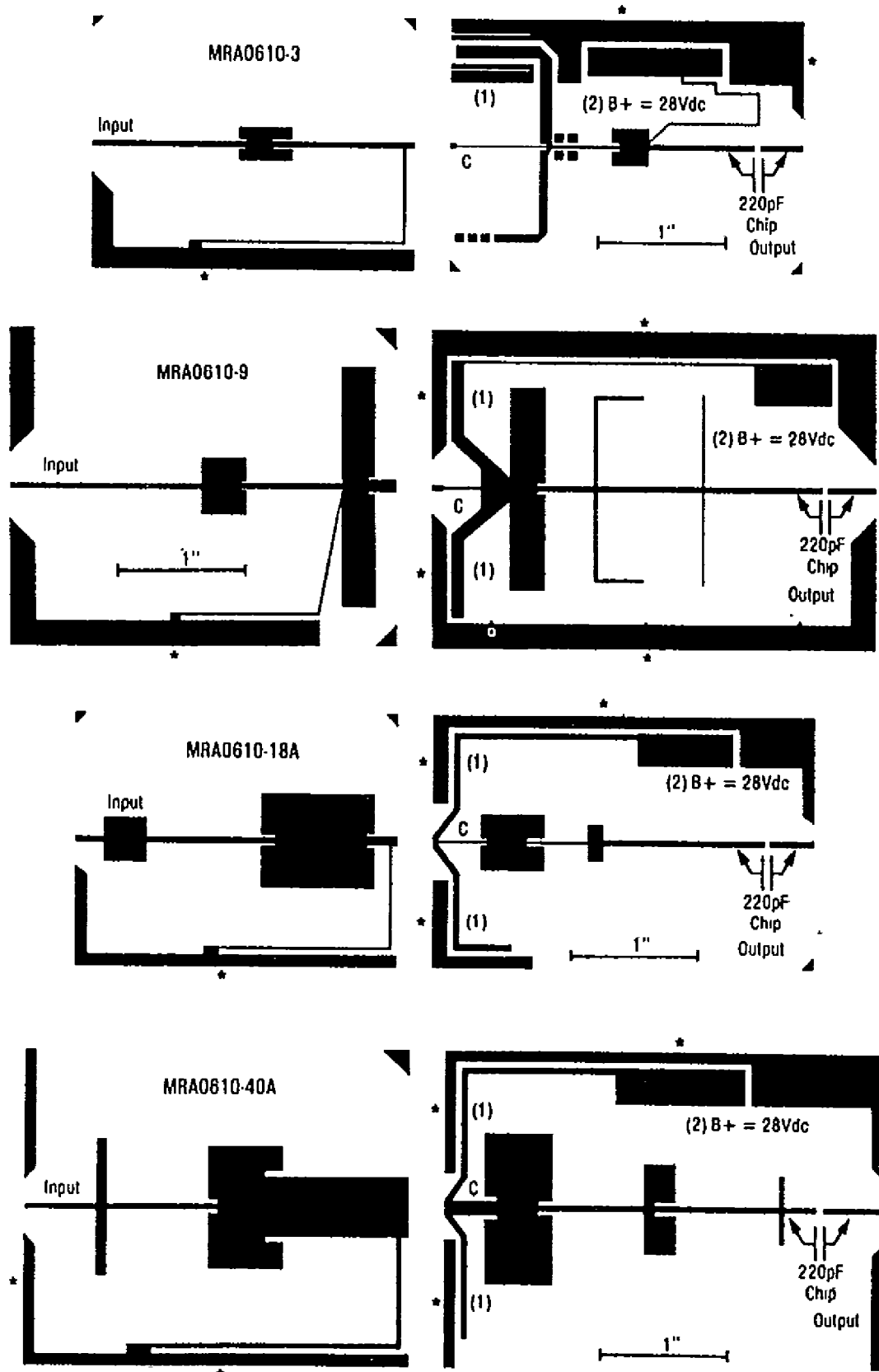
MTTF FACTOR vs T_J
 (Divide by I_c² to obtain metal lifetime in hours.)



MRA0610-3, MRA0610-9, MRA0610-18A, MRA0610-40A

TEST CIRCUIT BOARDS FOR MRA0610 SERIES

NOTE: Scale is not 1:1.



*Foil wrap or plate around to ground plane. Board material 0.020 inch glass teflon $\epsilon_r = 2.55$.

(1) Bypass capacitor to ground for shunt inductor (220pF chip).

(2) Use B+ bypass of 0.01 and 1 μ F capacitors at this point.