

The RF Line

NPN SILICON RF POWER TRANSISTOR

... designed primarily for application as a high-power linear amplifier from 1.5 to 30 MHz, in single sideband mobile, marine and base station equipment.

- Low-Cost, Common-Emitter TO-220AB Package
- Specified 28 Volt, 30 MHz Performance —
Output Power = 40 W (PEP)
Power Gain = 15 dB Min
Efficiency = 40% Min
- Intermodulation Distortion @ 40 W (PEP) —
IMD = -30 dB (Max)
- 30:1 VSWR Load Mismatch Capability at Rated Output Power and Supply Voltage

MAXIMUM RATINGS

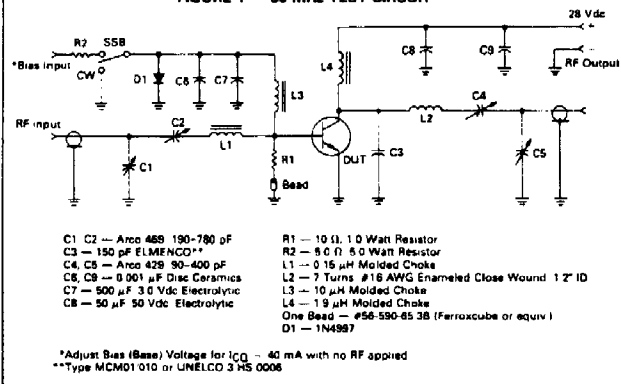
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEQ}	35	Vdc
Collector-Base Voltage	V _{CBQ}	65	Vdc
Emitter-Base Voltage	V _{EBO}	4.0	Vdc
Collector Current - Continuous	I _C	3.0	A dc
Withstand Current (t = 5.0 s)	-	6.0	A dc
Total Device Dissipation @ T _C = 25°C (1) Derate above 25°C	P _D	87.5 0.5	Watts W/°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance Junction to Case	R _{θJC}	2.0	°C/W

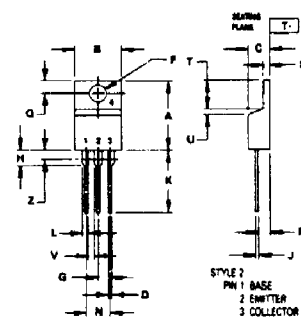
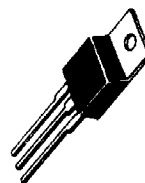
(1) This device is designed for RF operation. The total device dissipation rating applies only when the device is operated as an RF amplifier.

FIGURE 1 — 30 MHz TEST CIRCUIT



MRF486

40 W (PEP) — 30 MHz
RF POWER TRANSISTOR
NPN SILICON



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

MILLIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX
A	14.48	13.25	0.570	0.520
B	6.86	10.29	0.270	0.405
C	4.07	4.82	0.160	0.190
D	0.84	0.88	0.0325	0.035
F	3.61	3.73	0.142	0.147
G	2.52	2.66	0.099	0.105
H	3.92	3.95	0.154	0.156
J	0.26	0.56	0.010	0.022
K	12.70	14.27	0.500	0.562
L	1.15	1.30	0.045	0.051
N	4.83	5.20	0.190	0.205
O	2.54	3.25	0.100	0.128
R	2.04	2.70	0.080	0.106
S	1.15	1.30	0.045	0.051
T	3.97	4.47	0.156	0.176
U	0.50	1.27	0.020	0.050
V	1.18	—	0.046	—
W	—	2.61	—	0.103

CASE 221A-04
TO-220AB



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.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 50\text{ mAdc}$, $I_B = 0$)	$V_{(BR)CEO}$	35	—	—	Vdc
Collector-Emitter Breakdown Voltage ($I_C = 50\text{ mAdc}$, $V_{BE} = 0$)	$V_{(BR)CES}$	65	—	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 50\text{ mAdc}$, $I_E = 0$)	$V_{(BR)CBO}$	65	—	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 5.0\text{ mAdc}$, $I_C = 0$)	$V_{(BR)EBO}$	40	—	—	Vdc
Collector Cutoff Current ($V_{CE} = 28\text{ Vdc}$, $V_{BE} = 0$, $T_C = 25^\circ\text{C}$)	I_{CES}	—	—	10	mAdc
ON CHARACTERISTICS					
DC Current Gain ($I_C = 2.0\text{ Adc}$, $V_{CE} = 5.0\text{ Vdc}$)	h_{FE}	10	40	—	—
DYNAMIC CHARACTERISTICS					
Output Capacitance ($V_{CB} = 27\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}	—	130	200	pF
FUNCTIONAL TESTS					
Common-Emitter Amplifier Power Gain ($V_{CC} = 28\text{ Vdc}$, $P_{out} = 40\text{ W (PEP)}$, $f_1 = 30\text{ MHz}$, $f_2 = 30.001\text{ MHz}$, $I_{CQ} = 40\text{ mAdc}$)	G_{PE}	15	17.5	—	dB
Collector Efficiency ($V_{CC} = 28\text{ Vdc}$, $P_{out} = 40\text{ W (PEP)}$, $f_1 = 30\text{ MHz}$, $f_2 = 30.001\text{ MHz}$, $I_{CQ} = 40\text{ mAdc}$)	η	40	45	—	%
Intermodulation Distortion (1) ($V_{CC} = 28\text{ Vdc}$, $P_{out} = 40\text{ W (PEP)}$, $f_1 = 30\text{ MHz}$, $f_2 = 30.001\text{ MHz}$, $I_{CQ} = 40\text{ mAdc}$)	$IMD(d_3)$	—	-35	-30	dB

(1) TO MIL-STD-1311 Version A, Test Method 2204B, Two Tone, Reference Each Tone

