

# 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	$V_{CEO}$	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  $\leq 10\%$ .

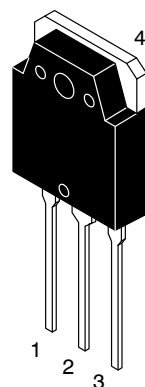
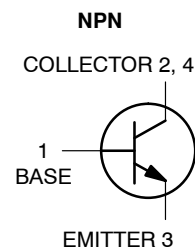
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



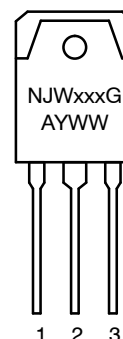
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## 80 VOLT, 10 AMPS NPN POWER TRANSISTORS



### MARKING DIAGRAM



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 (Pb-Free)	30 Units/Rail

# NJW44H11G

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

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

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

### ON CHARACTERISTICS

DC Current Gain (I <sub>C</sub> = 2 A, V <sub>CE</sub> = 2 V) (I <sub>C</sub> = 4 A, V <sub>CE</sub> = 2 V)	h <sub>FE</sub>	100 80	– –	400 320	–
Collector–Emitter Saturation Voltage (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 (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 (V <sub>CB</sub> = 10 V, f = 1.0 MHz)	C <sub>obo</sub>	–	65	–	pF
Cutoff Frequency (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 (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 (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 (I <sub>C</sub> = 5.0 Adc, I <sub>B1</sub> = I <sub>B2</sub> = 0.5 A)	t <sub>f</sub>	–	140	–	ns

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## TYPICAL CHARACTERISTICS

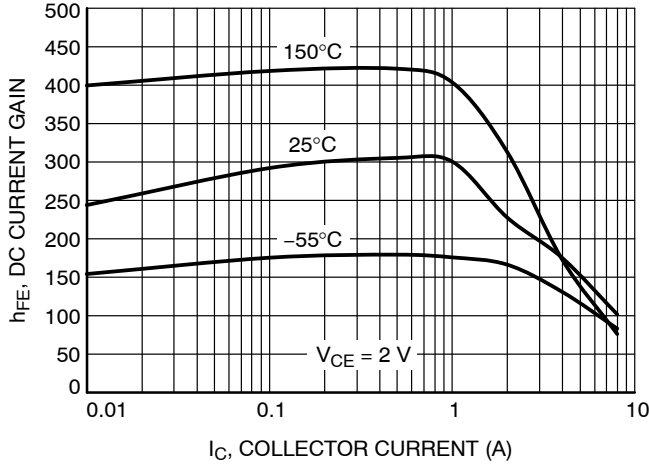


Figure 1. DC Current Gain

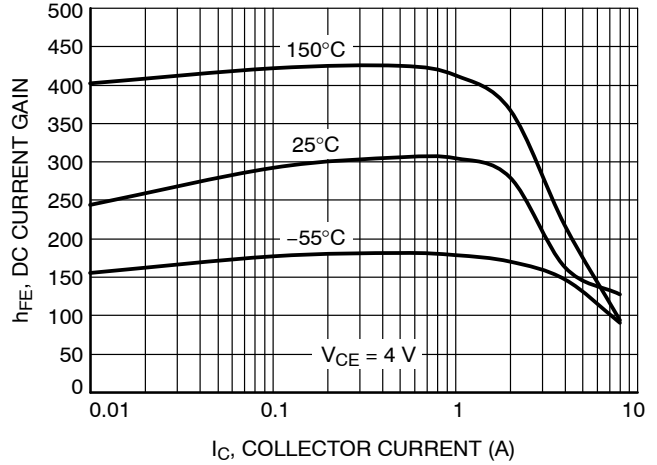


Figure 2. DC Current Gain

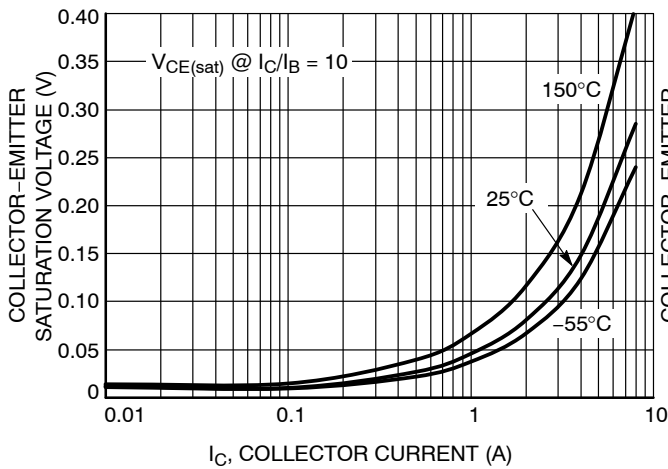


Figure 3. Collector Emitter Saturation Voltage

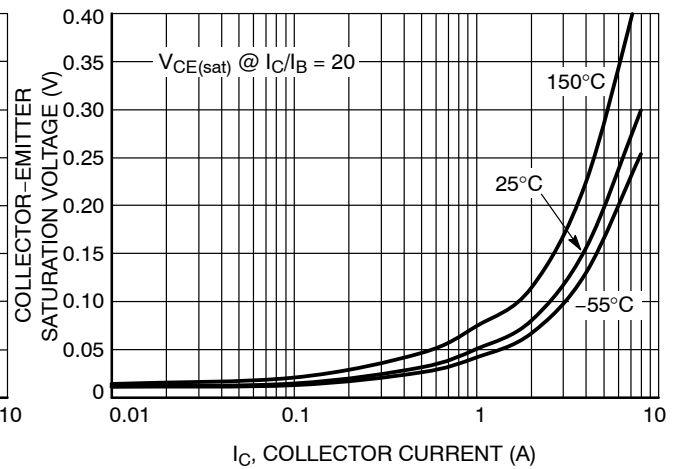


Figure 4. Collector Emitter Saturation Voltage

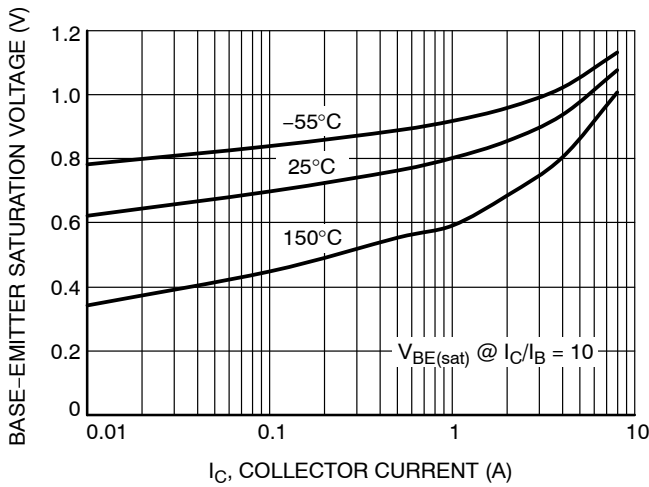


Figure 5. Base Emitter Saturation Voltage

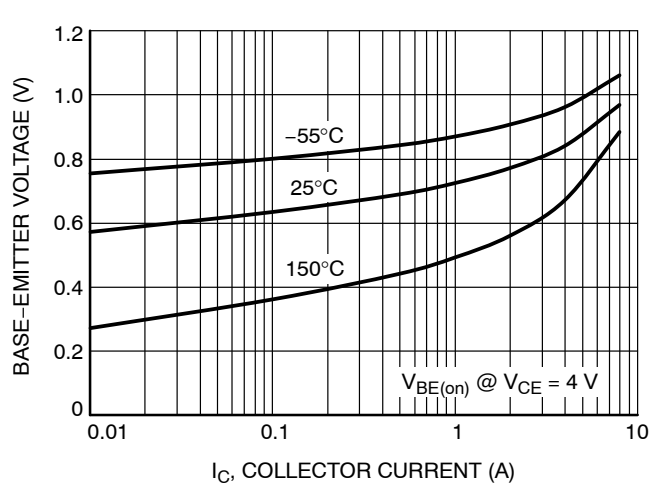


Figure 6. Base Emitter "ON" Voltage

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## TYPICAL CHARACTERISTICS

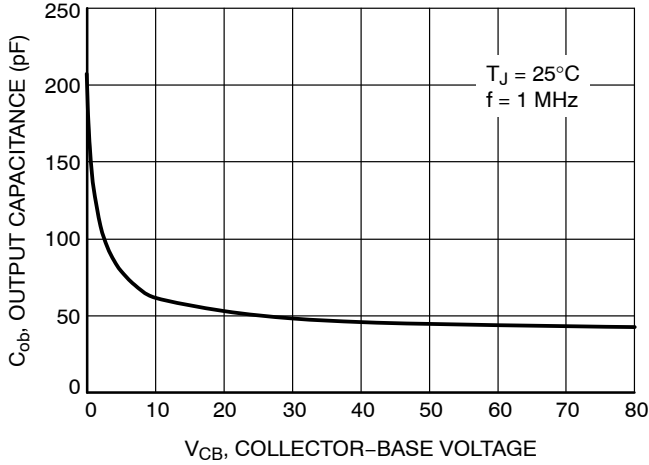


Figure 7. Output Capacitance

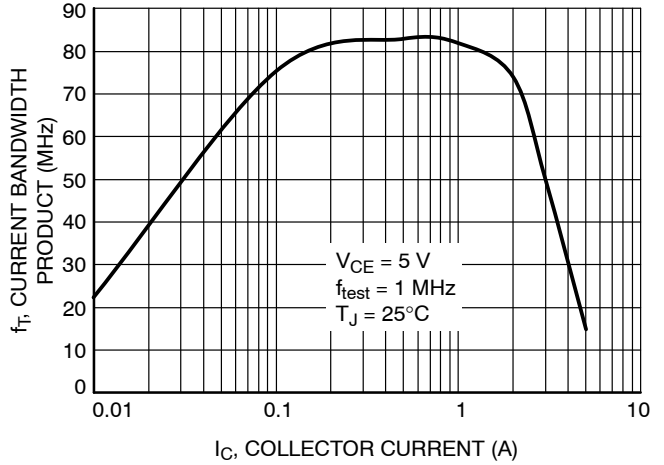


Figure 8. Current Gain Bandwidth Product

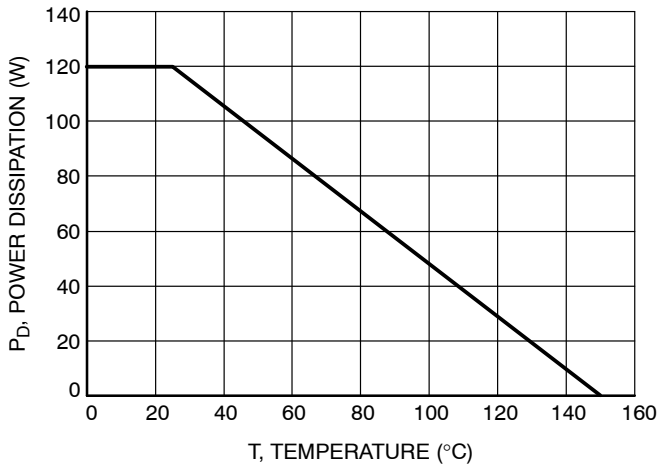


Figure 9. Power Temperature Derating

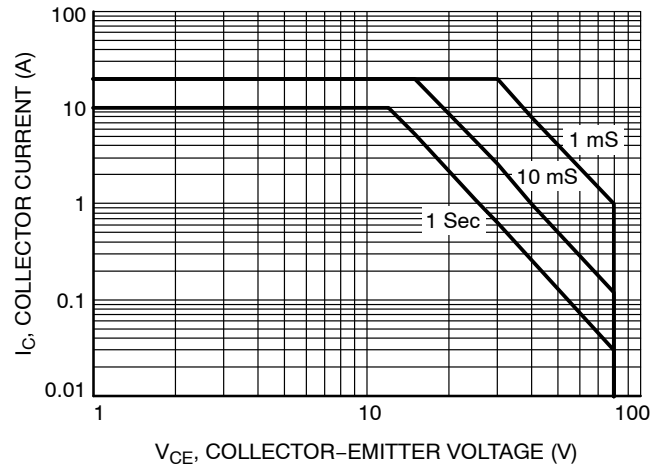
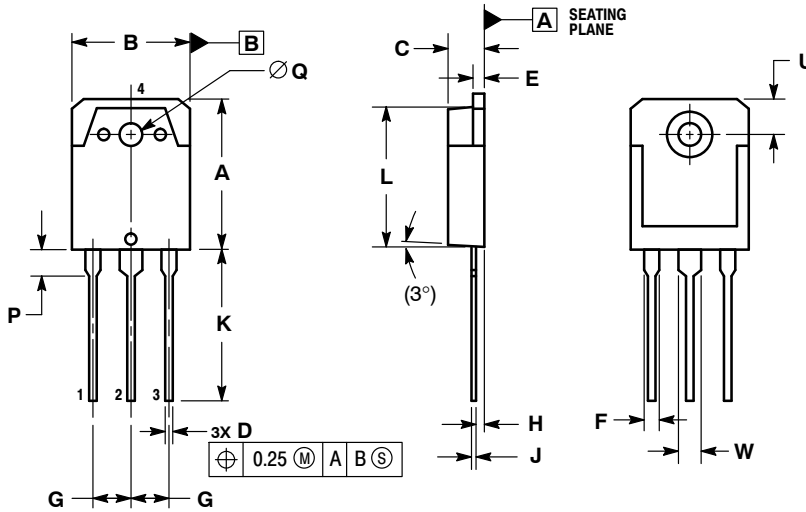


Figure 10. Safe Operating Area (SOA)

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## PACKAGE DIMENSIONS

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



### NOTES:

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

MILLIMETERS			
DIM	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
- COLLECTOR
- EMITTER
- COLLECTOR

### STYLE 2:

- PIN 1. ANODE
- CATHODE
- ANODE
- CATHODE

### STYLE 3:

- PIN 1. GATE
- DRAIN
- SOURCE
- DRAIN

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