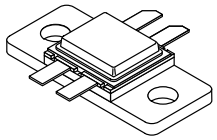
The RF Line
UHF Power Transistor

Designed primarily for wideband, large–signal output and driver amplifier stages in the 500 to 1000 MHz frequency range.

- Designed for Class AB Linear Power Amplifiers
- Specified 28 Volt, 1000 MHz Characteristics:
  Output Power — 50 Watts
  Power Gain — 7 dB (Min), Class AB
- Built–In Matching Network for Broadband Operation
- Gold Metallization for Improved Reliability
- Diffused Ballast Resistors
- Hermetic Package for Military/Space Applications

MRA0510-50H

7.0 dB, 500 – 1000 MHz
50 W
BROADBAND
UHF POWER TRANSISTOR



CASE 391–03, STYLE 1
(HLP–42)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	30	Vdc
Collector–Base Voltage	V_{CBO}	60	Vdc
Emitter–Base Voltage	V_{EBO}	4	Vdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	125 0.715	Watts W/°C
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 (T_C = 70°C)	$R_{\theta JC}$	1.4	°C/W

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS (1)					
Collector–Emitter Breakdown Voltage (I_C = 25 mA, V_{BE} = 0)	$V_{(BR)CES}$	60	–	–	Vdc
Collector–Base Breakdown Voltage (I_C = 25 mA, I_E = 0)	$V_{(BR)CBO}$	60	–	–	Vdc
Emitter–Base Breakdown Voltage (I_E = 5 mA, I_C = 0)	$V_{(BR)EBO}$	4	–	–	Vdc
Collector–Emitter Breakdown Voltage (I_C = 25 mA, R_{BE} = 1 Ω)	$V_{(BR)CER}$	50	–	–	Vdc
Collector Cutoff Current (V_{CB} = 30 V, I_E = 0)	I_{CBO}	–	–	25	mAdc

(1) Each transistor chip measured separately.

(continued)

ELECTRICAL CHARACTERISTICS — continued

Characteristic	Symbol	Min	Typ	Max	Unit
ON CHARACTERISTICS (1)					
DC Current Gain (I_C = 1 A, V_{CE} = 5 V)	h_{FE}	20	–	80	–
DYNAMIC CHARACTERISTICS (1)					
Output Capacitance (V_{CB} = 28 V, I_E = 0, f = 1 MHz)	C_{ob}	–	–	24	pF
FUNCTIONAL TESTS (2)					
Common–Emitter Amplifier Power Gain (V_{CE} = 28 V, P_{out} = 50 W, f = 1 GHz, I_{CQ} = 2 x 120 mA)	G_{PE1}	7	–	–	dB
Load Mismatch (V_{CE} = 28 V, I_{CQ} = 2 x 120 mA, P_{out} = 50 W, f = 1 GHz, Load VSWR = 5:1, All Phase Angles)	ψ	No Degradation in Output Power			
Broadband Power Gain (V_{CE} = 28 V, P_{out} = 45 W, f = 500 mHz and 1 GHz, I_{CQ} = 2 x 120 mA)	G_{PE2}	6.5	–	–	dB

(1) Each transistor chip measured separately.
(2) Both transistor chips operating in push–pull amplifier.

TYPICAL CHARACTERISTICS

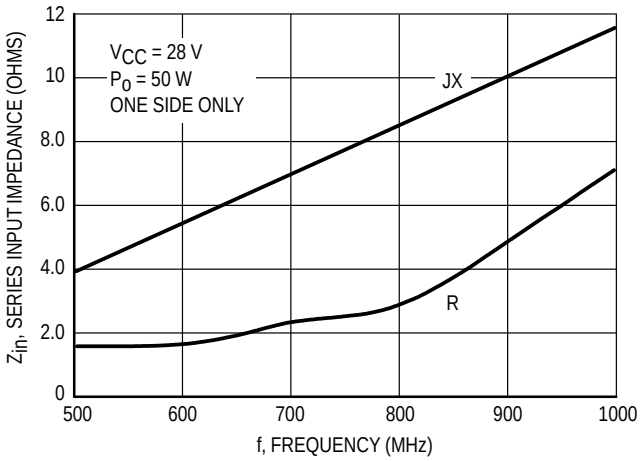


Figure 1. Input Impedance versus Frequency

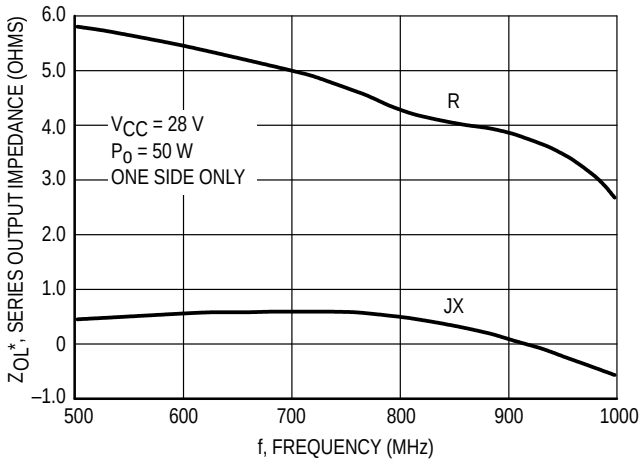
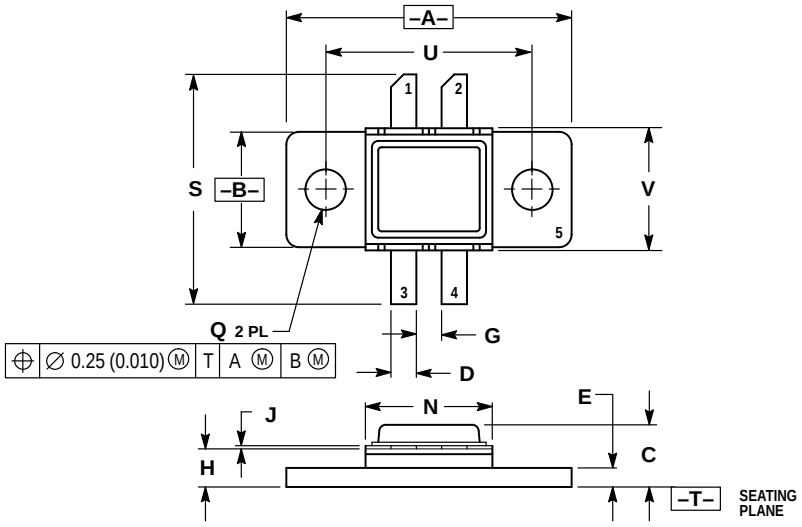


Figure 2. Output Impedance versus Frequency

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.895	0.905	22.73	22.99
B	0.380	0.390	9.65	9.91
C	0.172	0.208	4.37	5.28
D	0.075	0.085	1.91	2.16
E	0.055	0.065	1.40	1.65
G	0.075	0.085	1.91	2.16
H	0.115	0.125	2.92	3.18
J	0.003	0.006	0.08	0.15
N	0.393	0.403	9.98	10.24
Q	0.123	0.133	3.13	3.38
S	0.705	0.745	17.91	18.92
U	0.650 BSC		16.51 BSC	
V	0.393	0.403	9.98	10.24

STYLE 1:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. BASE
5. EMITTER

CASE 391–03
ISSUE C

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