

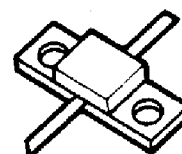
**MRA0610
Series**

**The RF Line
UHF Power Transistors**

... designed primarily for wideband, large-signal output and driver amplifier stages in the 600 to 1000 MHz frequency range.

- Designed for Class C, Common Base Power Amplifiers
- Specified 28 Volt, 1000 MHz Characteristics:
 - Output Power — 3 to 40 Watts
 - Power Gain — 7 to 7.8 dB Min, Common Base
 - Collector Efficiency — 50 to 55%
- Built-In Matching Network for Broadband Operation
- Gold Metallization for Improved Reliability
- Diffused Ballast Resistors

**7 to 7.8 dB
600-1000 MHz
3 TO 40 WATTS
BROADBAND
UHF POWER
TRANSISTORS**



**CASE 394-01, STYLE 1
(MRA .25)**

MAXIMUM RATINGS

Rating	Symbol	-3	-9	-18A	-40A	Unit
Collector-Base Voltage	V _{CES}	50				V _{dc}
Emitter-Base Voltage	V _{EBO}	3.5				V _{dc}
Collector Current — Continuous	I _C	0.5	1.5	2.5	5	A _{dc}
Operating Junction Temperature	T _J	200				°C
Storage Temperature Range	T _{stg}	-65 to +150				°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max				Unit
Thermal Resistance, RF, Junction to Case	R _{θJC}	15	6	4	2.5	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I _C = 20 mA, V _{BE} = 0)	MRA0610-3	V _{(BR)CES}	50	—	—	V _{dc}
(I _C = 60 mA, V _{BE} = 0)	-9		50	—	—	
(I _C = 100 mA, V _{BE} = 0)	-18A		50	—	—	
(I _C = 200 mA, V _{BE} = 0)	-40A		50	—	—	
Emitter-Base Breakdown Voltage (I _E = 0.25 mA, I _C = 0)	MRA0610-3	V _{(BR)EBO}	3.5	—	—	V _{dc}
(I _E = 0.75 mA, I _C = 0)	-9		3.5	—	—	
(I _E = 1.25 mA, I _C = 0)	-18A		3.5	—	—	
(I _E = 2.5 mA, I _C = 0)	-40A		3.5	—	—	
Collector Cutoff Current (V _{CB} = 28 V, I _E = 0)	MRA0610-3	I _{CBO}	—	—	0.5	mA _{dc}
	-9		—	—	1.5	
	-18A		—	—	2.5	
	-40A		—	—	5	

(continued)

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
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ON CHARACTERISTICS

DC Current Gain	MRA0610-3	hFE			
(IC = 0.1 A, VCE = 5 V)		10	—	100	—
(IC = 0.3 A, VCE = 5 V)	-9	10	—	100	
(IC = 0.5 A, VCE = 5 V)	-18A	10	—	100	
(IC = 1 A, VCE = 5 V)	-40A	10	—	100	

DYNAMIC CHARACTERISTICS

Output Capacitance	MRA0610-3	Cob	—	—	4.5	pF
(VCB = 28 V, IE = 0, f = 1 MHz)	-9		—	—	10	
	-18A		—	—	14	
	-40A		—	—	28	

FUNCTIONAL TESTS

Common-Base Amplifier Power Gain	MRA0610-3	GpB				dB
(VCE = 28 V, Pout = 3 W, f = 0.6 & 1 GHz)		7.8	—	—		
(VCE = 28 V, Pout = 9 W, f = 0.6 & 1 GHz)	-9	7.8	—	—		
(VCE = 28 V, Pout = 18 W, f = 0.6 & 1 GHz)	-18A	7.8	—	—		
(VCE = 28 V, Pout = 40 W, f = 0.6 & 1 GHz)	-40A	7	—	—		
Collector Efficiency	MRA0610-3	ηc				%
(VCE = 28 V, Pout = 3 W, f = 0.6 & 1 GHz)		50	—	—		
(VCE = 28 V, Pout = 9 W, f = 0.6 & 1 GHz)	-9	55	—	—		
(VCE = 28 V, Pout = 18 W, f = 0.6 & 1 GHz)	-18A	50	—	—		
(VCE = 28 V, Pout = 40 W, f = 0.6 & 1 GHz)	-40A	50	—	—		

TYPICAL CHARACTERISTICS
MRA0610-3 — 3 WATTS BROADBAND

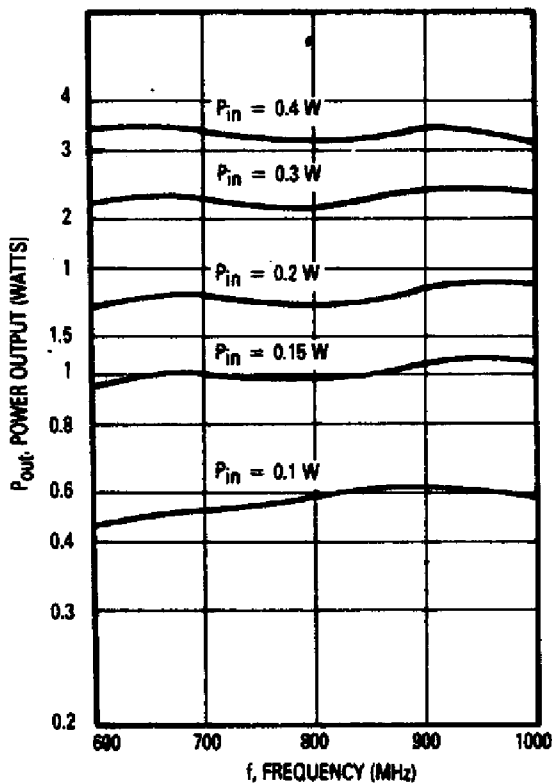


Figure 1. Power Output versus Frequency

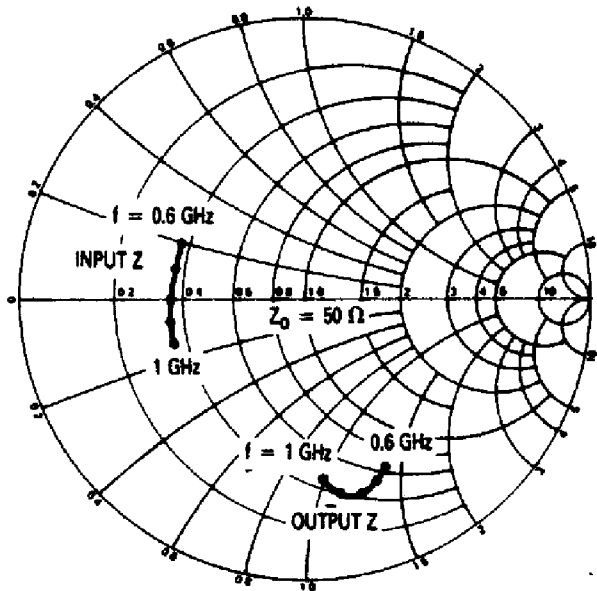


Figure 2. Series Equivalent Input/Output Impedance
VCC = 28 V

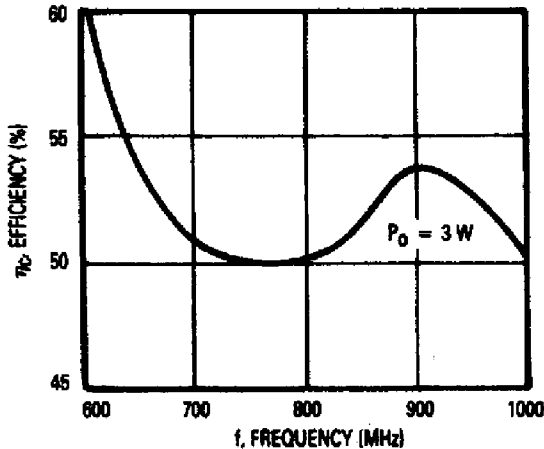


Figure 3. Efficiency versus Frequency

MRA0610-9 — 9 WATTS BROADBAND

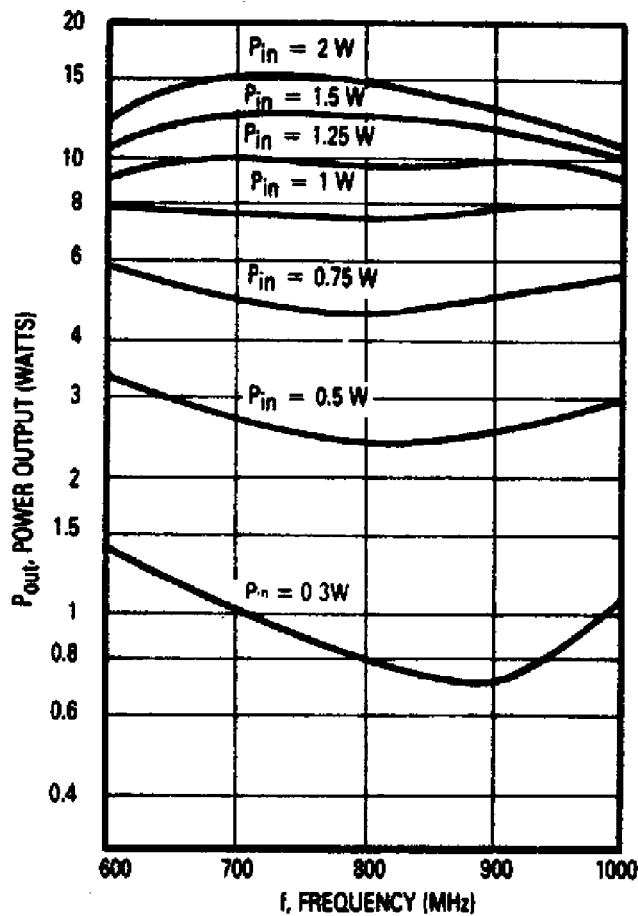


Figure 4. Power Output versus Frequency

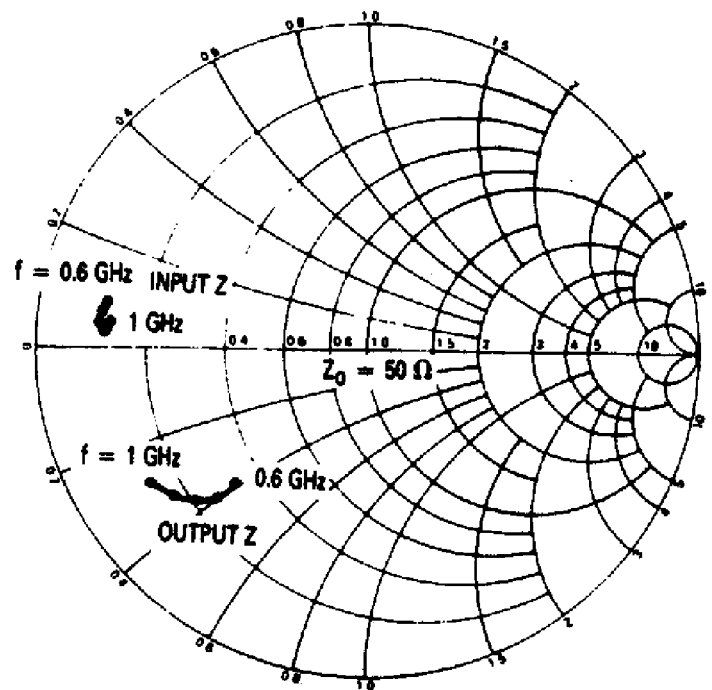
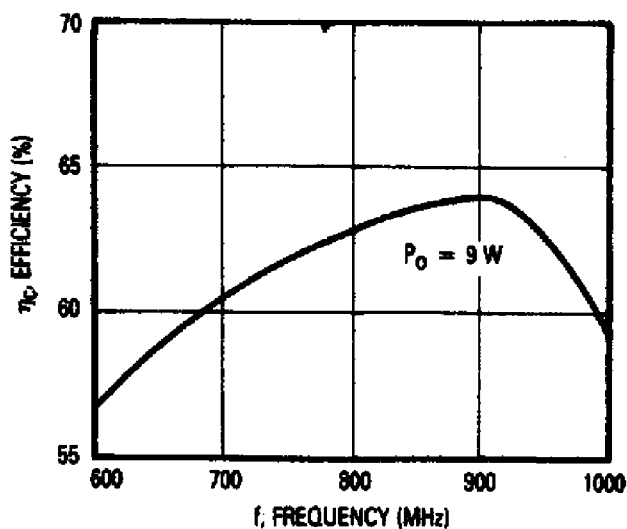
Figure 5. Series Equivalent Input/Output Impedance
 $V_{CC} = 28\text{ V}$ 

Figure 6. Efficiency versus Frequency

MRA0610 Series

TYPICAL CHARACTERISTICS

[查询"MRA0610"供应商](#)

MRA0610-18A — 18 WATTS BROADBAND

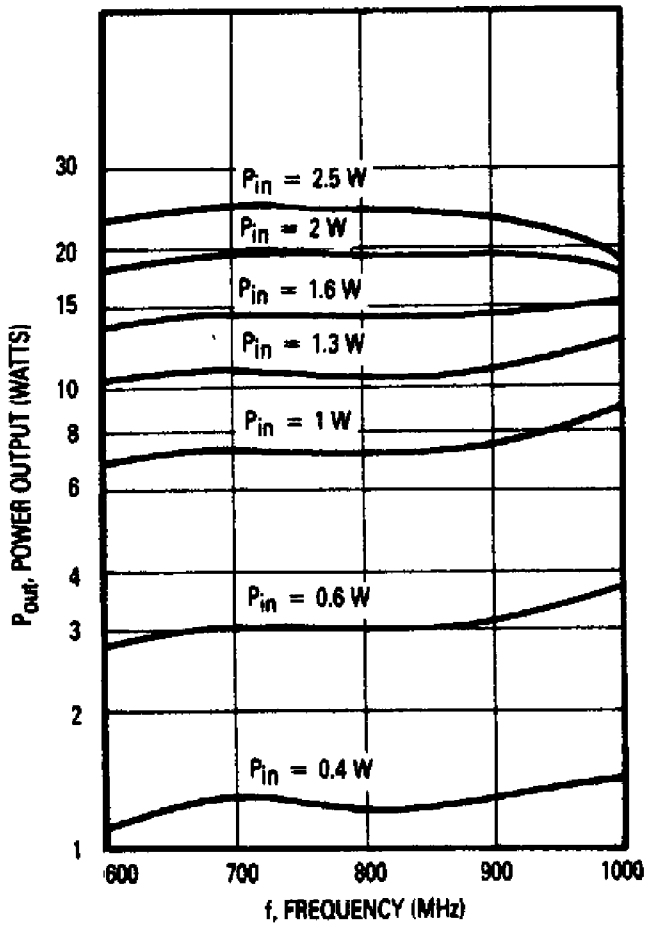


Figure 7. Power Output versus Frequency

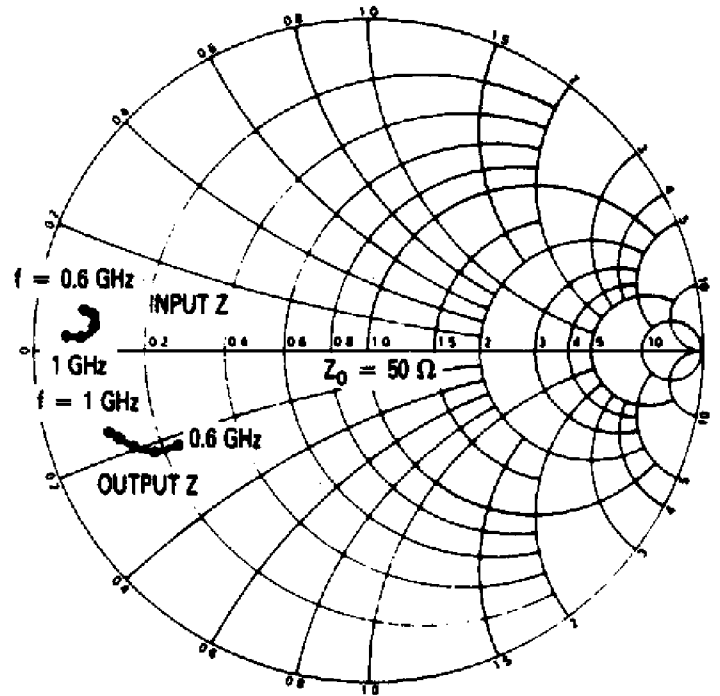


Figure 8. Series Equivalent Input/Output Impedance
 $V_{CC} = 28 \text{ V}$

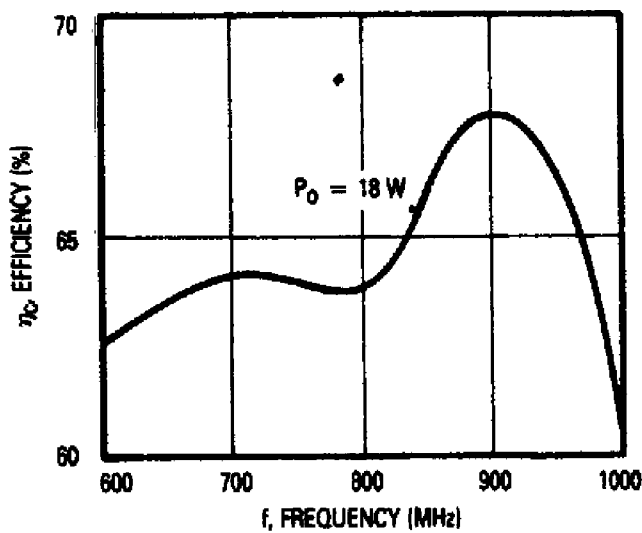


Figure 9. Efficiency versus Frequency

TYPICAL CHARACTERISTICS

[查询"MRA0610"供应商](#)

MRA0610-40A — 40 WATTS BROADBAND

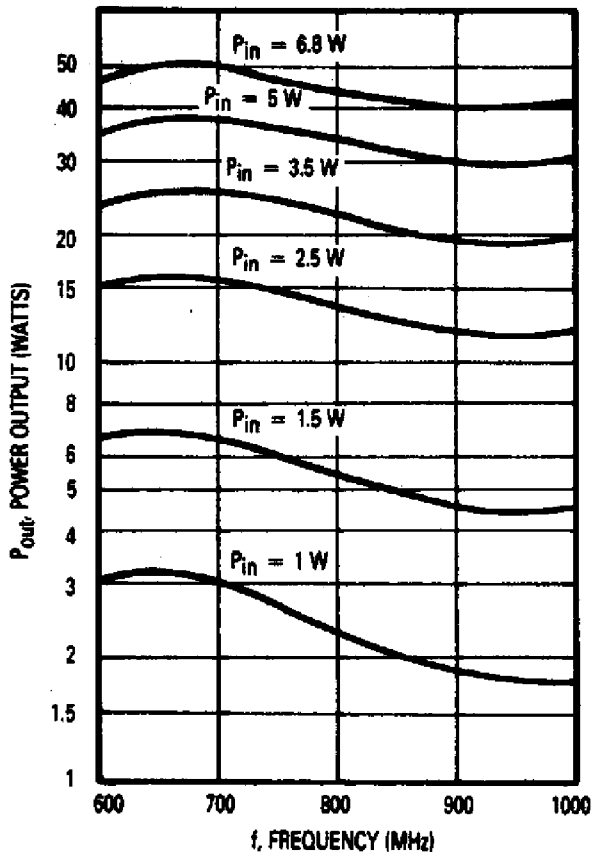


Figure 10. Power Output versus Frequency

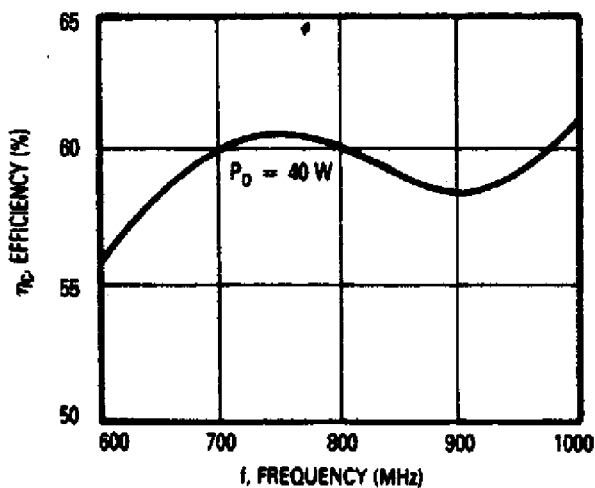


Figure 12. Efficiency versus Frequency

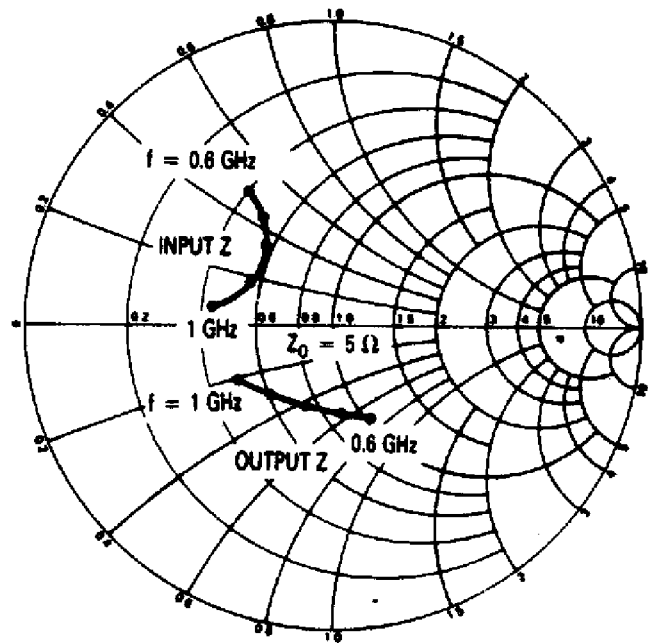
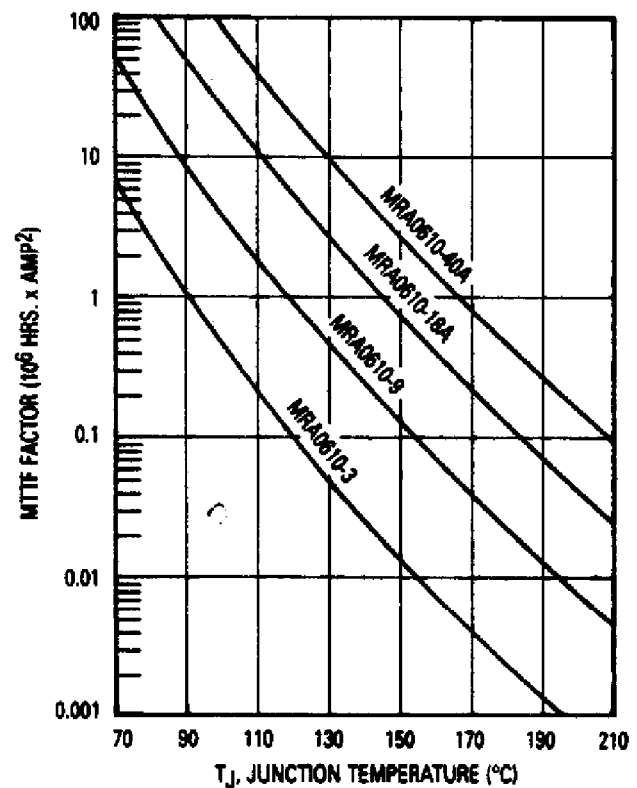
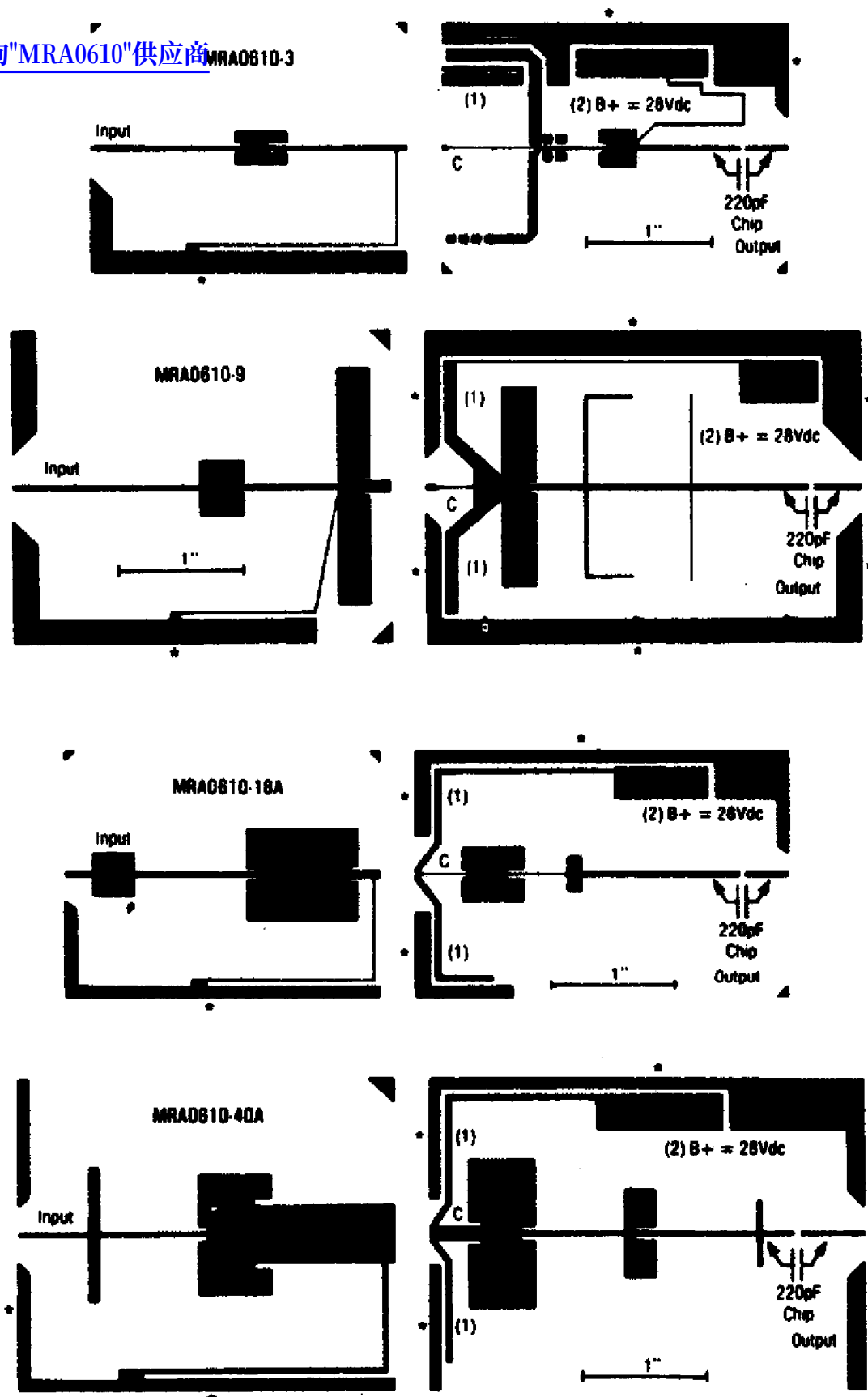
Figure 11. Series Equivalent Input/Output Impedance
 $V_{CC} = 28 \text{ V}$ 

Figure 13. MTTF Factor versus Junction Temperature

Note: Divide by I_C^2 to obtain metal lifetime in hours



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

Figure 14. Test Circuit Boards for MRA0610 Series

(Not to Scale)