MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

2N6082

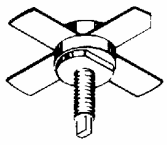
The RF Line

25 W – 175 MHz
RF POWER
TRANSISTOR
NPN SILICON

NPN SILICON RF POWER TRANSISTORS

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

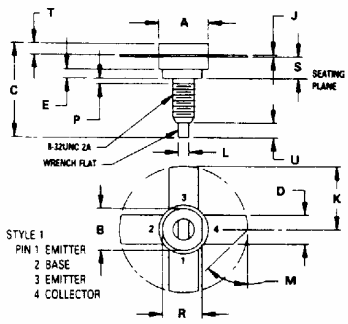
- Specified 12 5 Volt, 175 MHz Characteristics –
  Output Power = 25 W
  Minimum Gain = 6.2 dB
  Efficiency = 65%



***MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	18	Vdc
Collector-Base Voltage	V_{CBO}	36	Vdc
Emitter-Base Voltage	V_{EBO}	4.0	Vdc
Collector Current — Continuous	I_C	5.0	Adc
Total Device Dissipation @ T_C = 25°C(2) Derate above 25°C	P_D	65 .37	Watts W/°C
Storage Temperature Range	T_{stg}	−65 to +200	°C
Stud Torque(1)	—	6.5	in.lb.

*Indicates JEDEC Registered Data for 2N6082
(1)For Repeated Assembly Use 5 in lb
(2)These devices are designed for RF operation The total device dissipation rating applies only when the devices are operated as RF amplifiers



NOTES
1 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M 1982
2 CONTROLLING DIMENSION INCH

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	9.40	9.78	0.370	0.385
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	2.49	3.35	0.098	0.132

CASE 145A-09

***ELECTRICAL CHARACTERISTICS** (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 100 mAdc, I_B = 0)	$V_{(BR)CEO}$	18	–	–	Vdc
Collector-Emitter Breakdown Voltage (I_C = 15 mAdc, V_{BE} = 0)	$V_{(BR)CES}$	36	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 5.0 mAdc, I_C = 0)	$V_{(BR)EBO}$	4.0	–	–	Vdc
Collector Cutoff Current (V_{CE} = 15 Vdc, V_{BE} = 0, T_C = +55°C	I_{CES}	–	–	10	mAdc
Collector Cutoff Current (V_{CB} = 15 Vdc, I_E = 0)	I_{CBO}	–	–	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 Adc, V_{CE} = 5.0 Vdc)	h_{FE}	5.0	–	–	–
DYNAMIC CHARACTERISTICS					
Output Capacitance (V_{CB} = 15 Vdc, I_E = 0, f = 0.1 MHz)	C_{ob}	–	110	130	pF
FUNCTIONAL TEST					
Common-Emitter Amplifier Power Gain (P_{out} = 25 W, V_{CC} = 12.5 Vdc, f = 175 MHz)	G_{PE}	6.2	–	–	dB
Collector Efficiency (P_{out} = 25 W, V_{CC} = 12.5 Vdc, f = 175 MHz)	η	65	–	–	%

*Indicates JEDEC Registered Data for 2N6082

FIGURE 1 – 175 MHz TEST CIRCUIT

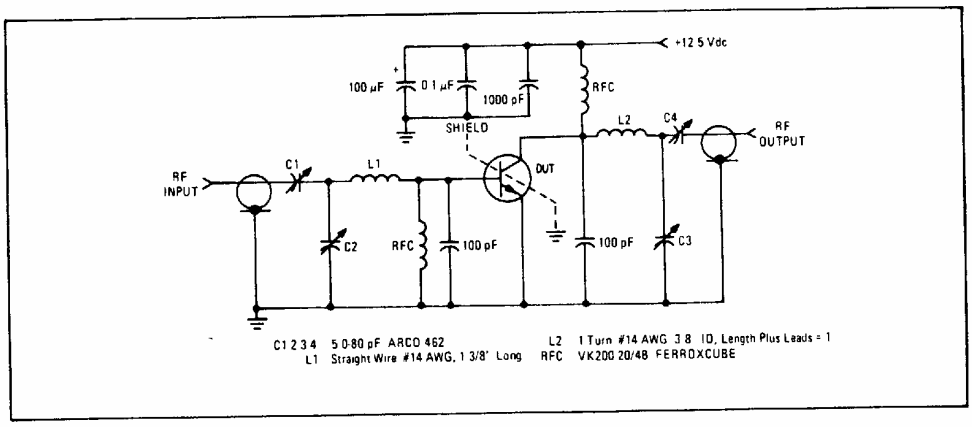


FIGURE 2 – OUTPUT POWER versus INPUT POWER

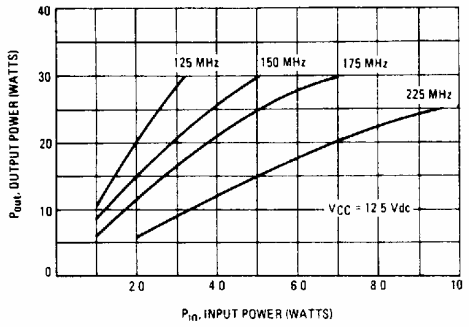


FIGURE 3 – OUTPUT POWER versus SUPPLY VOLTAGE

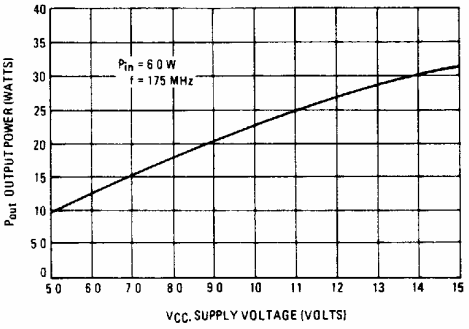
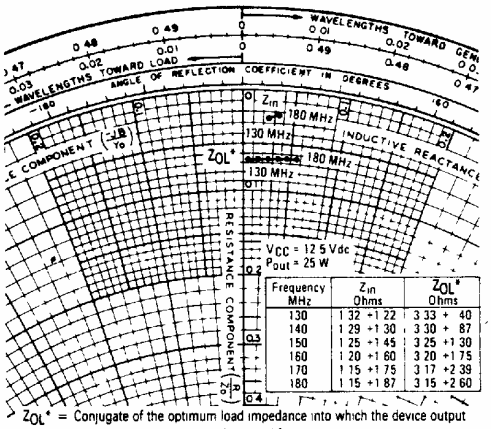


FIGURE 4 – SERIES EQUIVALENT IMPEDANCE



Frequency MHz	Z_{in} Ohms	Z_{OL}^* Ohms
130	1.32 +1.22	3.33 + 40
140	1.29 +1.30	3.30 + 87
150	1.25 +1.45	3.25 +1.30
160	1.20 +1.60	3.20 +1.75
170	1.15 +1.75	3.17 +2.39
180	1.15 +1.87	3.15 +2.60

Z_{OL}^* = Conjugate of the optimum load impedance into which the device output operates at a given output power, voltage and frequency