NJW0281G (NPN)
NJW0302G (PNP)

Complementary NPN-PNP Power Bipolar Transistors

These complementary devices are lower power versions of the popular NJW3281G and NJW1302G audio output transistors. With superior gain linearity and safe operating area performance, these transistors are ideal for high fidelity audio amplifier output stages and other linear applications.

Features

- Exceptional Safe Operating Area
- NPN/PNP Gain Matching within 10% from 50 mA to 3 A
- Excellent Gain Linearity
- High BVCEO
- High Frequency
- These Devices are Pb−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
- Professional Audio Amplifiers
  - Theater and Stadium Sound Systems
  - Public Address Systems (PAs)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage	V_{CEO}	250	Vdc
Collector−Base Voltage	V_{CBO}	250	Vdc
Emitter−Base Voltage	V_{EBO}	5.0	Vdc
Collector−Emitter Voltage − 1.5 V	V_{CEX}	250	Vdc
Collector Current − Continuous	I_C	15	Adc
Collector Current − Peak (Note 1)	I_{CM}	30	Adc
Base Current − Continuous	I_B	1.5	Adc
Total Power Dissipation @ T_C = 25°C	P_D	150	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	− 65 to +150	°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 = 5.0 ms, Duty Cycle < 10%.

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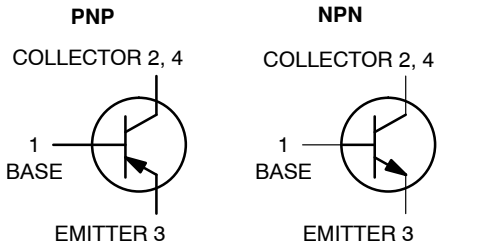
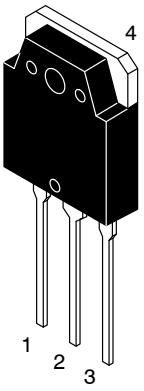
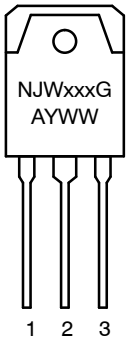
15 AMPERES COMPLEMENTARY SILICON POWER TRANSISTORS 250 VOLTS, 150 WATTS





TO−3P
CASE 340AB
STYLES 1,2,3

MARKING DIAGRAM



xxxx = 0281 or 0302
G = Pb−Free Package
A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
NJW0281G	TO−3P (Pb−Free)	30 Units/Rail
NJW0302G	TO−3P (Pb−Free)	30 Units/Rail

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THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	0.83	°C/W

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (I_C = 30 mA, I_B = 0)	$V_{CEO(sus)}$	250	−	V
Collector Cutoff Current (V_{CB} = 250 V, I_E = 0)	I_{CBO}	−	10	μA
Emitter Cutoff Current (V_{EB} = 5.0 V, I_C = 0)	I_{EBO}	−	5.0	μA
ON CHARACTERISTICS				
DC Current Gain (I_C = 0.5 A, V_{CE} = 5.0 V) (I_C = 1.0 A, V_{CE} = 5.0 V) (I_C = 3.0 A, V_{CE} = 5.0 V)	h_{FE}	 75 75 75	 150 150 150	−
Collector−Emitter Saturation Voltage (I_C = 5.0 A, I_B = 0.5 A)	$V_{CE(sat)}$	−	1.0	V
Base−Emitter On Voltage (I_C = 5.0 A, V_{CE} = 5.0 V)	$V_{BE(on)}$	−	1.2	V
DYNAMIC CHARACTERISTICS				
Current−Gain − Bandwidth Product (I_C = 1.0 A, V_{CE} = 5.0 V, f_{test} = 1.0 MHz)	f_T	30	−	MHz
Output Capacitance (V_{CB} = 10 V, I_E = 0, f_{test} = 1.0 MHz)	C_{ob}	−	400	pF

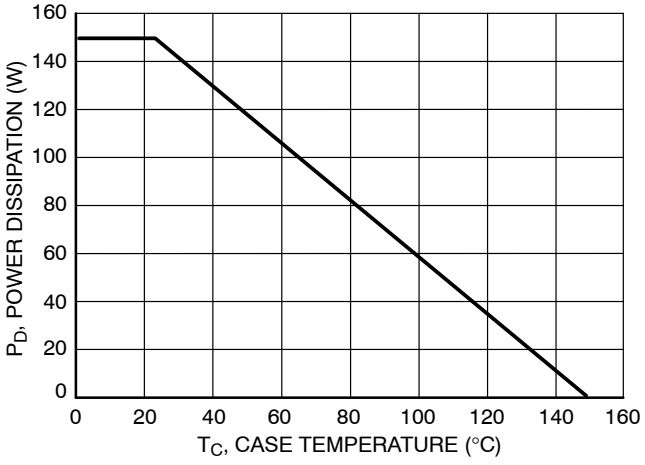


Figure 1. Power Derating

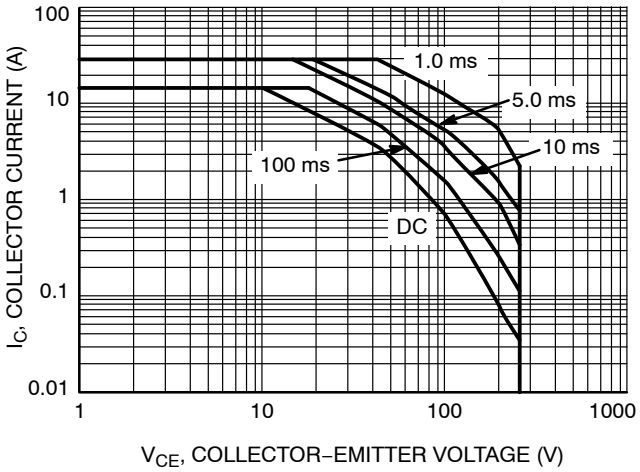


Figure 2. Safe Operating Area

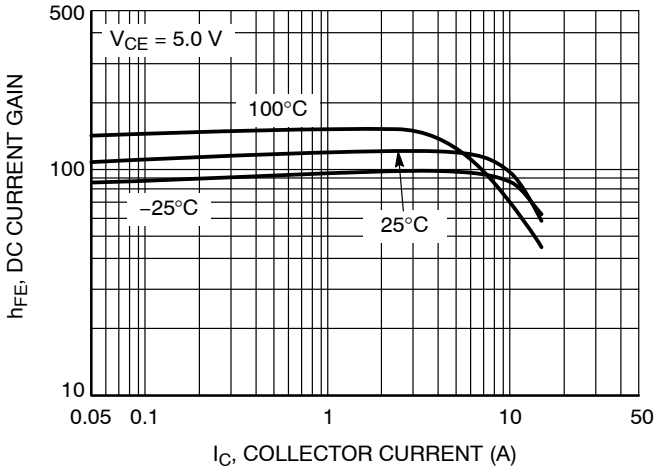


Figure 3. NJW0281G DC Current Gain

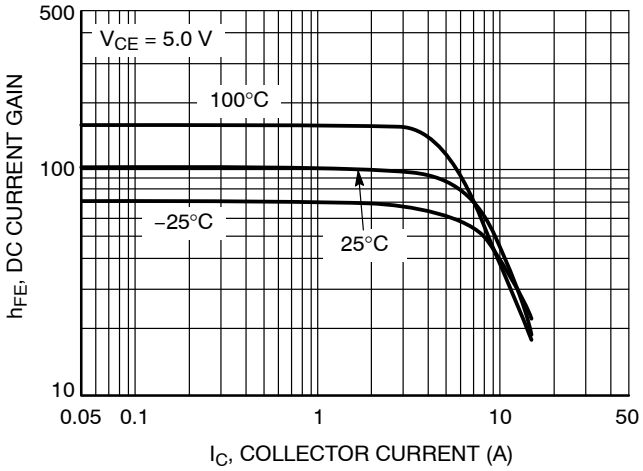


Figure 4. NJW0302G DC Current Gain

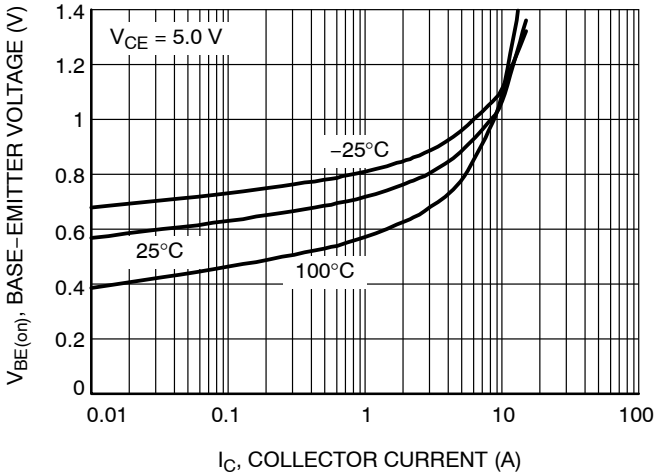


Figure 5. NJW0281G Base−Emitter Voltage

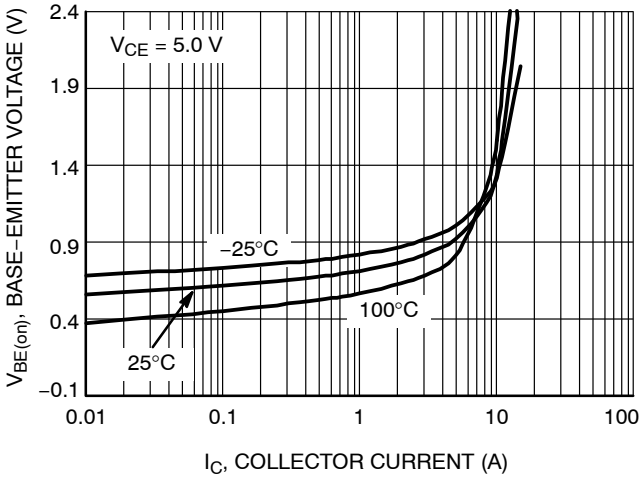


Figure 6. NJW0302G Base−Emitter Voltage

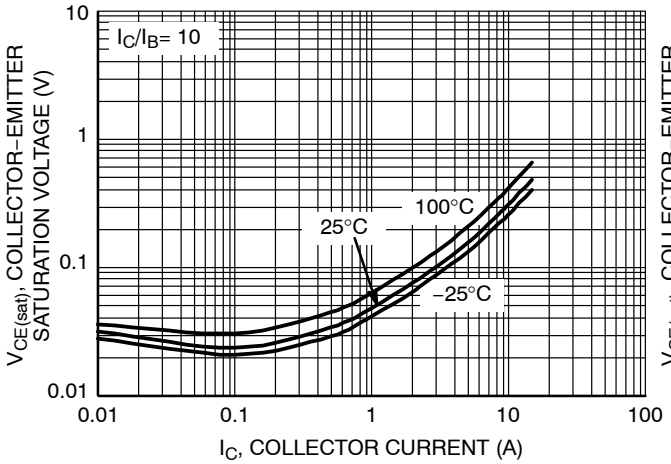


Figure 7. NJW0281G Saturation Voltage

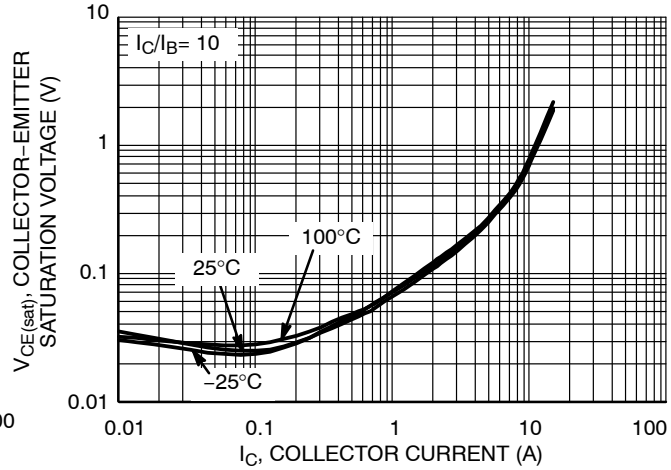


Figure 8. NJW0302G Saturation Voltage

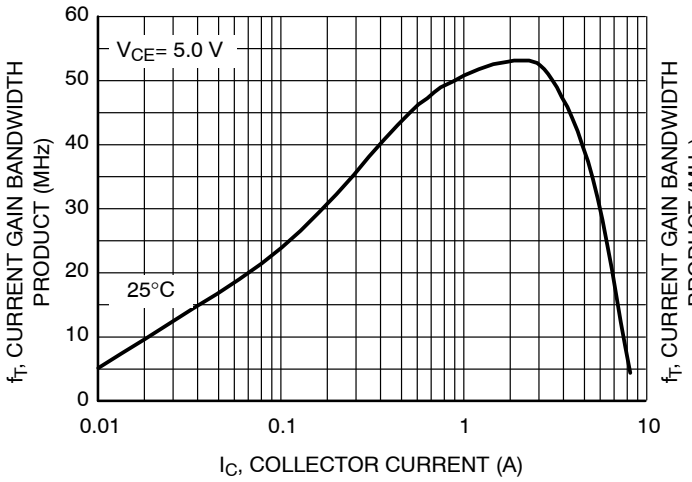


Figure 9. NJW0281G Current Gain Bandwidth Product

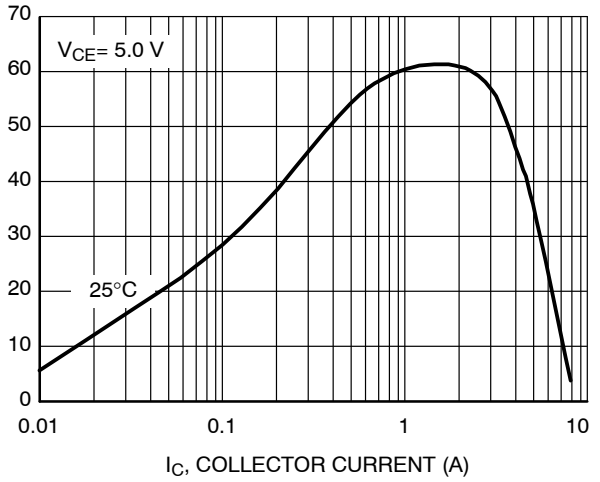


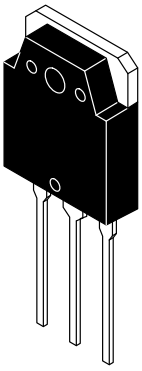
Figure 10. NJW0302G Current Gain Bandwidth Product

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

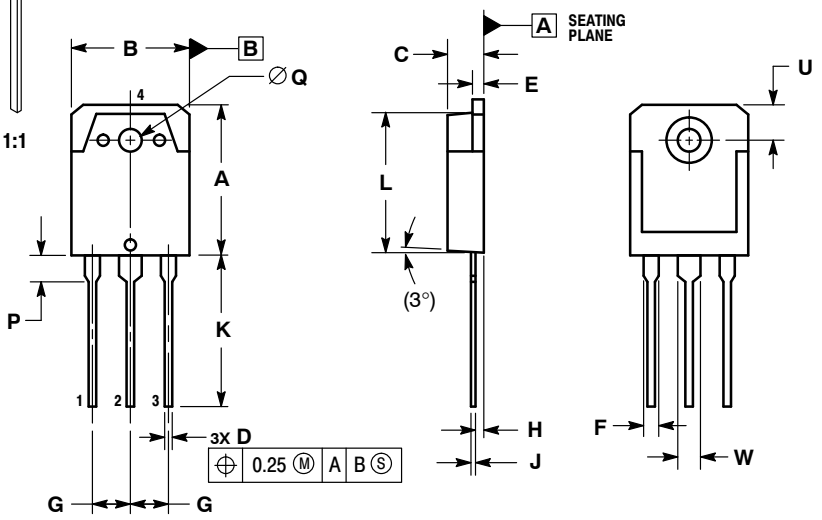
ON Semiconductor®

TO−3P−3LD
CASE 340AB−01
ISSUE A

DATE 30 OCT 2007



SCALE 1:1



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.

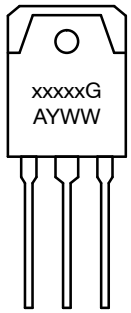
	MILLIMETERS		
DIM	MIN	NOM	MAX
A	19.70	19.90	20.10
B	15.40	15.60	15.80
C	4.60	4.80	5.00
D	0.80	1.00	1.20
E	1.45	1.50	1.65
F	1.80	2.00	2.20
G	5.45 BSC		
H	1.20	1.40	1.60
J	0.55	0.60	0.75
K	19.80	20.00	20.20
L	18.50	18.70	18.90
P	3.30	3.50	3.70
Q	3.10	3.20	3.50
U	5.00 REF		
W	2.80	3.00	3.20

STYLE 1:
PIN 1. BASE
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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