

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

T-33-01

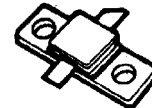
The RF Line
UHF Power Transistors

... 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 18 Watts
 - Power Gain — 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
- Hermetic Package for Military/Space Applications

MRA0610H
Series

7.8 dB
600-1000 MHz
3 TO 18 WATTS
BROADBAND
UHF POWER
TRANSISTORS



CASE 393-01, STYLE 1
(HLP-11)

MAXIMUM RATINGS

Rating	Symbol	-3H	-9H	-18H	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	A _{dc}
Operating Junction Temperature	T _J		200		°C
Storage Temperature Range	T _{stg}		-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, RF, Junction to Case	R _{θJC}	15	°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- 3H	V _{(BR)CES}	50	—	—	V _{dc}
(I _C = 60 mA, V _{BE} = 0)	- 9H		50	—	—	
(I _C = 100 mA, V _{BE} = 0)	-18H		50	—	—	
Emitter-Base Breakdown Voltage (I _E = 0.25 mA, I _C = 0)	MRA0610- 3H	V _{(BR)EBO}	3.5	—	—	V _{dc}
(I _E = 0.75 mA, I _C = 0)	- 9H		3.5	—	—	
(I _E = 1.25 mA, I _C = 0)	-18H		3.5	—	—	
Collector Cutoff Current (V _{CB} = 28 V, I _E = 0)	MRA0610- 3H	I _{CBO}	—	—	0.5	mA _{dc}
	- 9H		—	—	1.5	
	-18H		—	—	2.5	

ON CHARACTERISTICS

DC Current Gain (I _C = 100 mA, V _{CE} = 5 V)	MRA0610- 3H	h _{FE}	10	—	100	—
(I _C = 300 mA, V _{CE} = 5 V)	- 9H		10	—	100	
(I _C = 500 mA, V _{CE} = 5 V)	-18H		10	—	100	

(continued)

MRA0610H Series

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MOTOROLA SC (XSTRS/R F) 46E D 6367254 0094291 8 I

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS					
Output Capacitance ($V_{CB} = 28\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$)	C_{ob}	—	—	4.5	pF
		—	—	10	
		—	—	14	

FUNCTIONAL TESTS

Common-Base Amplifier Power Gain ($V_{CE} = 28\text{ V}$, $P_{out} = 3\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)	G_{pb}	7.8	—	—	dB
($V_{CE} = 28\text{ V}$, $P_{out} = 9\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)		7.8	—	—	
($V_{CE} = 28\text{ V}$, $P_{out} = 18\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)		7.8	—	—	
Collector Efficiency ($V_{CE} = 28\text{ V}$, $P_{out} = 3\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)	η_c	50	—	—	%
($V_{CE} = 28\text{ V}$, $P_{out} = 9\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)		55	—	—	
($V_{CE} = 28\text{ V}$, $P_{out} = 18\text{ W}$, $f = 600\text{ MHz}$ and 1 GHz)		55	—	—	

TYPICAL CHARACTERISTICS

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

