

**2N5160**

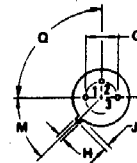
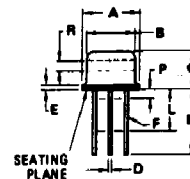
**The RF Line**

**PNP SILICON RF POWER TRANSISTORS**

... designed for amplifier, frequency multiplier or oscillator applications in military and industrial equipment. Suitable for use as Class A, B, or C output driver, or pre-driver stages in VHF and UHF.

- High Power Gain –  $G_{pE} = 8.0$  dB (Min) @  $f = 400$  MHz, 14.5 dB (Typ) @ 175 MHz – No Emitter Tuning
- Power Output –  $P_{out} = 1.0$  Watt (Min) @  $f = 400$  MHz = 1.5 Watt (Typ) @  $f = 175$  MHz
- Resists Burnout When Load is Shorted or Opened
- Designed for Use in Complementary Circuits with 2N3866

**PNP SILICON AMPLIFIER TRANSISTOR**



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

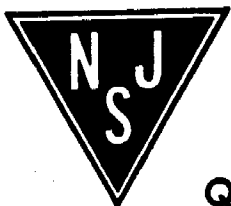
**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	40	Vdc
Collector-Base Voltage	$V_{CB}$	60	Vdc
Emitter-Base Voltage	$V_{EB}$	4.0	Vdc
Collector Current	$I_C$	0.4	Adc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	5.0 28.6	Watts mW/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	$^\circ C$

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.89	9.40	0.350	0.370
B	8.00	8.51	0.315	0.335
C	6.10	6.60	0.240	0.260
D	0.406	0.533	0.016	0.021
E	0.229	3.18	0.009	0.125
F	0.406	0.483	0.016	0.019
G	4.83	5.33	0.190	0.210
H	0.711	0.884	0.028	0.034
J	0.737	1.02	0.029	0.040
K	12.70	—	0.500	—
L	6.35	—	0.250	—
M	45 <sup>0</sup> NOM	45 <sup>0</sup> NOM	—	—
P	—	1.27	—	0.050
Q	90 <sup>0</sup> NOM	90 <sup>0</sup> NOM	—	—
R	2.54	—	0.100	—

All JEDEC dimensions and notes apply.

CASE 79-02  
TO-38



2N5160

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector-Emitter Sustaining Voltage ( $I_C = 5.0 \text{ mA dc}$ , $I_B = 0$ )	$V_{(BR)CEO(sus)}$	40	-	-	Vdc
Emitter-Base Breakdown Voltage ( $I_E = 0.1 \text{ mA dc}$ , $I_C = 0$ )	$V_{(BR)EBO(sus)}$	4.0	-	-	Vdc
Collector Cutoff Current ( $V_{CE} = 28 \text{ Vdc}$ , $I_B = 0$ )	$I_{CEO}$	-	-	20	$\mu\text{A dc}$
Collector Cutoff Current ( $V_{CE} = 60 \text{ Vdc}$ , $V_{BE} = 0$ )	$I_{CES}$	-	-	0.1	mA dc
Collector Cutoff Current ( $V_{CB} = 28 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	-	1.0	$\mu\text{A dc}$
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 50 \text{ mA dc}$ , $V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	10	-	-	-
<b>DYNAMIC CHARACTERISTICS</b>					
Current-Gain-Bandwidth Product ( $I_C = 50 \text{ mA dc}$ , $V_{CE} = 15 \text{ Vdc}$ , $f = 200 \text{ MHz}$ )	$f_T$	500	900	-	MHz
Collector-Base Capacitance ( $V_{CB} = 28 \text{ Vdc}$ , $I_E = 0$ , $f = 0.1$ to $1.0 \text{ MHz}$ )	$C_{cb}$	-	2.5	4.0	pF
<b>FUNCTIONAL TESTS</b>					
Common-Emitter Amplifier Power Gain ( $V_{CE} = 28 \text{ Vdc}$ , $P_{in} = 0.16 \text{ Watt}$ , $f = 400 \text{ MHz}$ ) ( $V_{CE} = 28 \text{ Vdc}$ , $P_{in} = 50 \text{ mW}$ , $f = 175 \text{ MHz}$ )	$G_{PE}$	8.0	8.8	-	dB
Power Output ( $V_{CE} = 28 \text{ Vdc}$ , $P_{in} = 0.16 \text{ Watt}$ , $f = 400 \text{ MHz}$ ) ( $V_{CE} = 28 \text{ Vdc}$ , $P_{in} = 50 \text{ mW}$ , $f = 175 \text{ MHz}$ )	$P_{out}$	1.0	1.2	-	Watt
Collector Efficiency ( $V_{CE} = 28 \text{ Vdc}$ , $P_{in} = 0.16 \text{ Watt}$ , $f = 400 \text{ MHz}$ )	$\eta$	45	55	-	%

FIGURE 1 - 400-MHz TEST CIRCUIT

