

# NJW44H11G

## 80 V NPN, 10 A Power Transistor

These series of plastic, silicon NPN power transistors can be used as general purpose power amplification and switching such as output or driver stages in applications such as switching regulators, converters and power amplifiers.

### Features

- Fast Switching Speeds
- High Frequency
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### Benefits

- Reliable Performance at Higher Powers
- Symmetrical Characteristics in Complementary Configurations
- Accurate Reproduction of Input Signal
- Greater Dynamic Range
- High Amplifier Bandwidth

### Applications

- High-end Consumer Audio Products
  - ◆ Home Amplifiers
  - ◆ Home Receivers

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

| Rating   | Symbol    | Max | Unit  |
|--|-----------|-----|-------|
| Collector-Emitter Voltage                          | $V_{CE0}$ | 80  | Vdc   |
| Emitter-Base Voltage                               | $V_{EBO}$ | 5.0 | Vdc   |
| Collector Current – Continuous                     | $I_C$     | 10  | A     |
| Collector Current – Peak (Note 1)                  | $I_{CM}$  | 20  | A     |
| Total Power Dissipation @ $T_C = 25^\circ\text{C}$ | $P_D$     | 120 | Watts |

### THERMAL CHARACTERISTICS

| Characteristic                         | Symbol          | Max         | Unit               |
|--|-----------------|-------------|--------------------|
| Thermal Resistance, Junction to Case   | $R_{\theta JC}$ | 1.04        | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range | $T_J, T_{stg}$  | -65 to +150 | $^\circ\text{C}$   |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Test: Pulse Width = 5 ms, Duty Cycle  $\leq 10\%$ .

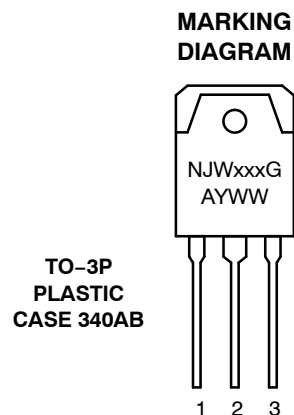
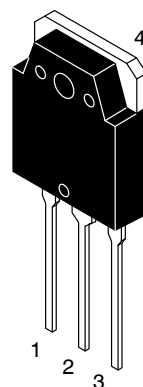
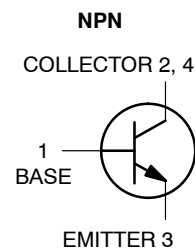
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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## 80 VOLT, 10 AMPS NPN POWER TRANSISTORS



**TO-3P  
PLASTIC  
CASE 340AB**

xxx = TBD  
G = Pb-Free Package  
A = Assembly Location  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

| Device    | Package            | Shipping      |
|-----------|--------------------|---------------|
| NJW44H11G | TO-3P<br>(Pb-Free) | 30 Units/Rail |

# NJW44H11G

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

### OFF CHARACTERISTICS

|  |                  |    |   |    |      |
|--|------------------|----|---|----|------|
| Collector-Emitter Sustaining Voltage<br>(I <sub>C</sub> = 30 mAdc, I <sub>B</sub> = 0)       | V <sub>CEO</sub> | 80 | – | –  | Vdc  |
| Collector-Cutoff Current<br>(V <sub>CE</sub> = Rated V <sub>CEO</sub> , V <sub>BE</sub> = 0) | I <sub>CES</sub> | –  | – | 10 | μAdc |
| Emitter Cutoff Current<br>(V <sub>BE</sub> = 5.0 Vdc)  | I <sub>EBO</sub> | –  | – | 10 | μAdc |

### ON CHARACTERISTICS

|   |                      |           |        |            |   |
|---|----------------------|-----------|--------|------------|---|
| DC Current Gain<br>(I <sub>C</sub> = 2 A, V <sub>CE</sub> = 2 V)<br>(I <sub>C</sub> = 4 A, V <sub>CE</sub> = 2 V) | h <sub>FE</sub>      | 100<br>80 | –<br>– | 400<br>320 | – |
| Collector-Emitter Saturation Voltage<br>(I <sub>C</sub> = 8 A, I <sub>B</sub> = 400 mA)                           | V <sub>CE(sat)</sub> | –         | –      | 1.0        | V |
| Base-Emitter Turn-on Voltage<br>(I <sub>C</sub> = 8 A, V <sub>CE</sub> = 2.0 V)                                   | V <sub>BE(on)</sub>  | –         | –      | 1.5        | V |

### DYNAMIC CHARACTERISTICS

|   |                  |   |    |   |     |
|---|------------------|---|----|---|-----|
| Output Capacitance<br>(V <sub>CB</sub> = 10 V, f = 1.0 MHz)                       | C <sub>obo</sub> | – | 65 | – | pF  |
| Cutoff Frequency<br>(I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 5 V, f = 1.0 MHz) | f <sub>T</sub>   | – | 85 | – | MHz |

### SWITCHING TIMES

|   |                                 |   |     |   |    |
|---|---------------------------------|---|-----|---|----|
| Delay and Rise Times<br>(I <sub>C</sub> = 5.0 Adc, I <sub>B1</sub> = 0.5 A)           | t <sub>d</sub> + t <sub>r</sub> | – | 300 | – | ns |
| Storage Time<br>(I <sub>C</sub> = 5.0 Adc, I <sub>B1</sub> = I <sub>B2</sub> = 0.5 A) | t <sub>s</sub>                  | – | 500 | – | ns |
| Fall Time<br>(I <sub>C</sub> = 5.0 Adc, I <sub>B1</sub> = I <sub>B2</sub> = 0.5 A)    | t <sub>f</sub>                  | – | 140 | – | ns |

TYPICAL CHARACTERISTICS

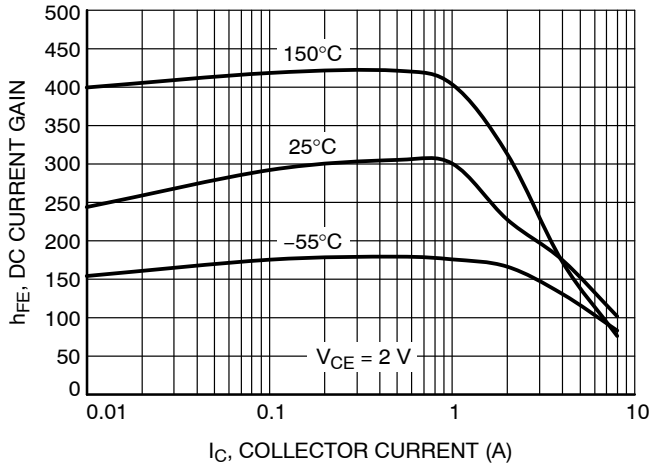


Figure 1. DC Current Gain

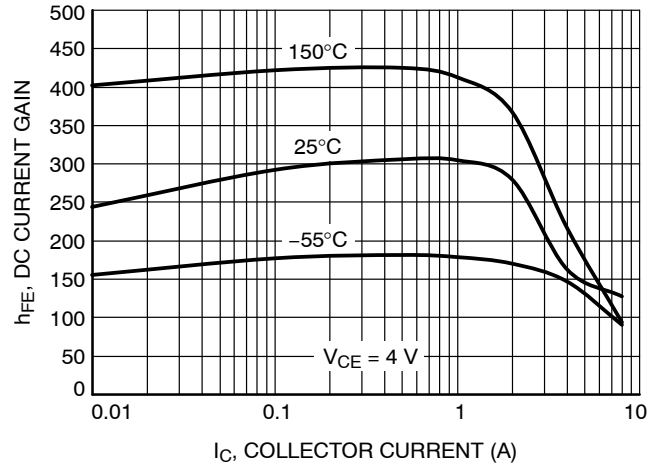


Figure 2. DC Current Gain

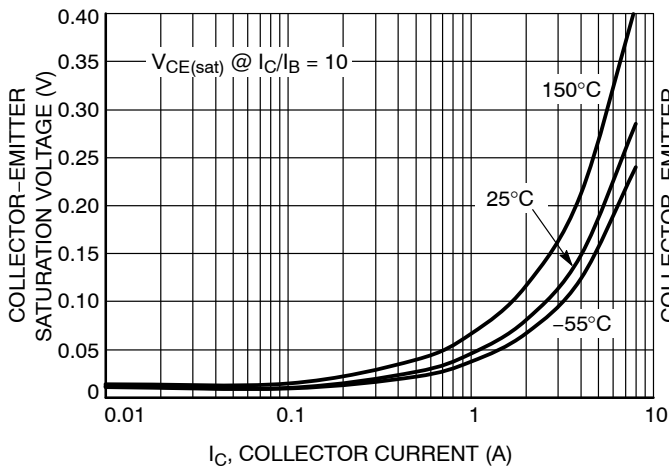


Figure 3. Collector Emitter Saturation Voltage

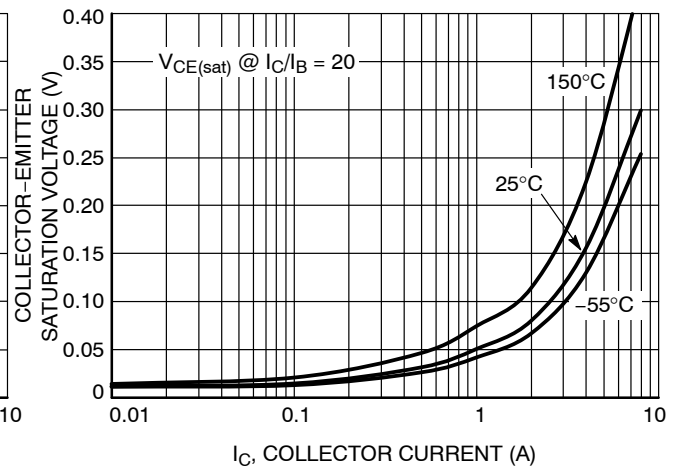


Figure 4. Collector Emitter Saturation Voltage

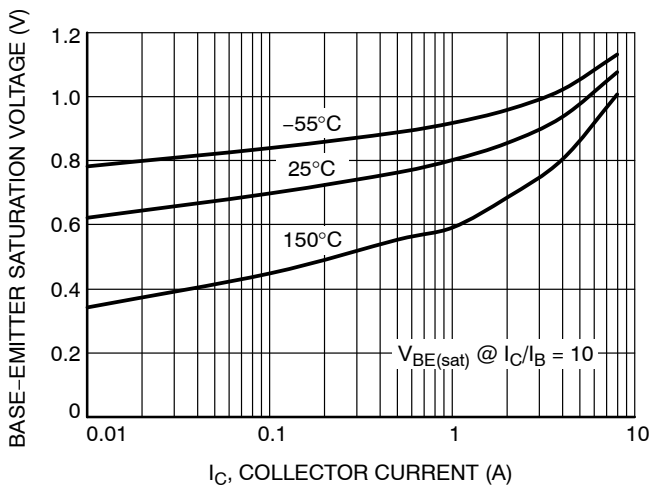


Figure 5. Base Emitter Saturation Voltage

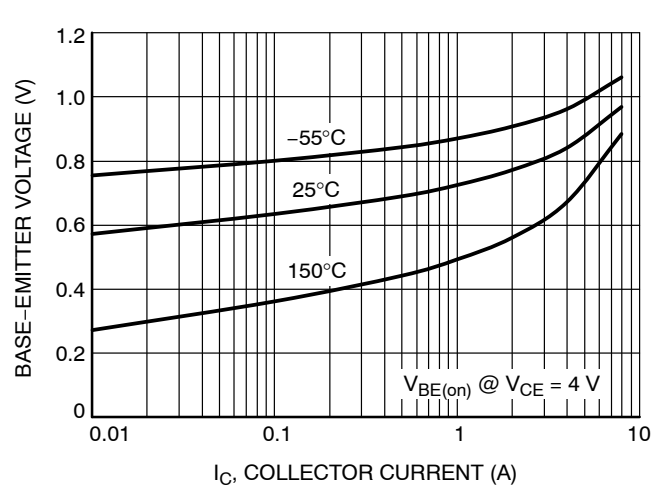


Figure 6. Base Emitter "ON" Voltage

TYPICAL CHARACTERISTICS

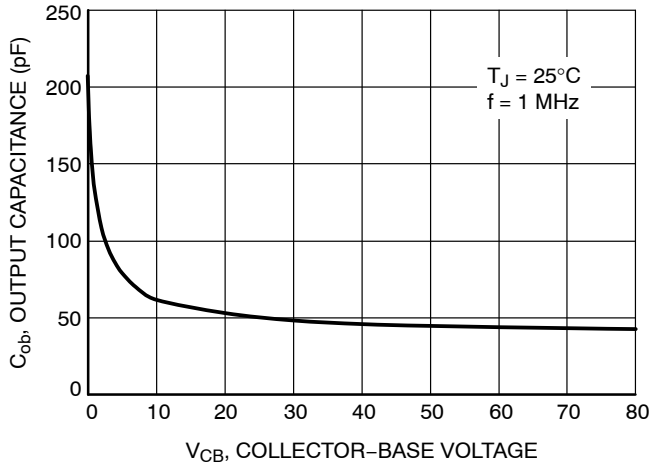


Figure 7. Output Capacitance

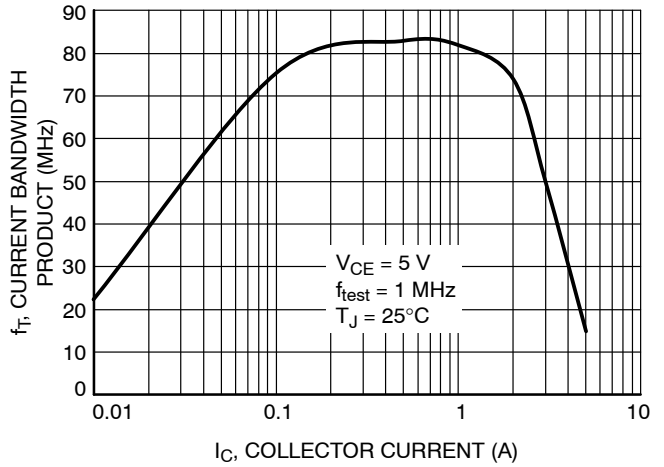


Figure 8. Current Gain Bandwidth Product

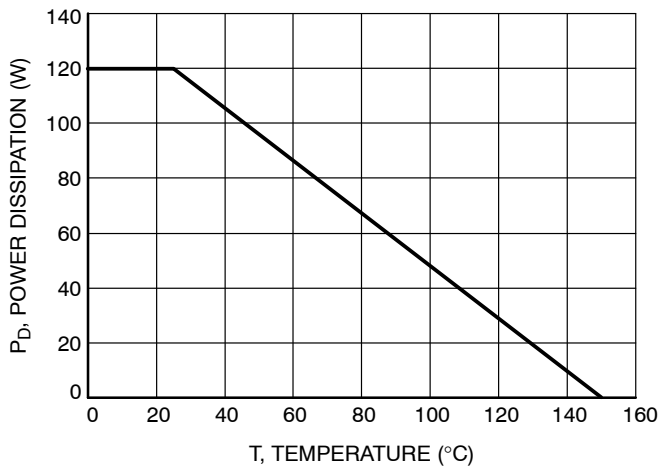


Figure 9. Power Temperature Derating

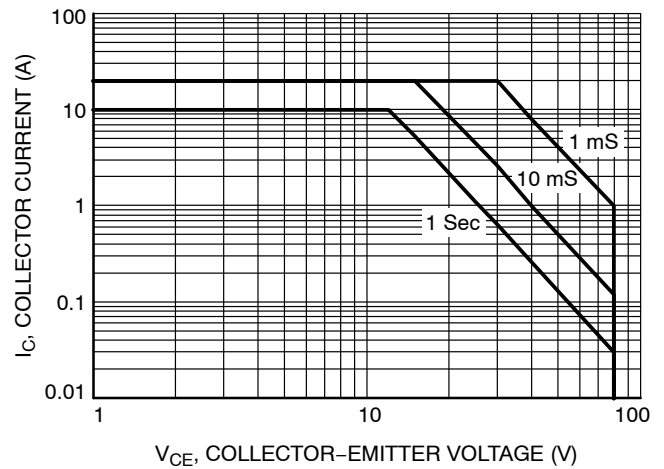


Figure 10. Safe Operating Area (SOA)

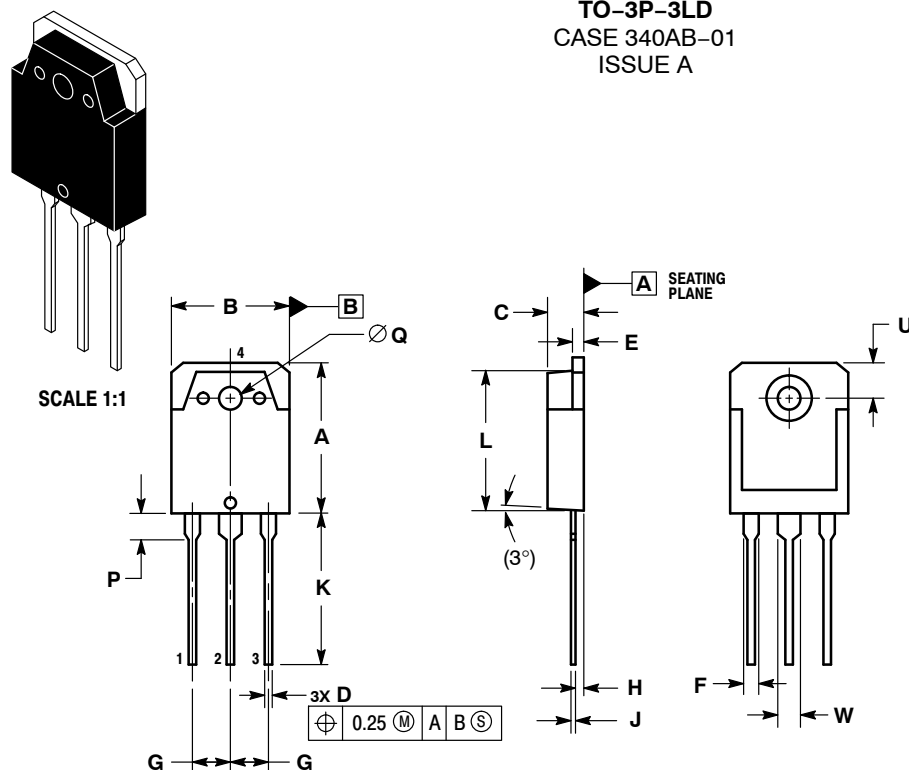
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

ON Semiconductor®



## TO-3P-3LD CASE 340AB-01 ISSUE A

DATE 30 OCT 2007



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30mm FROM THE TERMINAL TIP.
4. DIMENSION A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | MILLIMETERS |       |       |
|-----|-------------|-------|-------|
|     | MIN         | NOM   | MAX   |
| A   | 19.70       | 19.90 | 20.10 |
| B   | 15.40       | 15.60 | 15.80 |
| C   | 4.60        | 4.80  | 5.00  |
| D   | 0.80        | 1.00  | 1.20  |
| E   | 1.45        | 1.50  | 1.65  |
| F   | 1.80        | 2.00  | 2.20  |
| G   | 5.45 BSC    |       |       |
| H   | 1.20        | 1.40  | 1.60  |
| J   | 0.55        | 0.60  | 0.75  |
| K   | 19.80       | 20.00 | 20.20 |
| L   | 18.50       | 18.70 | 18.90 |
| P   | 3.30        | 3.50  | 3.70  |
| Q   | 3.10        | 3.20  | 3.50  |
| U   | 5.00 REF    |       |       |
| W   | 2.80        | 3.00  | 3.20  |

### STYLE 1:

- PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR

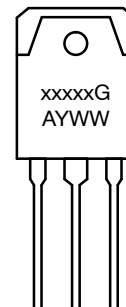
### STYLE 2:

- PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

### STYLE 3:

- PIN 1. GATE  
2. DRAIN  
3. SOURCE  
4. DRAIN

## GENERIC MARKING DIAGRAM\*



- xxxxx = Specific Device Code  
G = Pb-Free Package  
A = Assembly Location  
Y = Year  
WW = Work Week

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present.

|                  |             |  |
|------------------|-------------|--|
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