MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

T-33-01

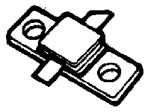
MRA0610H Series

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 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

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		Vdc
Emitter-Base Voltage	V_{EBO}		3.5		Vdc
Collector Current — Continuous	I_C	0.5	1.5	2.5	Adc
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	$R_{\theta JC}$	15	6	4	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage		$V_{(BR)CES}$				Vdc
(I_C = 20 mA, V_{BE} = 0)	MRA0610- 3H		50	—	—	
(I_C = 60 mA, V_{BE} = 0)	- 9H		50	—	—	
(I_C = 100 mA, V_{BE} = 0)	-18H		50	—	—	
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$				Vdc
(I_E = 0.25 mA, I_C = 0)	MRA0610- 3H		3.5	—	—	
(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	MRA0610- 3H	I_{CBO}	—	—	0.5	mAdc
(V_{CB} = 28 V, I_E = 0)	- 9H		—	—	1.5	
	-18H		—	—	2.5	
ON CHARACTERISTICS						
DC Current Gain		h_{FE}				—
(I_C = 100 mA, V_{CE} = 5 V)	MRA0610- 3H		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)

ELECTRICAL CHARACTERISTICS — continued

Characteristic		Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS						
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1 MHz)	MRA0610- 3H	C_{ob}	—	—	4.5	pF
	- 9H		—	—	10	
	-18H		—	—	14	
FUNCTIONAL TESTS						
Common-Base Amplifier Power Gain		G_{PB}				dB
(V_{CE} = 28 V, P_{out} = 3 W, f = 600 MHz and 1 GHz)	MRA0610- 3H		7.8	—	—	
(V_{CE} = 28 V, P_{out} = 9 W, f = 600 MHz and 1 GHz)	- 9H		7.8	—	—	
(V_{CE} = 28 V, P_{out} = 18 W, f = 600 MHz and 1 GHz)	-18H		7.8	—	—	
Collector Efficiency		η_C				%
(V_{CE} = 28 V, P_{out} = 3 W, f = 600 MHz and 1 GHz)	MRA0610- 3H		50	—	—	
(V_{CE} = 28 V, P_{out} = 9 W, f = 600 MHz and 1 GHz)	- 9H		55	—	—	
(V_{CE} = 28 V, P_{out} = 18 W, f = 600 MHz and 1 GHz)	-18H		55	—	—	

TYPICAL CHARACTERISTICS

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