

# New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.  
SPRINGFIELD, NEW JERSEY 07081  
U.S.A.

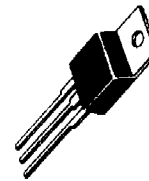
TELEPHONE: (973) 376-2922  
(212) 227-6005  
FAX: (973) 376-8960

## MRF497

40 W 50 MHz

RF POWER  
TRANSISTOR

NPN SILICON



### The RF Line

#### NPN SILICON RF POWER TRANSISTOR

... designed for 12.5 volt VHF large-signal power amplifier applications in commercial and industrial equipment, operating in the 25 to 50 MHz frequency range.

- Low-Cost, Common-Emitter TO-220AB Package
- Specified 12.5 V, 50 MHz Performance —  
Output Power = 40 Watts  
Power Gain = 10 dB Min  
Efficiency = 60% Min
- Load Mismatch Capability at Rated Voltage and RF Drive

#### MAXIMUM RATINGS

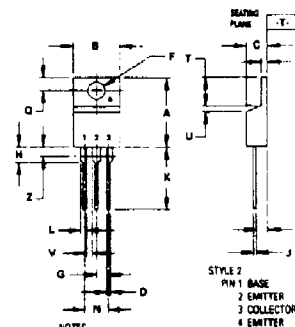
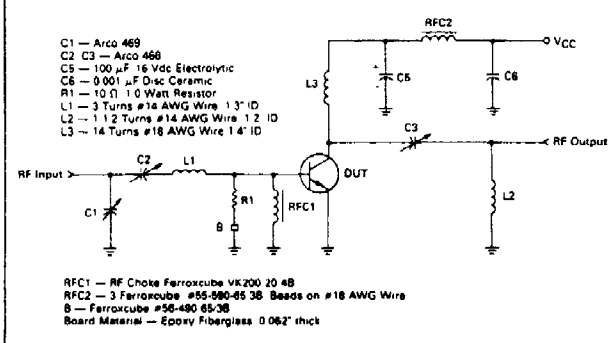
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	18	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	36	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	4.0	Vdc
Collector-Current — Continuous	I <sub>C</sub>	6.0	A <sub>dc</sub>
Total Device Dissipation @ T <sub>C</sub> = 25°C (1) Derate above 25°C	P <sub>D</sub>	87.5 0.5	Watts mW/°C
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case (2)	R <sub>θJC</sub>	2.0	°C/W

- (1) This device is designed for RF operation. The total device dissipation rating applies only when the device is operated as an RF amplifier.  
(2) Thermal Resistance is determined under specified RF operating conditions by infrared measurement techniques.

FIGURE 1 — 50 MHz TEST CIRCUIT



- NOTES  
1 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1982  
2 CONTROLLING DIMENSION INCH  
3 DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.68	15.75	0.579	0.620
B	9.66	10.26	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.84	0.89	0.033	0.035
F	2.81	2.73	0.110	0.107
G	2.42	2.48	0.095	0.100
H	2.80	2.83	0.110	0.109
J	0.26	0.28	0.010	0.011
K	17.70	18.27	0.699	0.720
L	1.15	1.28	0.045	0.050
M	4.82	5.20	0.190	0.205
N	2.54	2.04	0.100	0.080
R	2.08	2.79	0.080	0.110
S	1.15	1.28	0.045	0.050
T	3.37	3.47	0.133	0.136
V	0.90	1.27	0.035	0.050
W	1.15	—	0.045	—
Z	—	7.62	—	0.300

CASE 221A-04  
TO-220AB



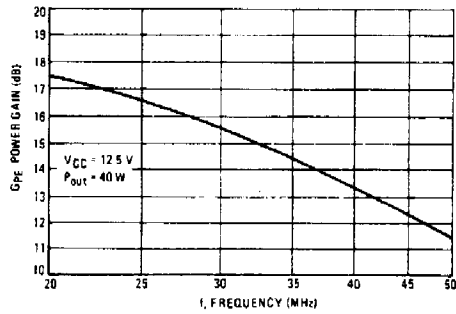
NJ Semi-Cond reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Cond is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Cond assumes no responsibility for any errors or omissions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

Quality Semi-Conductors

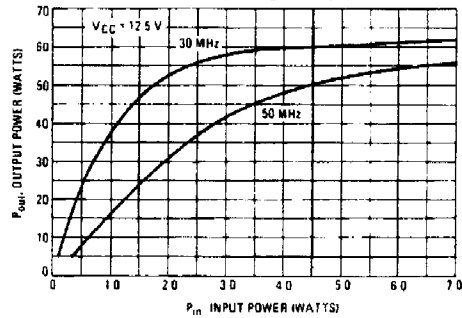
**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Breakdown Voltage ( $I_C = 100\text{ mA dc}$ , $I_B = 0$ )	$V_{(BR)CEO}$	18	—	—	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 20\text{ mA dc}$ , $V_{BE} = 0$ )	$V_{(BR)CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 10\text{ mA dc}$ , $I_C = 0$ )	$V_{(BR)EBO}$	4.0	—	—	Vdc
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 1.0\text{ A dc}$ , $V_{CE} = 5.0\text{ V dc}$ )	$h_{FE}$	20	—	—	—
<b>DYNAMIC CHARACTERISTICS</b>					
Output Capacitance ( $V_{CB} = 15\text{ V dc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )	$C_{ob}$	—	—	250	pF
<b>FUNCTIONAL TESTS</b>					
Common-Emitter Amplifier Power Gain ( $V_{CC} = 12.5\text{ V dc}$ , $P_{out} = 40\text{ W}$ , $f = 50\text{ MHz}$ )	$G_{pE}$	10	11.2	—	dB
Collector Efficiency ( $V_{CC} = 12.5\text{ V dc}$ , $P_{out} = 40\text{ W}$ , $f = 50\text{ MHz}$ )	$\eta$	60	—	—	%

**FIGURE 2 — POWER GAIN versus FREQUENCY**



**FIGURE 3 — OUTPUT POWER versus INPUT POWER**



**FIGURE 4 — OUTPUT POWER versus SUPPLY VOLTAGE**  
50 MHz

