

MRF207, MRF208, MRF209 (SILICON)

The RF Line

NPN SILICON RF POWER TRANSISTORS

... designed for 12.5 Volt large-signal power amplifier applications in communications equipment operating at 220 MHz.

- Specified 12.5 Volt, 220 MHz Characteristics –

Output Power = 1.0 W – MRF207

10 W – MRF208

25 W – MRF209

Minimum Gain = 8.2 dB – MRF207

10 dB – MRF208

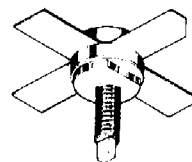
4.4 dB – MRF209

- Balanced-Emitter Construction to provide the designer with the device technology that assures ruggedness and resists transistor damage caused by load mismatch.

1.0, 10, 25 WATTS – 220 MHz
NPN SILICON
RF POWER
TRANSISTORS



MRF207



MRF208
MRF209

MAXIMUM RATINGS

Rating	Symbol	MRF207	MRF208	MRF209	Unit
Collector-Emitter Voltage	V_{CE0}	18	18	18	Vdc
Collector-Base Voltage	V_{CBO}	36	36	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	4.0	4.0	Vdc
Collector Current – Continuous	I_C	0.4	2.0	4.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ (1) Derate above 25°C	P_D	3.5 20	37.5 214	50 286	Watts mW/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	-65 to +200	-65 to +200	$^\circ\text{C}$
Stud Torque(2)		—	—	6.5	in. lb.

(1) These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.

(2) For Repeated Assembly use 5 in. lb.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

MRF207, MRF208, MRF209 (continued)

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 5.0\text{ mAdc}$, $I_B = 0$) ($I_C = 15\text{ mAdc}$, $I_B = 0$) ($I_C = 20\text{ mAdc}$, $I_B = 0$)	BV_{CEO}	18 18 18	— — —	— — —	Vdc
Collector-Base Breakdown Voltage ($I_C = 2.0\text{ mAdc}$, $I_E = 0$) ($I_C = 5.0\text{ mAdc}$, $I_E = 0$) ($I_C = 10\text{ mAdc}$, $I_E = 0$)	BV_{CBO}	36 36 36	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 1.0\text{ mAdc}$, $I_C = 0$) ($I_E = 2.5\text{ mAdc}$, $I_C = 0$) ($I_E = 5.0\text{ mAdc}$, $I_C = 0$)	BV_{EBO}	4.0 4.0 4.0	— — —	— — —	Vdc
Collector Cutoff Current ($V_{CB} = 15\text{ Vdc}$, $I_E = 0$)	I_{CBO}	— — —	— — —	0.1 0.25 0.5	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 100\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 250\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$) ($I_C = 500\text{ mAdc}$, $V_{CE} = 5.0\text{ Vdc}$)	h_{FE}	5.0 5.0 5.0	— — —	— — —	—
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FUNCTIONAL TESTS

Common-Emitter Amplifier Power Gain ($V_{CC} = 12.5\text{ Vdc}$, $P_{out} = 1.0\text{ W}$, $f = 220\text{ MHz}$) ($V_{CC} = 12.5\text{ Vdc}$, $P_{out} = 10\text{ W}$, $f = 220\text{ MHz}$) ($V_{CC} = 12.5\text{ Vdc}$, $P_{out} = 25\text{ W}$, $f = 220\text{ MHz}$)	G_{PE}	8.2 10 4.4	12.5 12.5 5.2	— — —	dB
Input Impedance ($P_{out} = 1.0\text{ W}$, $f = 220\text{ MHz}$) ($P_{out} = 10\text{ W}$, $f = 220\text{ MHz}$) ($P_{out} = 25\text{ W}$, $f = 220\text{ MHz}$)	Z_{in}	— — —	$10-j11.5$ $1.4+j1.4$ $1.4+j1.8$	— — —	Ohms
Output Impedance ($P_{out} = 1.0\text{ W}$, $f = 220\text{ MHz}$) ($P_{out} = 10\text{ W}$, $f = 220\text{ MHz}$) ($P_{out} = 25\text{ W}$, $f = 220\text{ MHz}$)	Z_{out}	— — —	$32-j41$ $5.7-j1.3$ $3.9-j0.2$	— — —	Ohms

220 MHz TEST CIRCUIT

FIGURE 1 - MRF207

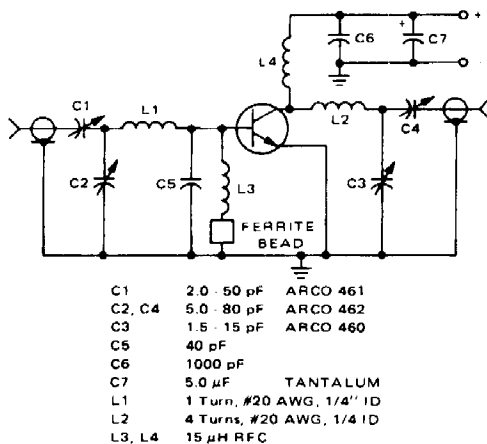


FIGURE 2 - MRF208, MRF209

