

# Bipolar Power Transistors

## PNP Silicon

### NJT4030P, NJV4030P

#### 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<sub>C</sub> = 25 °C unless otherwise noted)

| Symbol           | Rating                         | Value | Unit |
|------------------|--------------------------------|-------|------|
| V <sub>CEO</sub> | Collector-Emitter Voltage      | 40    | Vdc  |
| V <sub>CB</sub>  | Collector-Base Voltage         | 40    | Vdc  |
| V <sub>EB</sub>  | Emitter-Base Voltage           | 6.0   | Vdc  |
| I <sub>B</sub>   | Base Current - Continuous      | 1.0   | Adc  |
| I <sub>C</sub>   | Collector Current - Continuous | 3.0   | Adc  |
| I <sub>CM</sub>  | Collector Current - Peak       | 5.0   | Adc  |
| HBM              | ESD - Human Body Model         | 3B    | V    |
| MM               | ESD - Machine Model            | C     | V    |

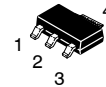
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

#### THERMAL CHARACTERISTICS

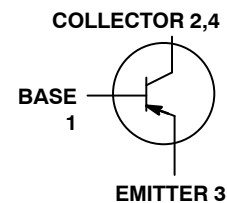
| Symbol                                                   | Characteristic                                                                                                                              | Max             | Unit |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|
| P <sub>D</sub>                                           | Total Power Dissipation<br>Total P <sub>D</sub> @ T <sub>A</sub> = 25 °C (Note 1)<br>Total P <sub>D</sub> @ T <sub>A</sub> = 25 °C (Note 2) | 2.0<br>0.80     | W    |
| R <sub>θJC</sub><br>R <sub>θJA</sub><br>R <sub>θJA</sub> | Thermal Resistance<br>Junction-to-Case<br>Junction-to-Ambient (Note 1)<br>Junction-to-Ambient (Note 2)                                      | 11<br>64<br>155 | °C/W |
| T <sub>L</sub>                                           | Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 5 seconds                                                               | 260             | °C   |
| T <sub>J</sub> , T <sub>stg</sub>                        | Operating and Storage Junction Temperature Range                                                                                            | -55 to +150     | °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.

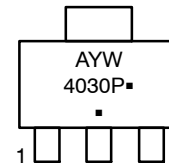
## PNP TRANSISTOR 3.0 AMPERES 40 VOLTS, 2.0 WATTS



SOT-223  
CASE 318E  
STYLE 1



#### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

| Device      | Package              | Shipping†           |
|-------------|----------------------|---------------------|
| NJT4030PT1G | SOT-223<br>(Pb-Free) | 1,000 / Tape & Reel |
| NJV4030PT1G |                      |                     |
| NJT4030PT3G | SOT-223<br>(Pb-Free) | 4,000 / Tape & Reel |
| NJV4030PT3G |                      |                     |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](http://www.onsemi.com/BRD8011/D).

# NJT4030P, NJV4030P

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

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

### OFF CHARACTERISTICS

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

### ON CHARACTERISTICS (Note 3)

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

### DYNAMIC CHARACTERISTICS

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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

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

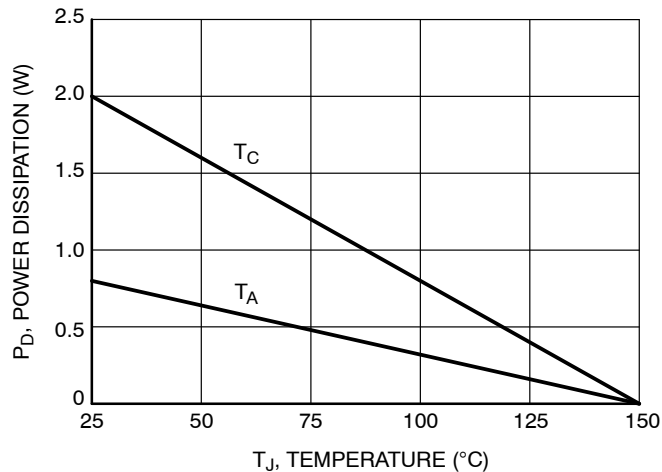


Figure 1. Power Derating

TYPICAL CHARACTERISTICS

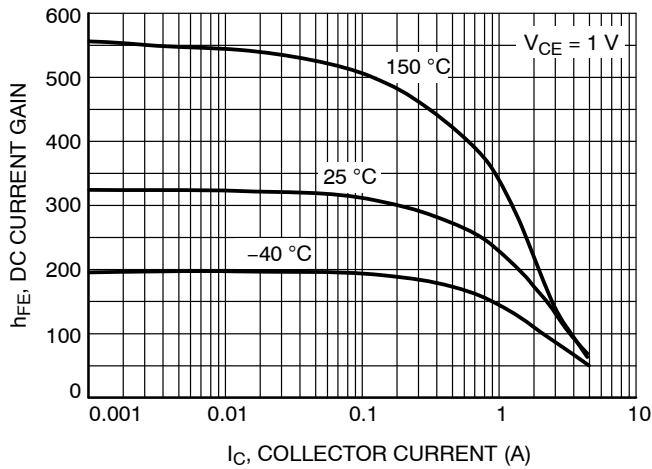


Figure 2. DC Current Gain

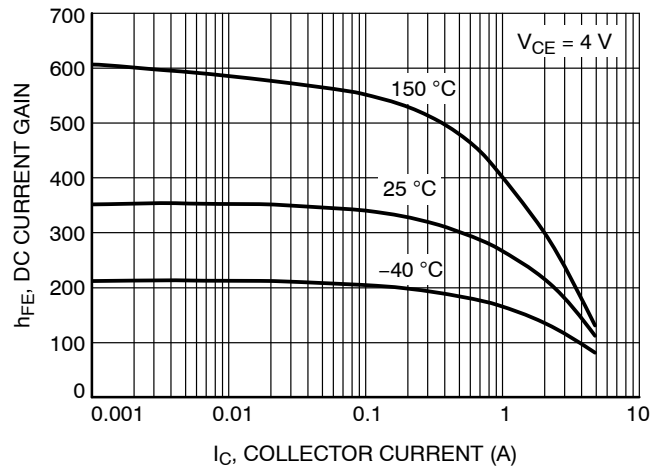


Figure 3. DC Current Gain

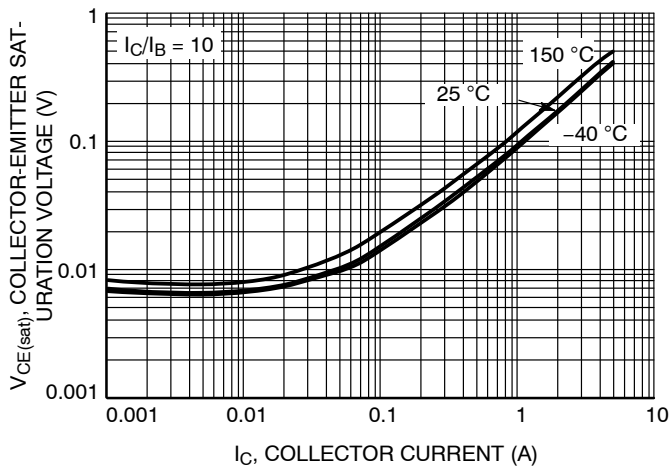


Figure 4. Collector-Emitter Saturation Voltage

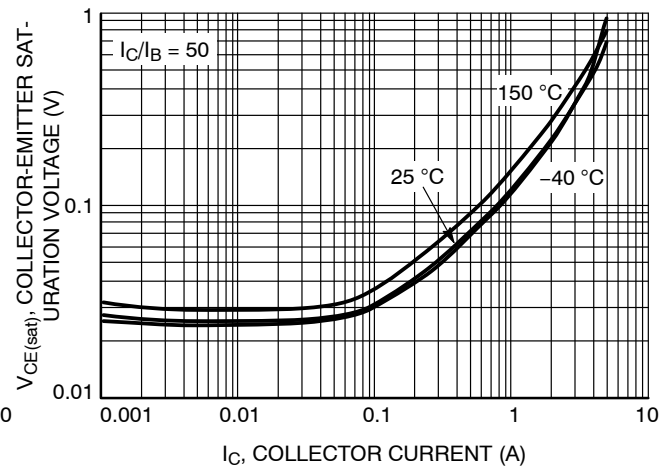


Figure 5. Collector-Emitter Saturation Voltage

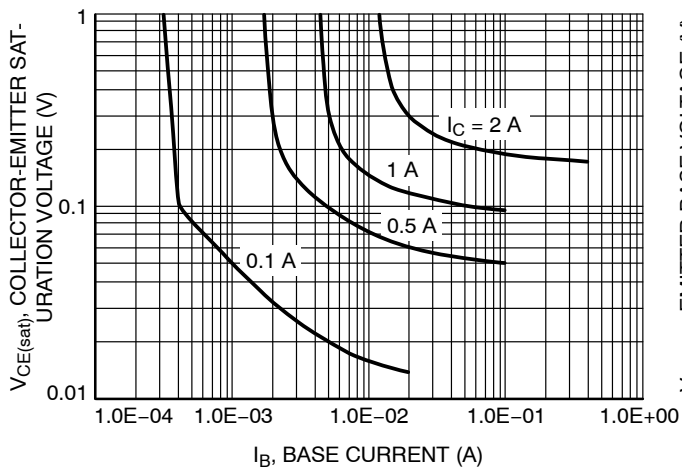


Figure 6. Collector Saturation Region

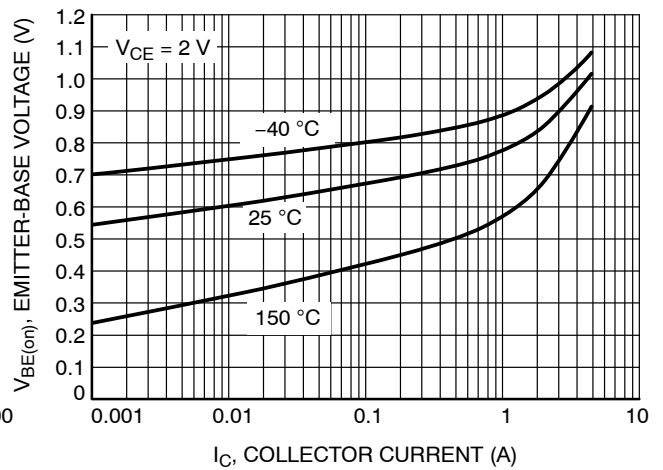


Figure 7.  $V_{BE(on)}$  Voltage

TYPICAL CHARACTERISTICS (continued)

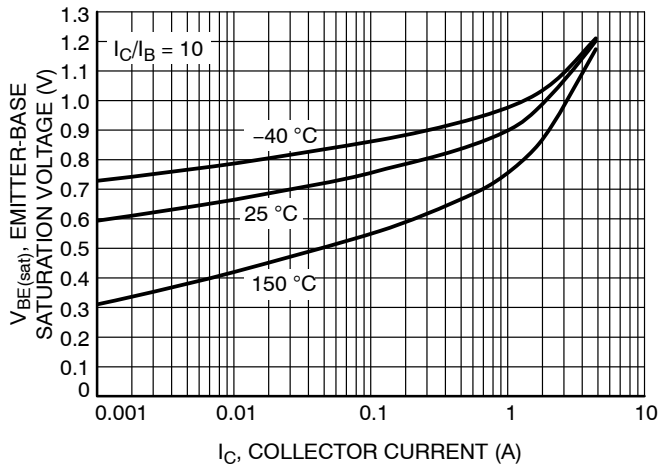


Figure 8. Base-Emitter Saturation Voltage

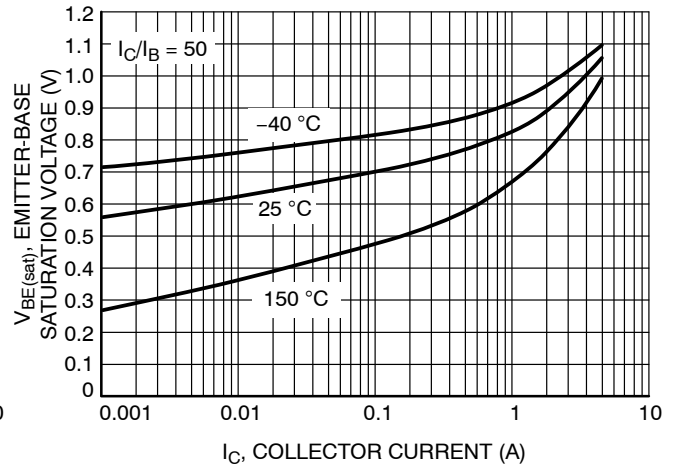


Figure 9. Base-Emitter Saturation Voltage

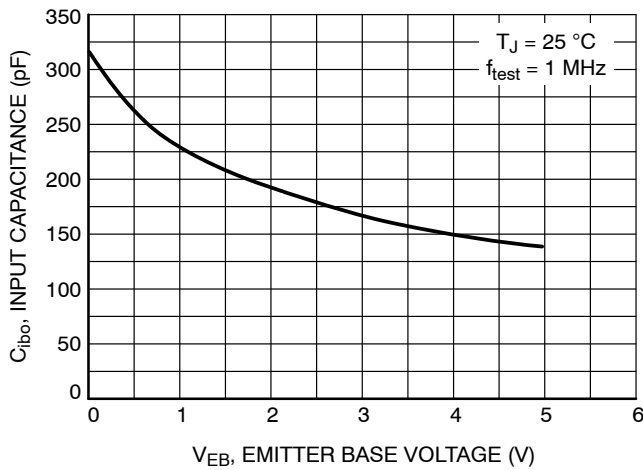


Figure 10. Input Capacitance

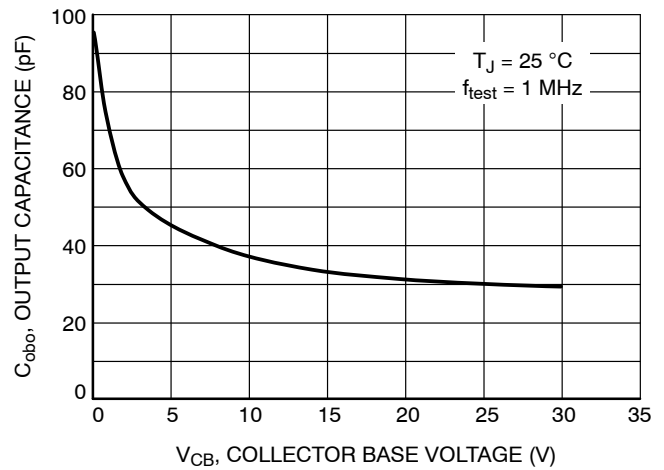


Figure 11. Output Capacitance

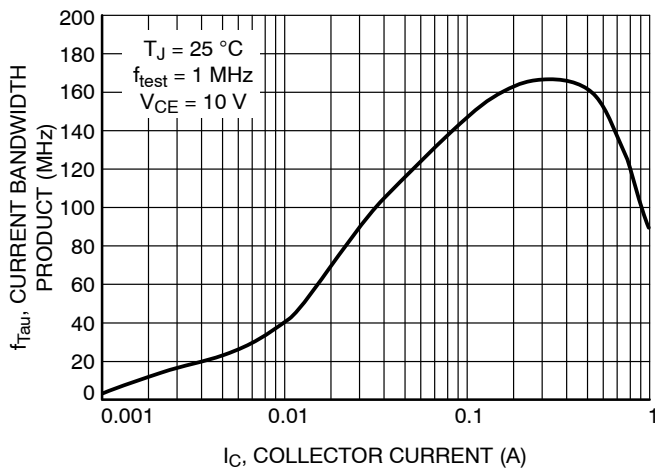


Figure 12. Current-Gain Bandwidth Product

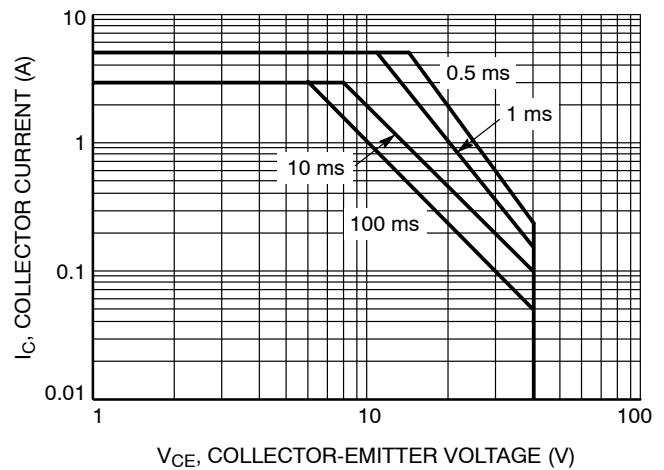


Figure 13. Safe Operating Area

## NJT4030P, NJV4030P

### REVISION HISTORY

| Revision | Description of Changes                            | Date      |
|----------|---------------------------------------------------|-----------|
| 8        | Rebranded the Data Sheet to <b>onsemi</b> format. | 6/26/2025 |

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



SCALE 1:1

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

DATE 02 OCT 2018



TOP VIEW

$\oplus 0.10 \text{ (M) C A B}$   
NOTE 5



SIDE VIEW



FRONT VIEW



DETAIL A

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D & E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.200MM PER SIDE.
4. DATUMS A AND B ARE DETERMINED AT DATUM H.
5. A1 IS DEFINED AS THE VERTICAL DISTANCE FROM THE SEATING PLANE TO THE LOWEST POINT OF THE PACKAGE BODY.
6. POSITIONAL TOLERANCE APPLIES TO DIMENSIONS b AND b1.

| MILLIMETERS |          |      |      |
|-------------|----------|------|------|
| DIM         | MIN.     | NOM. | MAX. |
| A           | 1.50     | 1.63 | 1.75 |
| A1          | 0.02     | 0.06 | 0.10 |
| b           | 0.60     | 0.75 | 0.89 |
| b1          | 2.90     | 3.06 | 3.20 |
| c           | 0.24     | 0.29 | 0.35 |
| D           | 6.30     | 6.50 | 6.70 |
| E           | 3.30     | 3.50 | 3.70 |
| e           | 2.30 BSC |      |      |
| L           | 0.20     | ---  | ---  |
| L1          | 1.50     | 1.75 | 2.00 |
| He          | 6.70     | 7.00 | 7.30 |
| $\theta$    | 0°       | ---  | 10°  |



RECOMMENDED MOUNTING  
FOOTPRINT

|                  |                  |                                                                                                                                                                                     |
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**SOT-223 (TO-261)**  
**CASE 318E-04**  
**ISSUE R**

DATE 02 OCT 2018

|                                                                              |                                                                             |                                                                               |                                                                       |                                                                       |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>STYLE 1:</b><br>PIN 1. BASE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR | <b>STYLE 2:</b><br>PIN 1. ANODE<br>2. CATHODE<br>3. NC<br>4. CATHODE        | <b>STYLE 3:</b><br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE<br>4. DRAIN           | <b>STYLE 4:</b><br>PIN 1. SOURCE<br>2. DRAIN<br>3. GATE<br>4. DRAIN   | <b>STYLE 5:</b><br>PIN 1. DRAIN<br>2. GATE<br>3. SOURCE<br>4. GATE    |
| <b>STYLE 6:</b><br>PIN 1. RETURN<br>2. INPUT<br>3. OUTPUT<br>4. INPUT        | <b>STYLE 7:</b><br>PIN 1. ANODE 1<br>2. CATHODE<br>3. ANODE 2<br>4. CATHODE | <b>STYLE 8:</b><br>CANCELLED                                                  | <b>STYLE 9:</b><br>PIN 1. INPUT<br>2. GROUND<br>3. LOGIC<br>4. GROUND | <b>STYLE 10:</b><br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE<br>4. ANODE |
| <b>STYLE 11:</b><br>PIN 1. MT 1<br>2. MT 2<br>3. GATE<br>4. MT 2             | <b>STYLE 12:</b><br>PIN 1. INPUT<br>2. OUTPUT<br>3. NC<br>4. OUTPUT         | <b>STYLE 13:</b><br>PIN 1. GATE<br>2. COLLECTOR<br>3. EMITTER<br>4. COLLECTOR |                                                                       |                                                                       |

**GENERIC  
MARKING DIAGRAM\***



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

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                         |                         |                                                                                                                                                                                     |
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