

# 2N6081 (SILICON) MRF211

## The RF Line

### NPN SILICON RF POWER TRANSISTORS

... designed for 12.5 Volt VHF large-signal power amplifier applications required in commercial and industrial equipment operating to 300 MHz.

- Specified 12.5 Volt, 175 MHz Characteristics —  
Output Power = 15 W  
Minimum Gain = 6.3 dB  
Efficiency = 60%
- Characterized with Series Equivalent Large-Signal Impedance Parameters

#### \*MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CE0}$	18	Vdc
Collector-Base Voltage	$V_{CBO}$	36	Vdc
Emitter-Base Voltage	$V_{EBO}$	4.0	Vdc
Collector Current — Continuous	$I_C$	2.5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ (1) Derate above $25^\circ\text{C}$	$P_D$	31 177	Watts mW/ $^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +200	$^\circ\text{C}$
Stud Torque (2)	—	6.5	in. lb.

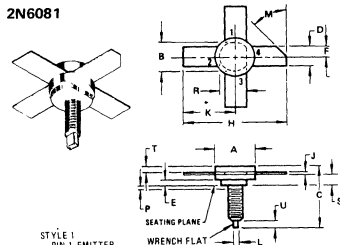
\*Indicates JEDEC Registered Data for 2N6081.

- These devices are designed for RF operation. The total device dissipation rating applies only when the devices are operated as RF amplifiers.
- For repeated assembly use 5 in. lb.

15 W — 175 MHz

RF POWER  
TRANSISTORS  
NPN SILICON

2N6081



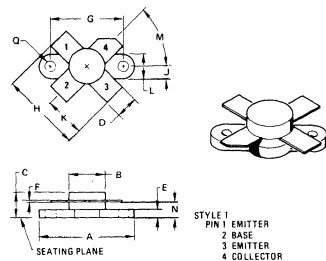
STYLE 1  
PIN 1 EMITTER  
2 BASE  
3 EMITTER  
4 COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	9.76	0.370	0.385
B	8.13	8.38	0.320	0.330
C	18.93	19.05	0.710	0.750
D	5.58	5.84	0.220	0.230
E	1.78	2.03	0.070	0.080
F	2.79	2.92	0.110	0.115
H	26.42	28.70	1.040	1.130
J	0.10	0.15	0.004	0.006
K	13.21	14.35	0.520	0.565
L	1.40	1.65	0.055	0.065
M	45° NOM		45° NOM	
P	1.27		0.050	
R	7.69	7.80	0.300	0.307
S	4.01	4.52	0.158	0.178
T	2.16	2.41	0.085	0.095
U	2.54	3.30	0.100	0.130

CASE 145A-01

NOTE  
CASE 145A 01 USE 8 32NC2A STUD

MRF221



STYLE 1  
PIN 1 EMITTER  
2 BASE  
3 EMITTER  
4 COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.64	24.89	0.970	0.980
B	9.47	9.71	0.373	0.383
C	6.07	7.14	0.239	0.281
D	5.59	5.84	0.220	0.230
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	21.69	22.10	0.850	0.870
J	3.12	3.23	0.123	0.127
K	10.80	11.05	0.425	0.435
L	1.22	1.48	0.243	0.285
M	40°	50°	40°	50°
N	3.81	4.57	0.150	0.180
Q	2.91	3.12	0.117	0.123

CASE 211-01

**\*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 ( $I_C = 20 \text{ mA dc}, I_B = 0$ )	$BV_{CEO}$	18	—	—	Vdc
Collector-Emitter Breakdown Voltage ( $I_C = 10 \text{ mA dc}, V_{BE} = 0$ )	$BV_{CES}$	36	—	—	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 2.0 \text{ mA dc}, I_C = 0$ )	$BV_{EBO}$	4.0	—	—	Vdc
Collector Cutoff Current ( $V_{CE} = 15 \text{ Vdc}, V_{BE} = 0, T_C = +55^\circ\text{C}$ )	$I_{CES}$	—	—	8.0	mA dc
Collector Cutoff Current ( $V_{CB} = 15 \text{ Vdc}, I_E = 0$ )	$I_{CBO}$	—	—	0.5	mA dc
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 0.5 \text{ A dc}, V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	5.0	—	—	—
<b>DYNAMIC CHARACTERISTICS</b>					
Output Capacitance ( $V_{CB} = 15 \text{ Vdc}, I_E = 0, f = 0.1 \text{ MHz}$ )	$C_{ob}$	—	70	85	pF
<b>FUNCTIONAL TEST</b>					
Common-Emitter Amplifier Power Gain ( $P_{out} = 15 \text{ W}, V_{CC} = 12.5 \text{ Vdc}, f = 175 \text{ MHz}$ )	$G_{PE}$	6.3	—	—	dB
Collector Efficiency ( $P_{out} = 15 \text{ W}, V_{CC} = 12.5 \text{ Vdc}, f = 175 \text{ MHz}$ )	$\eta$	60	—	—	%

\*Indicates JEDEC Registered Data for 2N6081.

FIGURE 1 – 175 MHz TEST CIRCUIT

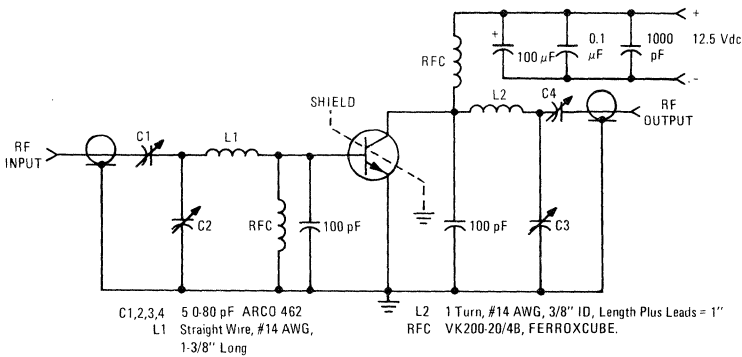


FIGURE 2 – OUTPUT POWER versus INPUT POWER

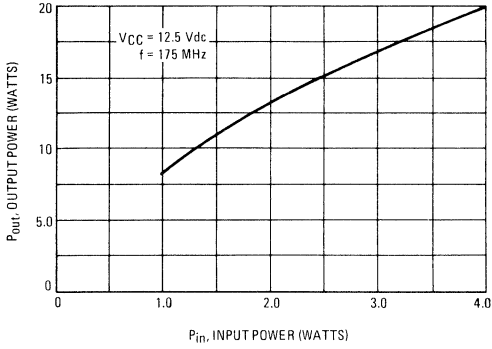


FIGURE 3 – OUTPUT POWER versus FREQUENCY

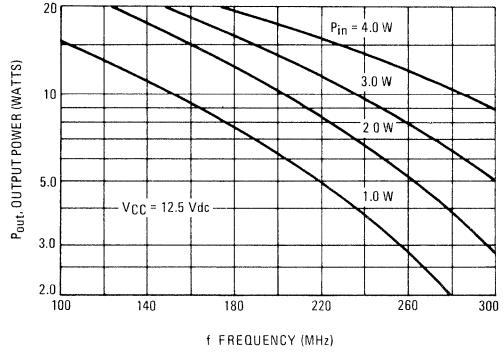


FIGURE 4 – OUTPUT POWER versus SUPPLY VOLTAGE

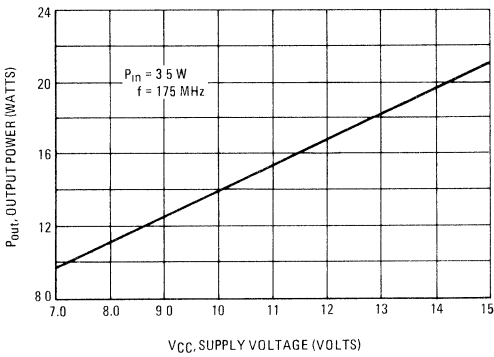


FIGURE 5 – SERIES EQUIVALENT IMPEDANCE

