

NJT4030P, NJV4030P

Bipolar Power Transistors

PNP Silicon

Features

- Epoxy Meets UL 94, V-0 @ 0.125 in
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Rating | Symbol | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector-Emitter Voltage | V_{CEO} | 40 | Vdc |
| Collector-Base Voltage | V_{CB} | 40 | Vdc |
| Emitter-Base Voltage | V_{EB} | 6.0 | Vdc |
| Base Current - Continuous | I_B | 1.0 | Adc |
| Collector Current - Continuous | I_C | 3.0 | Adc |
| Collector Current - Peak | I_{CM} | 5.0 | Adc |
| ESD - Human Body Model | HBM | 3B | V |
| ESD - Machine Model | MM | C | V |

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.

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|------------------------------------|----------------|--------------------|
| Total Power Dissipation Total P_D @ $T_A = 25^\circ\text{C}$ (Note 1) Total P_D @ $T_A = 25^\circ\text{C}$ (Note 2) | P_D | 2.0 0.80 | W |
| Thermal Resistance, Junction-to-Case Junction-to-Ambient (Note 1) Junction-to-Ambient (Note 2) | $R_{\theta JA}$ $R_{\theta JA}$ | 64 155 | $^\circ\text{C/W}$ |
| Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 5 seconds | T_L | 260 | $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

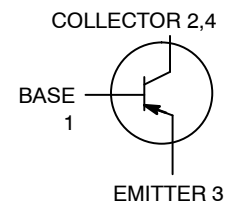
1. Mounted on 1" sq. (645 sq. mm) Collector pad on FR-4 bd material.
2. Mounted on 0.012" sq. (7.6 sq. mm) Collector pad on FR-4 bd material.



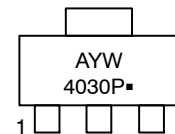
ON Semiconductor®

<http://onsemi.com>

PNP TRANSISTOR
3.0 AMPERES
40 VOLTS, 2.0 WATTS



MARKING DIAGRAM



A = Assembly Location
Y = Year
W = Work Week
4030P = Specific Device Code
▪ = Pb-Free Package

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|----------------------|--------------------|
| NJT4030PT1G | SOT-223 (Pb-Free) | 1000 / Tape & Reel |
| NJV4030PT1G | | |
| NJT4030PT3G | SOT-223 (Pb-Free) | 4000 / Tape & Reel |
| NJV4030PT3G | | |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

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

OFF CHARACTERISTICS

| | | | | | |
|---|---------------|-----|---|-----|------|
| Collector–Emitter Sustaining Voltage ($I_C = 10\text{ mA}$, $I_B = 0\text{ A}$) | $V_{CE(sus)}$ | 40 | – | – | Vdc |
| Emitter–Base Voltage ($I_E = 50\text{ }\mu\text{A}$, $I_C = 0\text{ A}$) | V_{EBO} | 6.0 | – | – | Vdc |
| Collector Cutoff Current ($V_{CB} = 40\text{ Vdc}$) | I_{CBO} | – | – | 100 | nAdc |
| Emitter Cutoff Current ($V_{BE} = 6.0\text{ Vdc}$) | I_{EBO} | – | – | 100 | nAdc |

ON CHARACTERISTICS (Note 3)

| | | | | | |
|--|---------------|-------------------|-------------|-------------------------|-----|
| Collector–Emitter Saturation Voltage ($I_C = 0.5\text{ A}$, $I_B = 5.0\text{ mA}$) ($I_C = 1.0\text{ A}$, $I_B = 10\text{ mA}$) ($I_C = 3.0\text{ A}$, $I_B = 0.3\text{ A}$) | $V_{CE(sat)}$ | – | – | 0.150 0.200 0.500 | Vdc |
| Base–Emitter Saturation Voltage ($I_C = 1.0\text{ A}$, $I_B = 0.1\text{ A}$) | $V_{BE(sat)}$ | – | – | 1.0 | Vdc |
| Base–Emitter On Voltage ($I_C = 1.0\text{ A}$, $V_{CE} = 2.0\text{ Vdc}$) | $V_{BE(on)}$ | – | – | 1.0 | Vdc |
| DC Current Gain ($I_C = 0.5\text{ A}$, $V_{CE} = 1.0\text{ Vdc}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 1.0\text{ Vdc}$) ($I_C = 3.0\text{ A}$, $V_{CE} = 1.0\text{ Vdc}$) | h_{FE} | 220 200 100 | – – – | – 400 – | – |

DYNAMIC CHARACTERISTICS

| | | | | | |
|---|----------|---|-----|---|-----|
| Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$) | C_{ob} | – | 40 | – | pF |
| Input Capacitance ($V_{EB} = 5.0\text{ Vdc}$, $f = 1.0\text{ MHz}$) | C_{ib} | – | 130 | – | pF |
| Current–Gain – Bandwidth Product (Note 4) ($I_C = 500\text{ mA}$, $V_{CE} = 10\text{ V}$, $F_{test} = 1.0\text{ MHz}$) | f_T | – | 160 | – | MHz |

3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$.

4. $f_T = |h_{FE}| \cdot f_{test}$

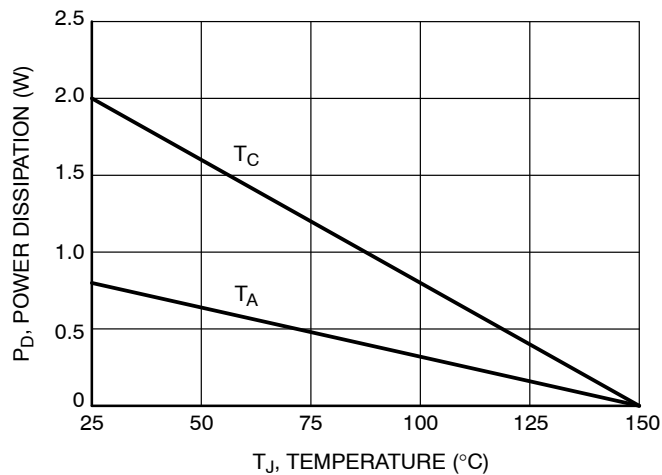


Figure 1. Power Derating

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TYPICAL CHARACTERISTICS

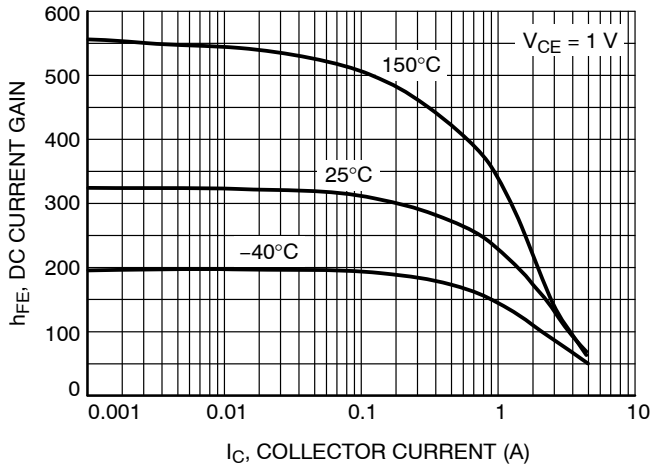


Figure 2. DC Current Gain

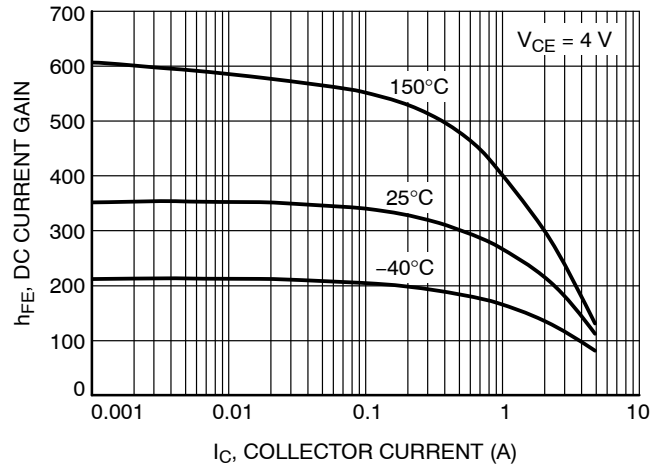


Figure 3. DC Current Gain

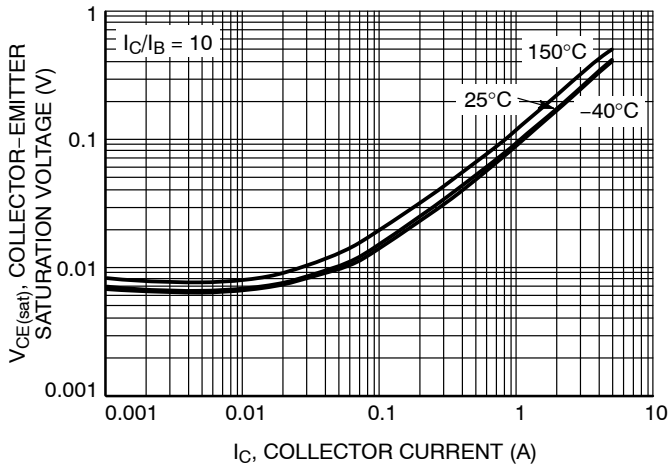


Figure 4. Collector-Emitter Saturation Voltage

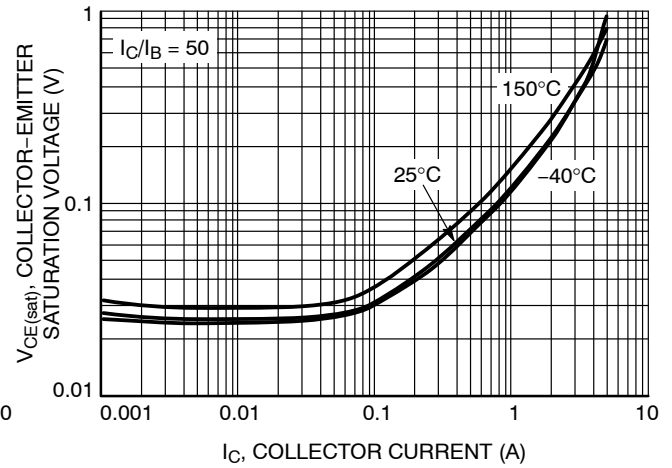


Figure 5. Collector-Emitter Saturation Voltage

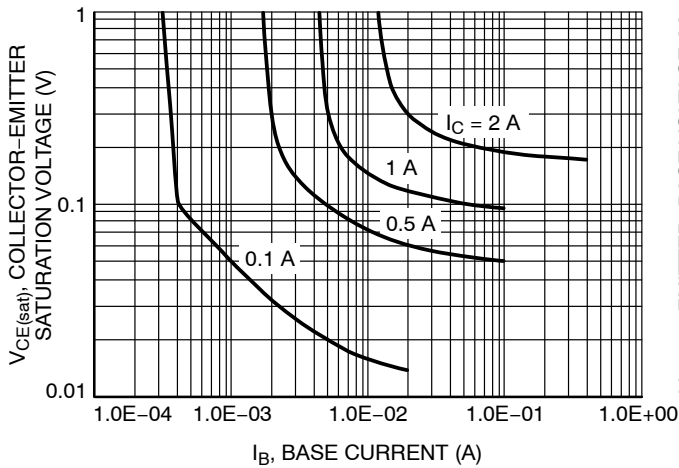


Figure 6. Collector Saturation Region

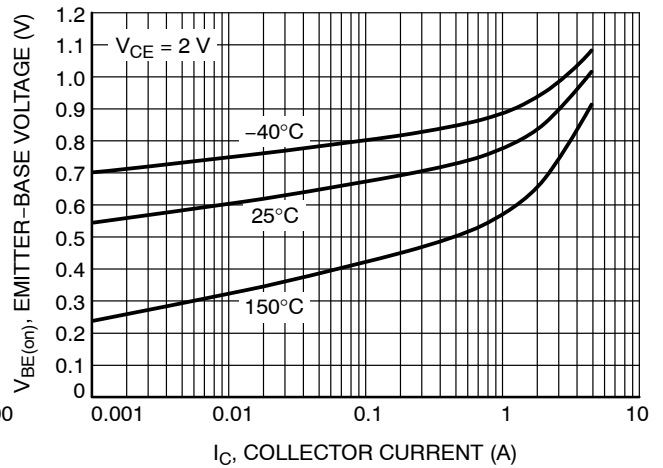


Figure 7. $V_{BE(on)}$ Voltage

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TYPICAL CHARACTERISTICS

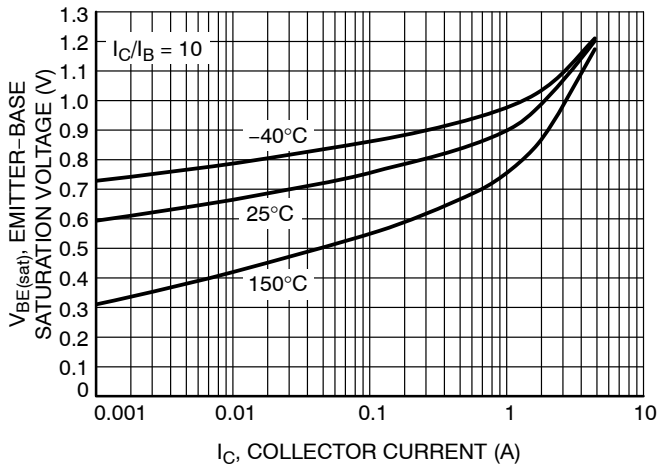


Figure 8. Base-Emitter Saturation Voltage

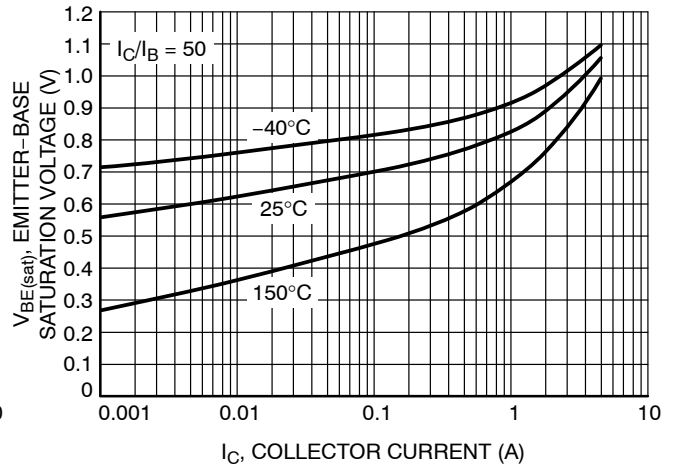


Figure 9. Base-Emitter Saturation Voltage

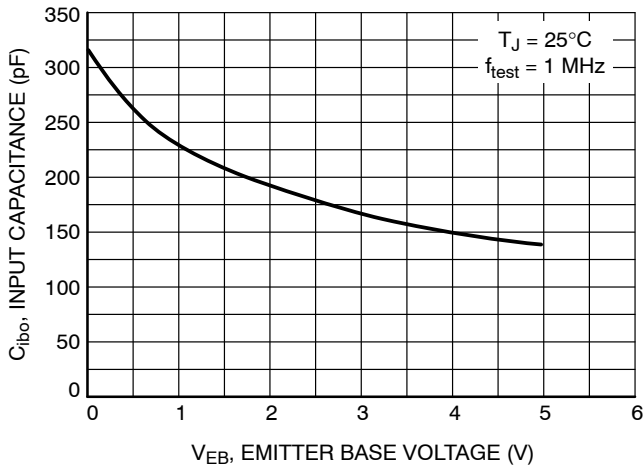


Figure 10. Input Capacitance

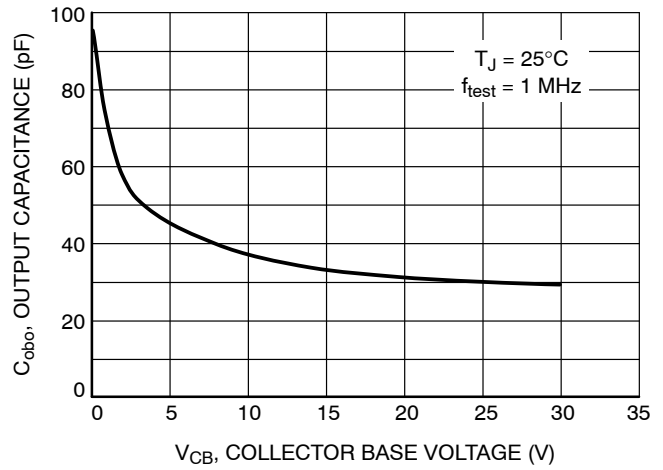


Figure 11. Output Capacitance

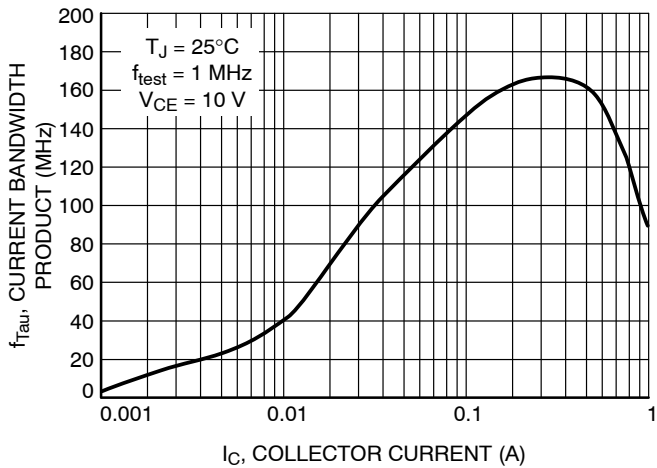


Figure 12. Current-Gain Bandwidth Product

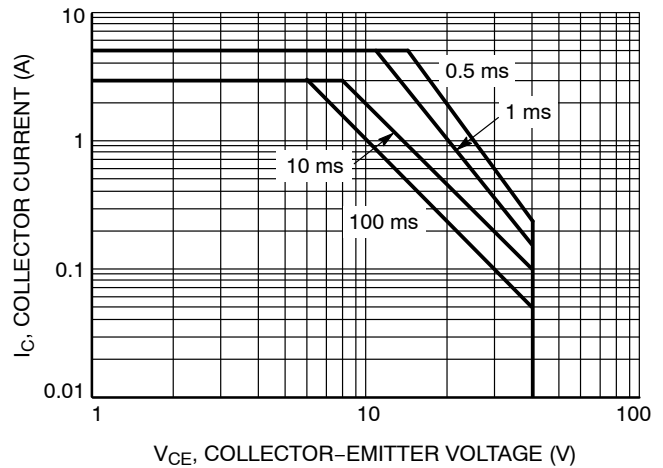
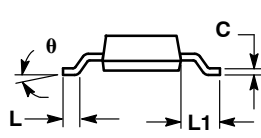
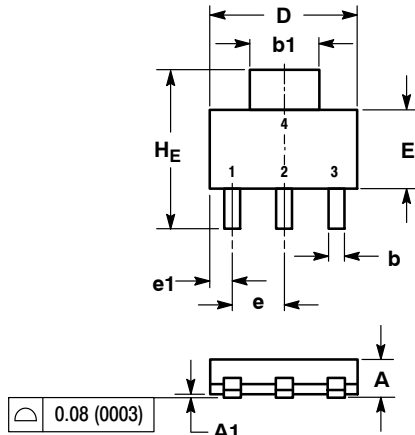


Figure 13. Safe Operating Area

NJT4030P, NJV4030P

PACKAGE DIMENSIONS

SOT-223 (TO-261)
CASE 318E-04
ISSUE N



NOTES:

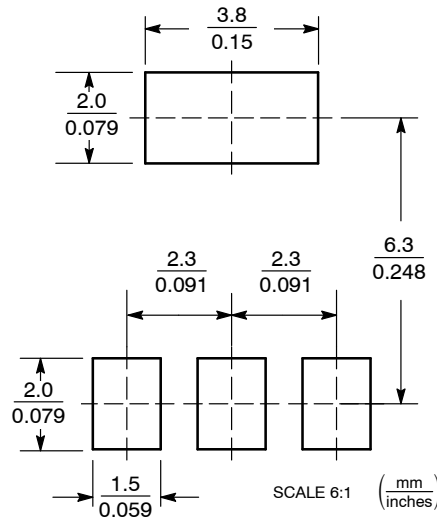
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.50 | 1.63 | 1.75 | 0.060 | 0.064 | 0.068 |
| A1 | 0.02 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| b | 0.60 | 0.75 | 0.89 | 0.024 | 0.030 | 0.035 |
| b1 | 2.90 | 3.06 | 3.20 | 0.115 | 0.121 | 0.126 |
| c | 0.24 | 0.29 | 0.35 | 0.009 | 0.012 | 0.014 |
| D | 6.30 | 6.50 | 6.70 | 0.249 | 0.256 | 0.263 |
| E | 3.30 | 3.50 | 3.70 | 0.130 | 0.138 | 0.145 |
| e | 2.20 | 2.30 | 2.40 | 0.087 | 0.091 | 0.094 |
| e1 | 0.85 | 0.94 | 1.05 | 0.033 | 0.037 | 0.041 |
| L | 0.20 | --- | --- | 0.008 | --- | --- |
| L1 | 1.50 | 1.75 | 2.00 | 0.060 | 0.069 | 0.078 |
| HE | 6.70 | 7.00 | 7.30 | 0.264 | 0.276 | 0.287 |
| θ | 0° | - | 10° | 0° | - | 10° |

STYLE 1:

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

SOLDERING FOOTPRINT*



*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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