

# 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  $\leq 10\%$ .

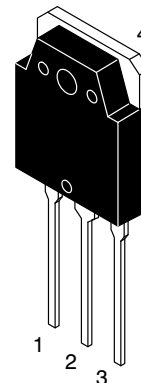
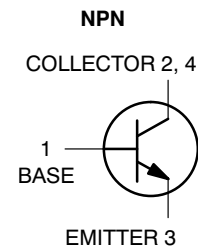
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



**ON Semiconductor®**

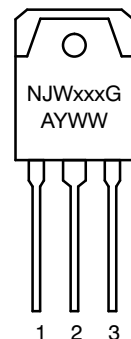
<http://onsemi.com>

## 80 VOLT, 10 AMPS NPN POWER TRANSISTORS



TO-3P  
PLASTIC  
CASE 340AB

### MARKING DIAGRAM



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
----------------	--------	-----	-----	-----	------

### 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

# NJW44H11G

## TYPICAL CHARACTERISTICS

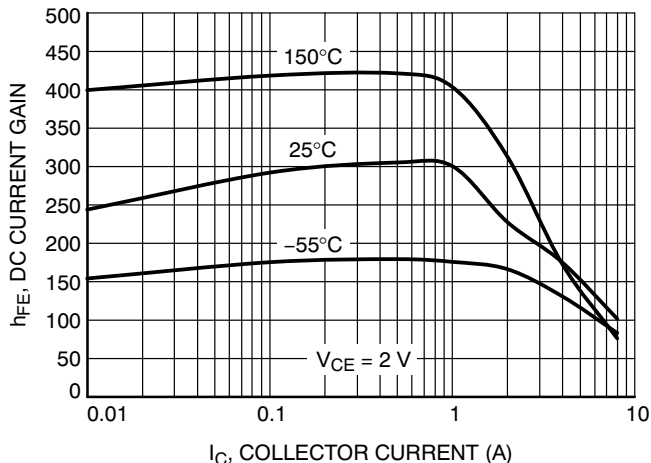


Figure 1. DC Current Gain

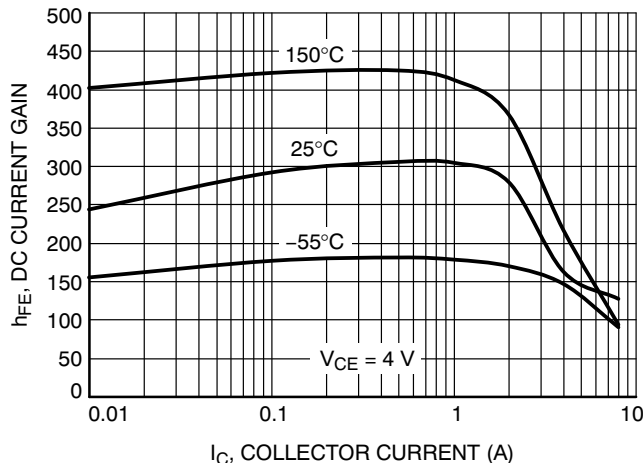


Figure 2. DC Current Gain

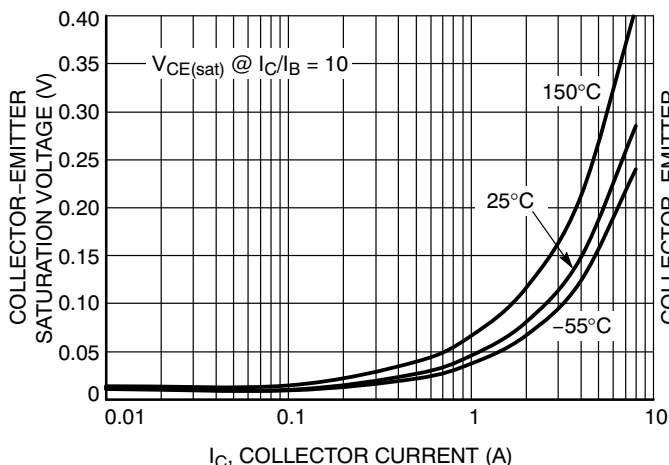


Figure 3. Collector Emitter Saturation Voltage

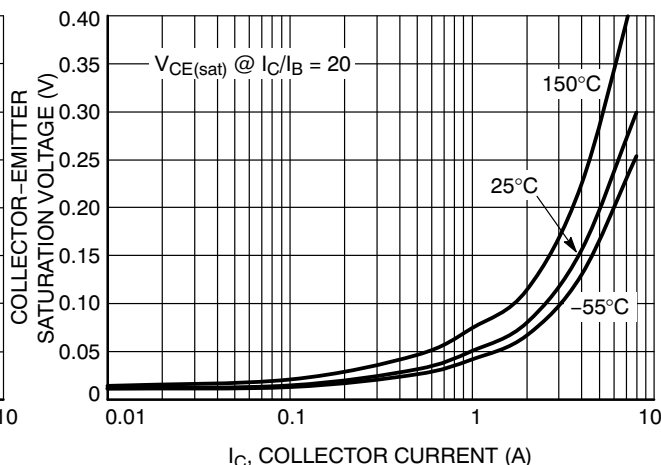


Figure 4. Collector Emitter Saturation Voltage

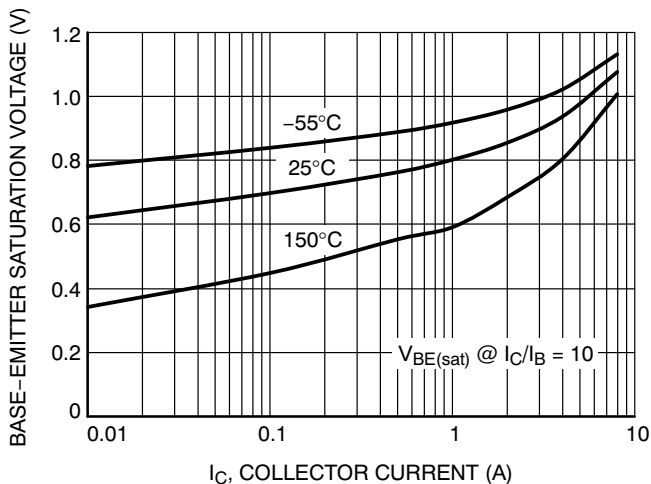


Figure 5. Base Emitter Saturation Voltage

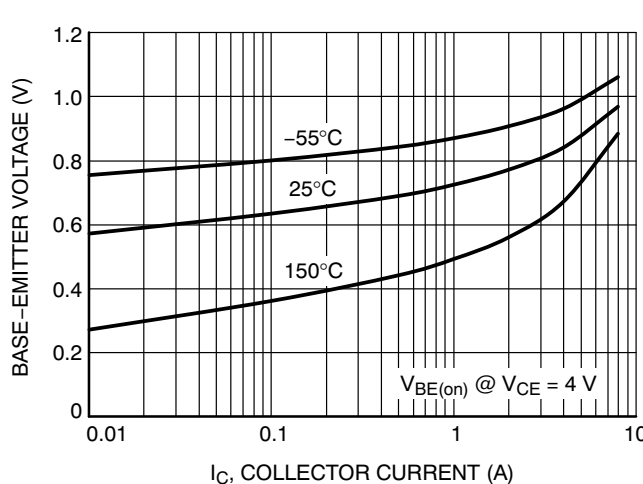


Figure 6. Base Emitter "ON" Voltage

# NJW44H11G

## TYPICAL CHARACTERISTICS

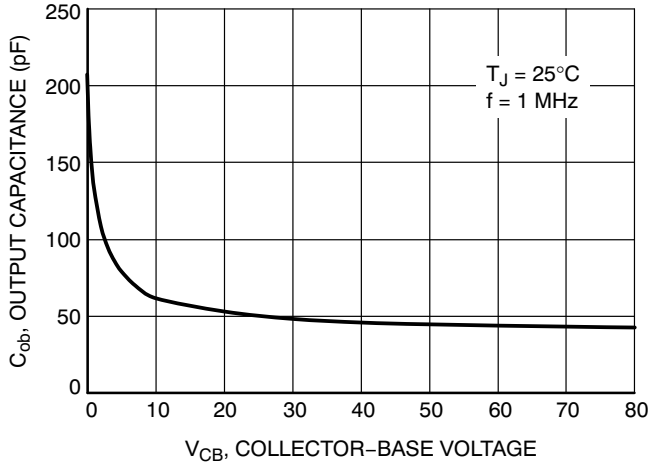


Figure 7. Output Capacitance

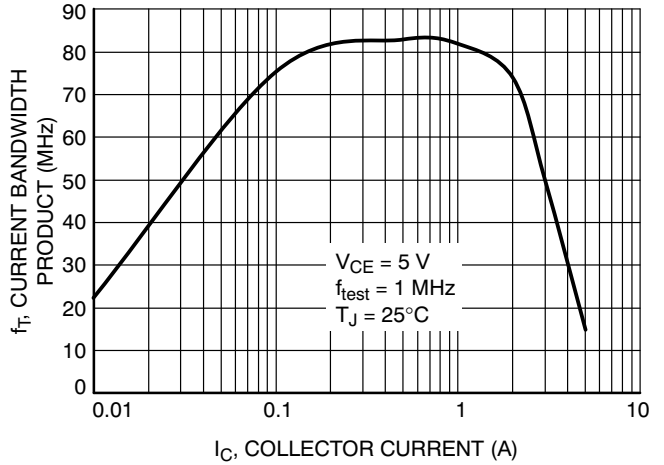


Figure 8. Current Gain Bandwidth Product

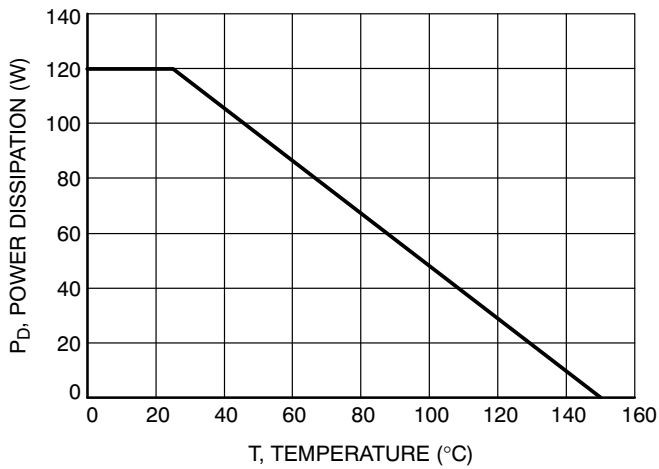


Figure 9. Power Temperature Derating

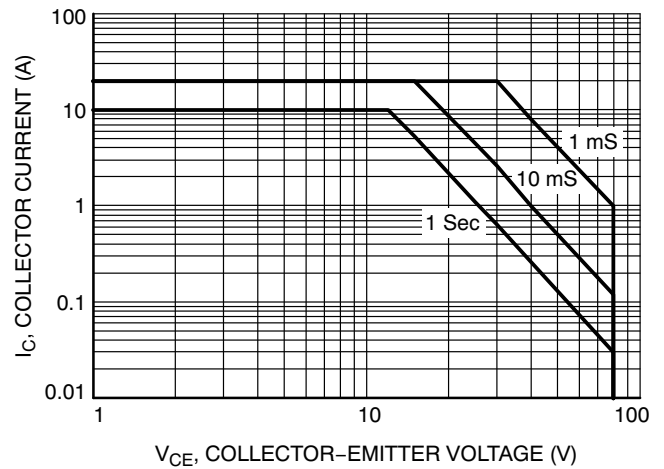
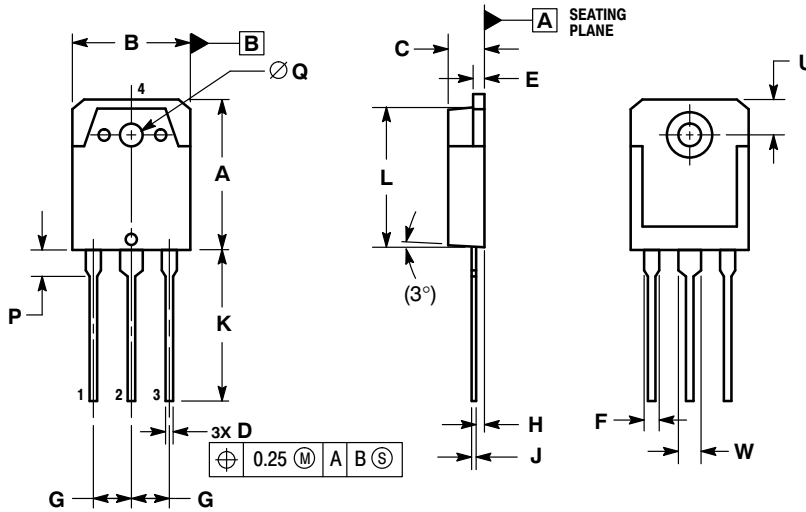


Figure 10. Safe Operating Area (SOA)

# NJW44H11G

## PACKAGE DIMENSIONS

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



**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

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marketing.pdf](http://www.onsemi.com/site/pdf/Patent-Marketing.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative