

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 ($T_C = 25^\circ\text{C}$ 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 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

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)	$R_{\theta JC}$ $R_{\theta JA}$ $R_{\theta JA}$	11 64 155	$^\circ\text{C}/\text{W}$
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	$^\circ\text{C}$

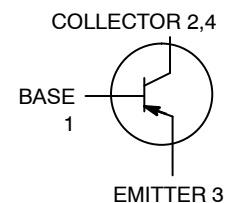
1. Mounted on 1" sq. (645 sq. mm) Collector pad on FR-4 bd material.
2. Mounted on 0.012" sq. (7.6 sq. mm) Collector pad on FR-4 bd material.



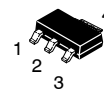
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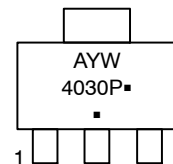
PNP TRANSISTOR
3.0 AMPERES
40 VOLTS, 2.0 WATTS



MARKING DIAGRAM



SOT-223
CASE 318E
STYLE 1



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 (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.

NJT4030P, NJV4030P

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage (I _C = 10 mA _{dc} , I _B = 0 A _{dc})	V _{CEO(sus)}	40	–	–	V _{dc}
Emitter–Base Voltage (I _E = 50 μA _{dc} , I _C = 0 A _{dc})	V _{EBO}	6.0	–	–	V _{dc}
Collector Cutoff Current (V _{CB} = 40 V _{dc})	I _{CBO}	–	–	100	nA _{dc}
Emitter Cutoff Current (V _{BE} = 6.0 V _{dc})	I _{EBO}	–	–	100	nA _{dc}

ON CHARACTERISTICS (Note 3)

Collector–Emitter Saturation Voltage (I _C = 0.5 A _{dc} , I _B = 5.0 mA _{dc}) (I _C = 1.0 A _{dc} , I _B = 10 mA _{dc}) (I _C = 3.0 A _{dc} , I _B = 0.3 A _{dc})	V _{CE(sat)}	–	–	0.150 0.200 0.500	V _{dc}
Base–Emitter Saturation Voltage (I _C = 1.0 A _{dc} , I _B = 0.1 A _{dc})	V _{BE(sat)}	–	–	1.0	V _{dc}
Base–Emitter On Voltage (I _C = 1.0 A _{dc} , V _{CE} = 2.0 V _{dc})	V _{BE(on)}	–	–	1.0	V _{dc}
DC Current Gain (I _C = 0.5 A _{dc} , V _{CE} = 1.0 V _{dc}) (I _C = 1.0 A _{dc} , V _{CE} = 1.0 V _{dc}) (I _C = 3.0 A _{dc} , V _{CE} = 1.0 V _{dc})	h _{FE}	220 200 100	– – –	– 400 –	–

DYNAMIC CHARACTERISTICS

Output Capacitance (V _{CB} = 10 V _{dc} , f = 1.0 MHz)	C _{ob}	–	40	–	pF
Input Capacitance (V _{EB} = 5.0 V _{dc} , f = 1.0 MHz)	C _{ib}	–	130	–	pF
Current–Gain – Bandwidth Product (Note 4) (I _C = 500 mA, V _{CE} = 10 V, F _{test} = 1.0 MHz)	f _T	–	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 ≤ 300 μs, Duty Cycle ≤ 2%.

4. f_T = |h_{FE}| • f_{test}

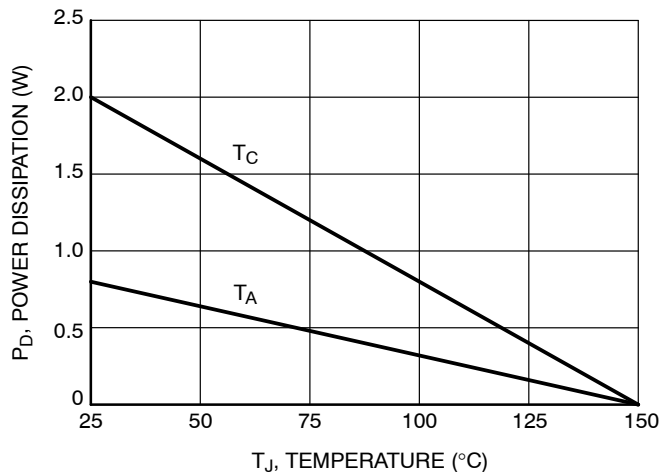


Figure 1. Power Derating

NJT4030P, NJV4030P

TYPICAL CHARACTERISTICS

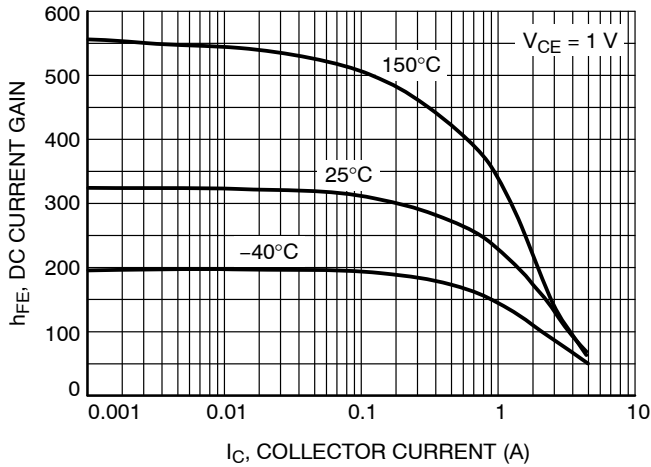


Figure 2. DC Current Gain

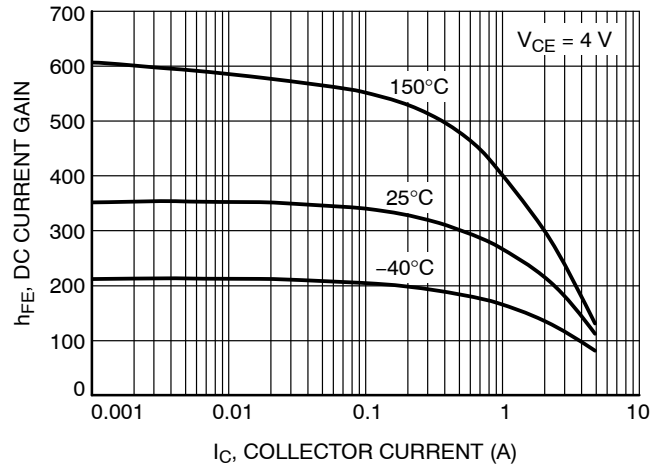


Figure 3. DC Current Gain

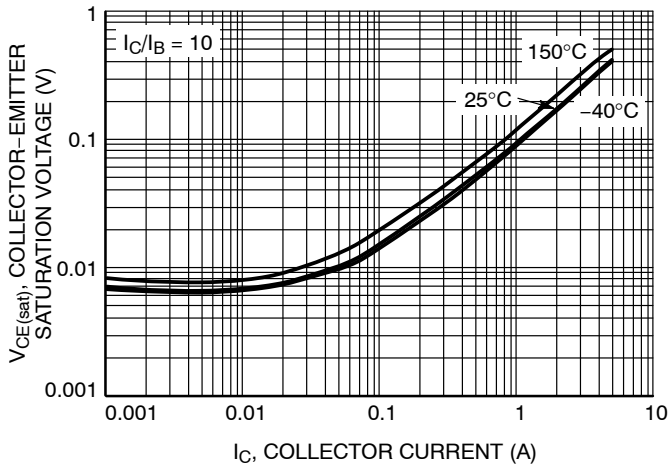


Figure 4. Collector-Emitter Saturation Voltage

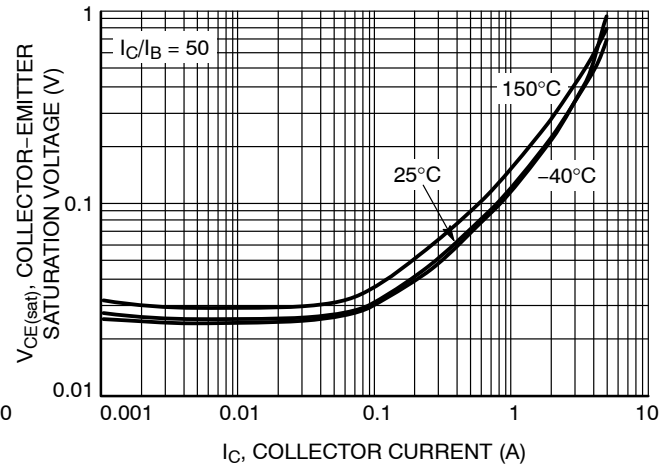


Figure 5. Collector-Emitter Saturation Voltage

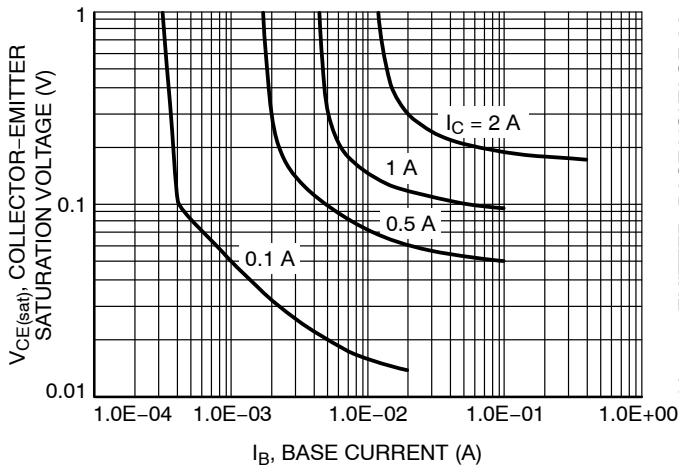


Figure 6. Collector Saturation Region

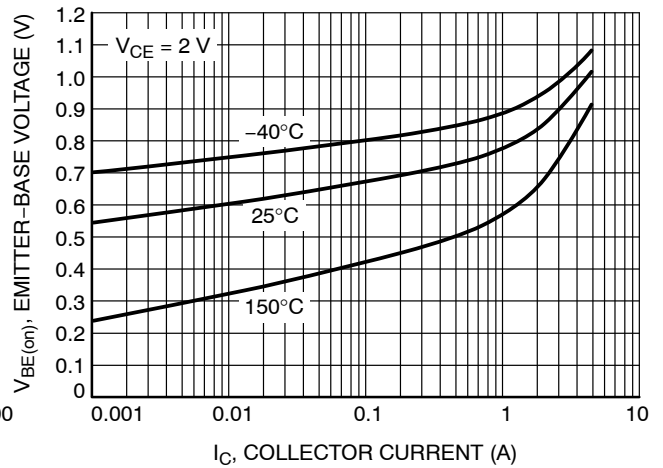


Figure 7. $V_{BE(on)}$ Voltage

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TYPICAL CHARACTERISTICS

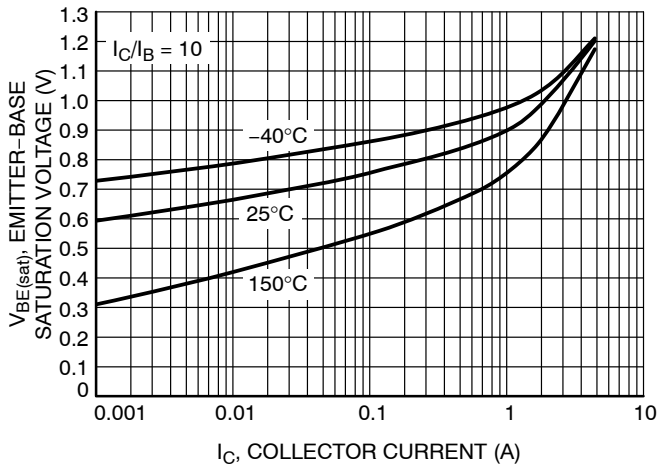


Figure 8. Base-Emitter Saturation Voltage

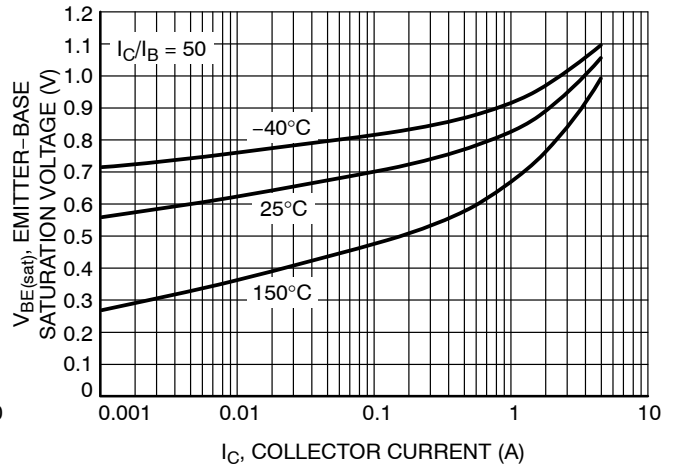


Figure 9. Base-Emitter Saturation Voltage

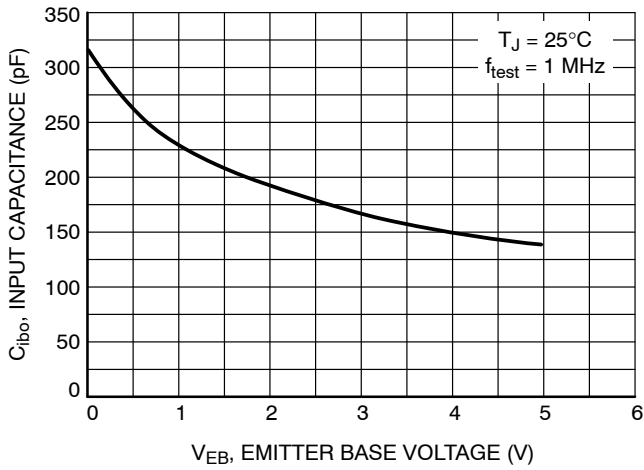


Figure 10. Input Capacitance

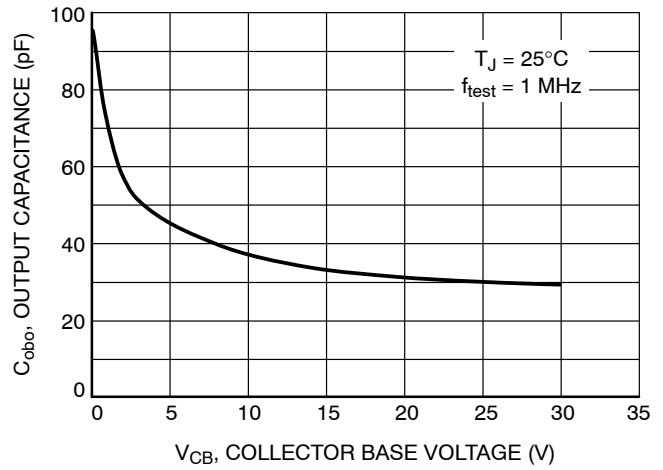


Figure 11. Output Capacitance

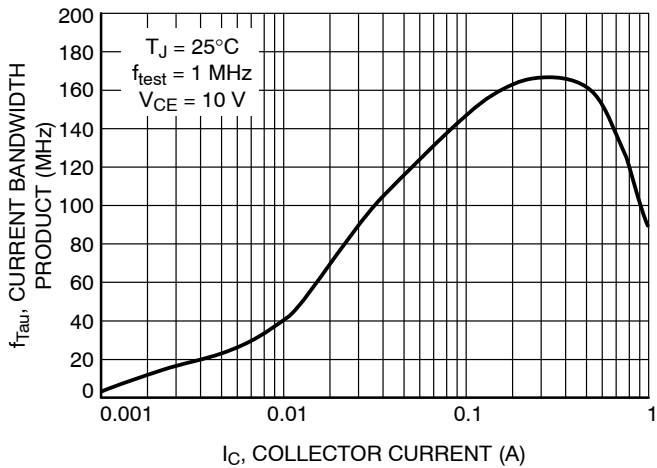


Figure 12. Current-Gain Bandwidth Product

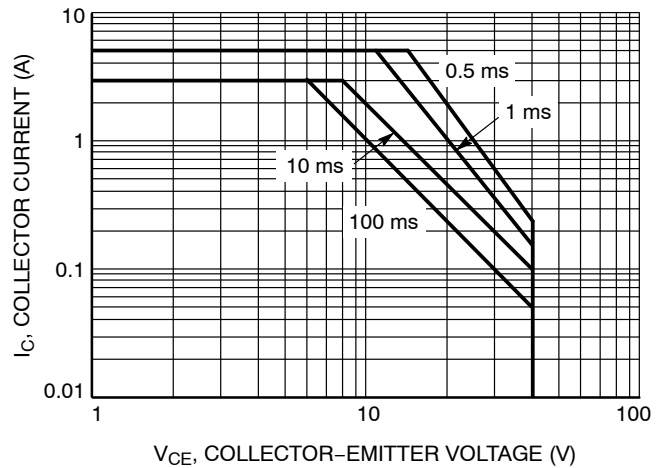


Figure 13. Safe Operating Area

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

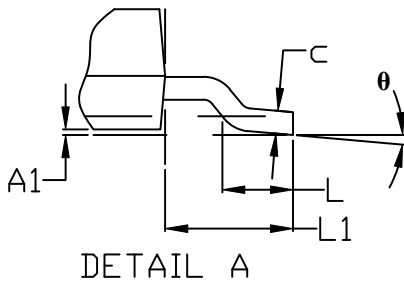
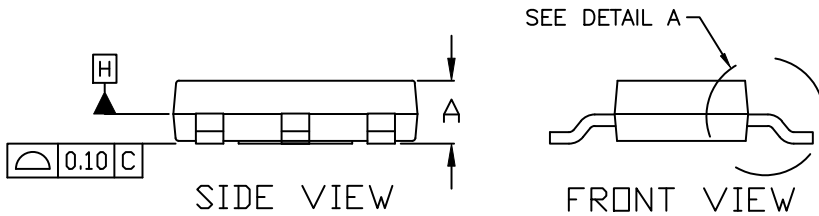
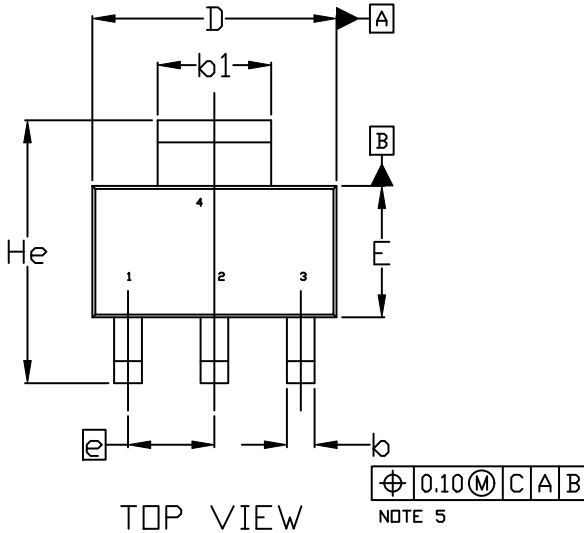
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SCALE 1:1

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

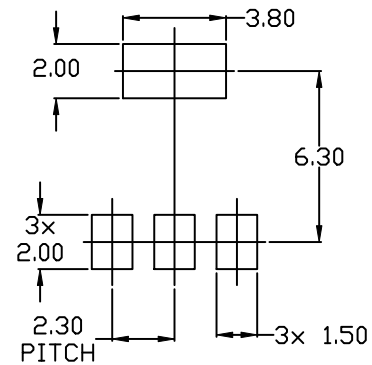
DATE 02 OCT 2018



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
θ	0°	---	10°



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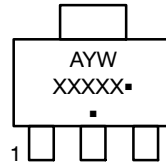
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SOT-223 (TO-261)
CASE 318E-04
ISSUE R

DATE 02 OCT 2018

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