

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

MRF449
MRF449A

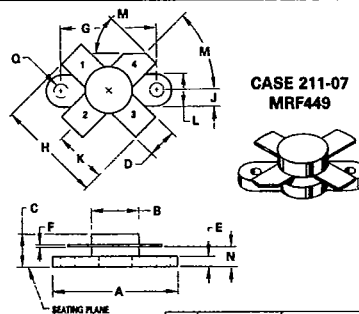
The RF Line

NPN SILICON RF POWER TRANSISTORS

... designed for power amplifier application in industrial, commercial and amateur radio equipment to 30 MHz.

- Specified 12.5 Volt, 30 MHz Characteristics –
Output Power = 30 Watts
Minimum Gain = 12 dB
Efficiency = 50%

30 W – 30 MHz
RF POWER TRANSISTORS
NPN SILICON



CASE 211-07
MRF449

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.38	25.15	0.960	0.990
B	3.40	3.51	0.130	0.139
C	5.82	7.14	0.229	0.281
D	5.46	5.97	0.215	0.235
E	2.16	2.67	0.085	0.105
F	0.10	0.15	0.004	0.006
G	18.29	18.54	0.720	0.730
H	20.07	20.57	0.790	0.810
K	10.03	10.29	0.395	0.405
L	6.22	6.48	0.245	0.255
M	4.2	5.0	0.167	0.197
N	3.81	4.57	0.150	0.180
Q	2.87	3.30	0.113	0.130

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

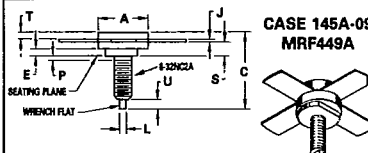
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MAXIMUM RATINGS

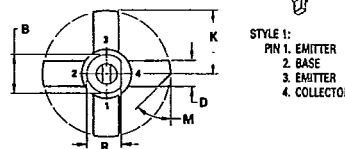
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	20	V _{dc}
Collector-Base Voltage	V _{CBO}	40	V _{dc}
Emitter-Base Voltage	V _{EBO}	4.0	V _{dc}
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	60 343	Watts mW/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	2.9	°C/W



CASE 145A-09
MRF449A



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.40	8.78	0.370	0.365
B	8.13	8.38	0.320	0.330
C	17.02	20.07	0.670	0.790
D	5.46	5.97	0.215	0.235
E	1.78	—	0.070	—
J	0.08	0.18	0.003	0.007
K	12.45	—	0.490	—
L	1.40	1.78	0.055	0.070
M	45° NOM	—	45° NOM	—
P	—	1.27	—	0.050
R	7.59	7.80	0.299	0.307
S	4.01	4.52	0.158	0.178
T	2.11	2.54	0.083	0.100
U	2.43	3.35	0.098	0.132

6367254 MOTOROLA SC (XSTRS/R F)
MRF449, MRF449A

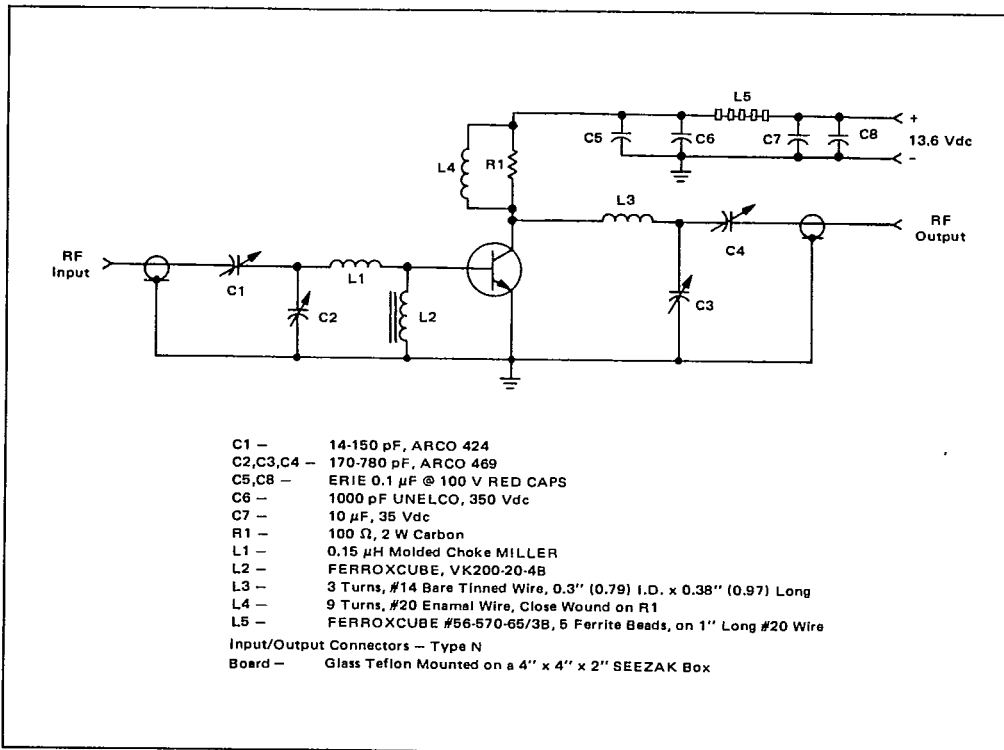
89D 79010 DT-33-11

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 100 \text{ mA dc}$, $I_B = 0$)	$V_{(BR)CEO}$	20	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 50 \text{ mA dc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	40	50	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 20 \text{ mA dc}$, $I_E = 0$)	$V_{(BR)CBO}$	40	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 5.0 \text{ mA dc}$, $I_C = 0$)	$V_{(BR)EBO}$	4.0	—	—	Vdc
ON CHARACTERISTICS					
DC Current Gain ($I_C = 1.0 \text{ A dc}$, $V_{CE} = 5.0 \text{ V dc}$)	h_{FE}	10	—	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance ($V_{CB} = 12.5 \text{ V dc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{ob}	—	—	140	pF
FUNCTIONAL TESTS (Figure 1)					
Common-Emitter Amplifier Power Gain ($V_{CC} = 13.6 \text{ V dc}$, $P_{out} = 30 \text{ W}$, $I_C(\text{max}) = 4.0 \text{ A dc}$, $f = 30 \text{ MHz}$)	G_{pE}	12	14	—	dB
Collector Efficiency ($V_{CC} = 13.6 \text{ V dc}$, $P_{out} = 30 \text{ W}$, $I_C(\text{max}) = 4.0 \text{ A dc}$, $f = 30 \text{ MHz}$)	η	50	—	—	%
Series Equivalent Input Impedance ($V_{CC} = 12.5 \text{ V dc}$, $P_{out} = 30 \text{ W}$, $f = 30 \text{ MHz}$)	Z_{in}	—	$2.13-j1.15$	—	Ohms
Series Equivalent Output Impedance ($V_{CC} = 12.5 \text{ V dc}$, $P_{out} = 30 \text{ W}$, $f = 30 \text{ MHz}$)	Z_{out}	—	$2.47-j0.37$	—	Ohms

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FIGURE 1 - 30 MHz TEST CIRCUIT SCHEMATIC



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FIGURE 2 - POWER OUTPUT versus POWER INPUT

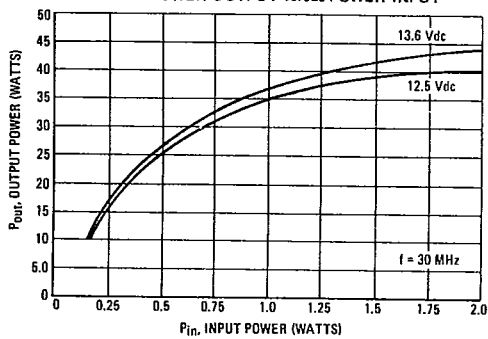


FIGURE 3 - OUTPUT POWER versus SUPPLY VOLTAGE

