

# NJD2873T4G, NJVNJD2873T4G

## Power Transistors

### NPN Silicon DPAK For Surface Mount Applications

Designed for high-gain audio amplifier applications.

#### Features

- High DC Current Gain –  
 $h_{FE} = 120$  (Min) @  $I_C = 500$  mA  
 $= 40$  (Min) @  $I_C = 2$  A
- Low Collector–Emitter Saturation Voltage –  
 $V_{CE(sat)} = 0.3$  Vdc (Max) @  $I_C = 1$  A
- High Current–Gain – Bandwidth Product –  
 $f_T = 65$  MHz (Min) @  $I_C = 100$  mA
- Epoxy Meets UL 94 V–0 @ 0.125 in
- ESD Ratings:
  - ♦ Human Body Model, 3B > 8000 V
  - ♦ Machine Model, C > 400 V
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC–Q101 Qualified and PPAP Capable
- These are Pb–Free Packages

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Base Voltage	$V_{CB}$	50	Vdc
Collector–Emitter Voltage	$V_{CEO}$	50	Vdc
Emitter–Base Voltage	$V_{EB}$	5	Vdc
Collector Current Continuous Peak	$I_C$	2 3	Adc
Base Current	$I_B$	0.4	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	15 0.1	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_A = 25^\circ\text{C}^*$ Derate above $25^\circ\text{C}$	$P_D$	1.68 0.011	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	–65 to +175	$^\circ\text{C}$

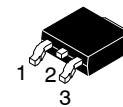
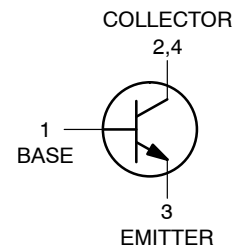
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



ON Semiconductor®

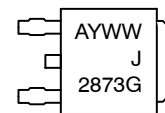
<http://onsemi.com>

**SILICON  
POWER TRANSISTORS  
2 AMPERES  
50 VOLTS  
15 WATTS**



**DPAK  
CASE 369C  
STYLE 1**

#### MARKING DIAGRAM



A = Assembly Location  
 Y = Year  
 WW = Work Week  
 G = Pb–Free Device

#### ORDERING INFORMATION

Device	Package	Shipping†
NJD2873T4G	DPAK (Pb–Free)	2,500 Units / Reel
NJVNJD2873T4G	DPAK (Pb–Free)	2,500 Units / Reel

†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.

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## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction-to-Case Junction-to-Ambient (Note 1)	$R_{\theta JC}$ $R_{\theta JA}$	10 89.3	$^{\circ}\text{C}/\text{W}$

1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

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

Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (Note 2) ( $I_C = 10 \text{ mAdc}$ , $I_B = 0$ )	$V_{CEO(sus)}$	50	-	Vdc
Collector Cutoff Current ( $V_{CB} = 50 \text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	-	100	nAdc
Emitter Cutoff Current ( $V_{BE} = 5 \text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	-	100	nAdc

### ON CHARACTERISTICS

DC Current Gain (Note 2) ( $I_C = 0.5 \text{ A}$ , $V_{CE} = 2 \text{ V}$ ) ( $I_C = 2 \text{ Adc}$ , $V_{CE} = 2 \text{ Vdc}$ ) ( $I_C = 0.75 \text{ Adc}$ , $V_{CE} = 1.6 \text{ Vdc}$ , $-40^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$ )	$h_{FE}$	120 40 80	360 - 360	-
Collector-Emitter Saturation Voltage (Note 2) ( $I_C = 1 \text{ A}$ , $I_B = 0.05 \text{ A}$ )	$V_{CE(sat)}$	-	0.3	Vdc
Base-Emitter Saturation Voltage (Note 2) ( $I_C = 1 \text{ A}$ , $I_B = 0.05 \text{ Adc}$ )	$V_{BE(sat)}$	-	1.2	Vdc
Base-Emitter On Voltage (Note 2) ( $I_C = 1 \text{ Adc}$ , $V_{CE} = 2 \text{ Vdc}$ ) ( $I_C = 0.75 \text{ Adc}$ , $V_{CE} = 1.6 \text{ Vdc}$ , $-40^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$ )	$V_{BE(on)}$	- -	1.2 0.95	Vdc

### DYNAMIC CHARACTERISTICS

Current-Gain - Bandwidth Product (Note 3) ( $I_C = 100 \text{ mAdc}$ , $V_{CE} = 10 \text{ Vdc}$ , $f_{test} = 10 \text{ MHz}$ )	$f_T$	65	-	MHz
Output Capacitance ( $V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $f = 0.1 \text{ MHz}$ )	$C_{ob}$	-	80	pF

- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\approx 2\%$ .
- $f_T = |h_{fe}| \cdot f_{test}$ .

TYPICAL CHARACTERISTICS

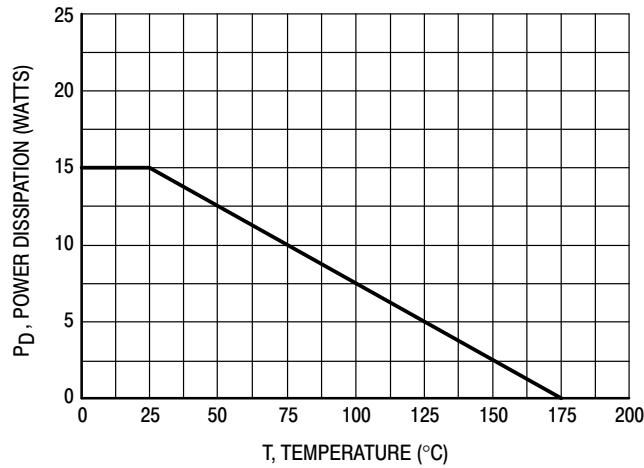


Figure 1. Power Derating

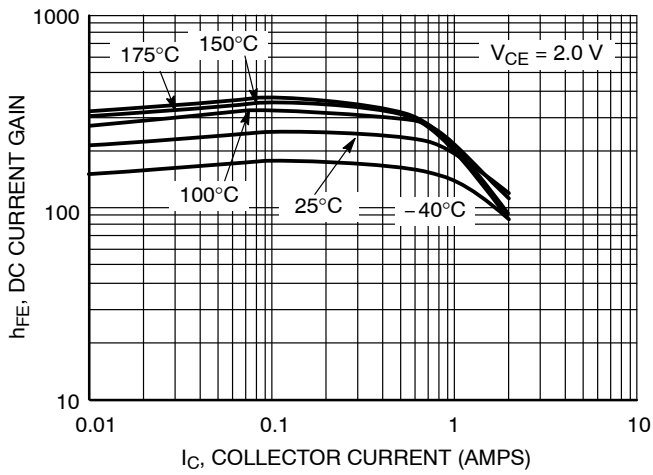


Figure 2. DC Current Gain

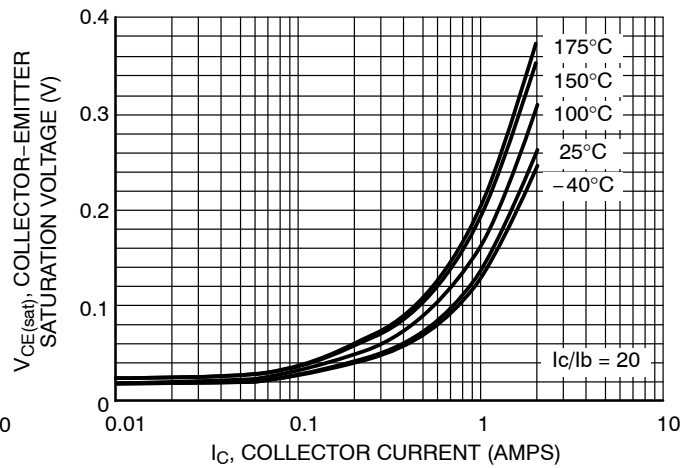


Figure 3. Collector-Emitter Saturation Voltage

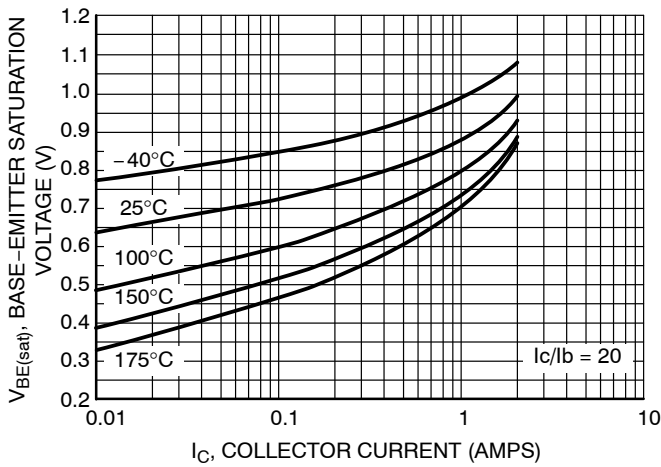


Figure 4. Base-Emitter Saturation Voltage

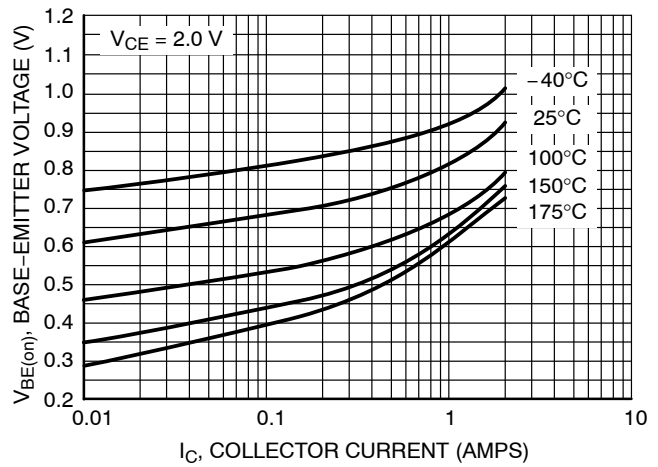


Figure 5. Base-Emitter Voltage

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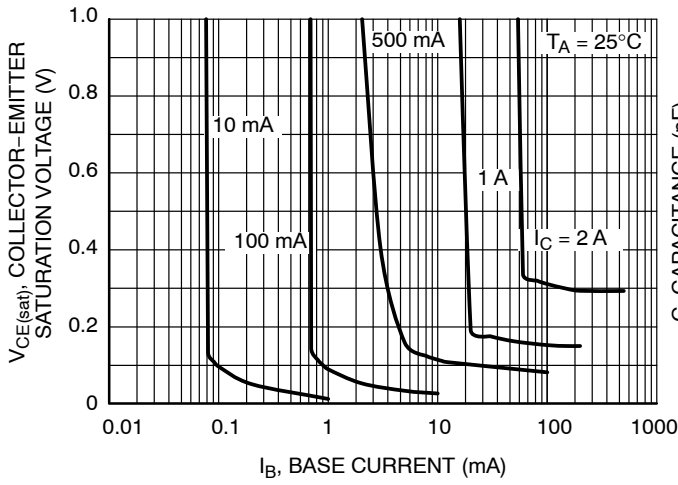


Figure 6. Saturation Region

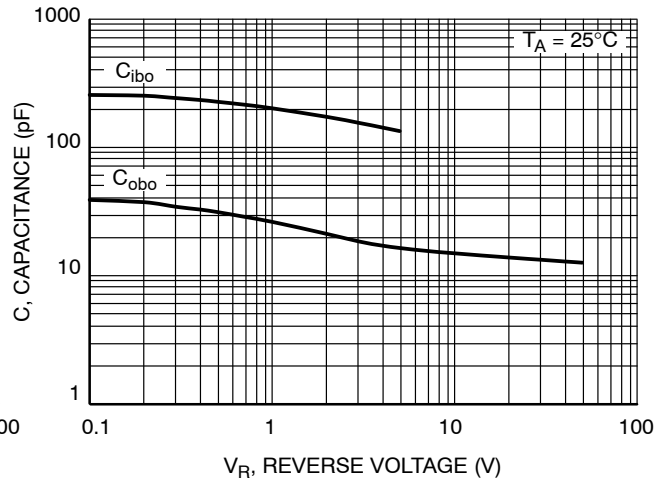


Figure 7. Capacitance

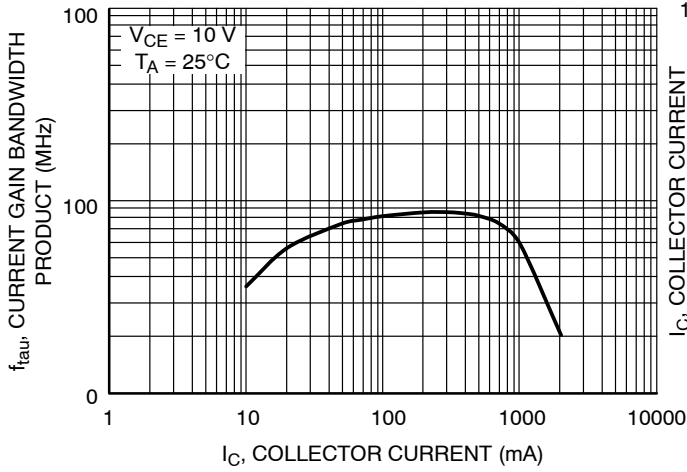


Figure 8. Saturation Region

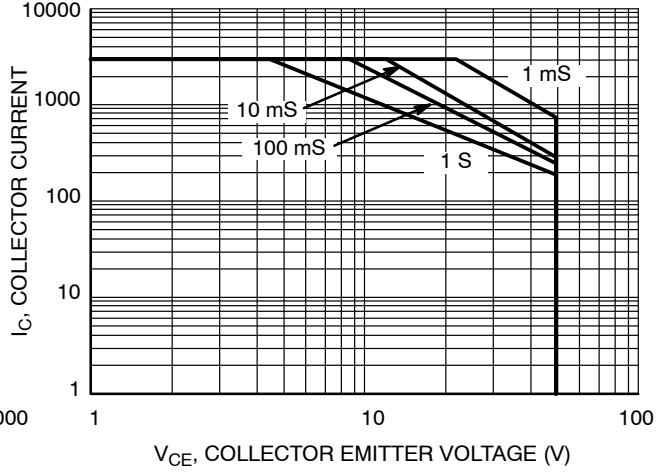


Figure 9. Capacitance

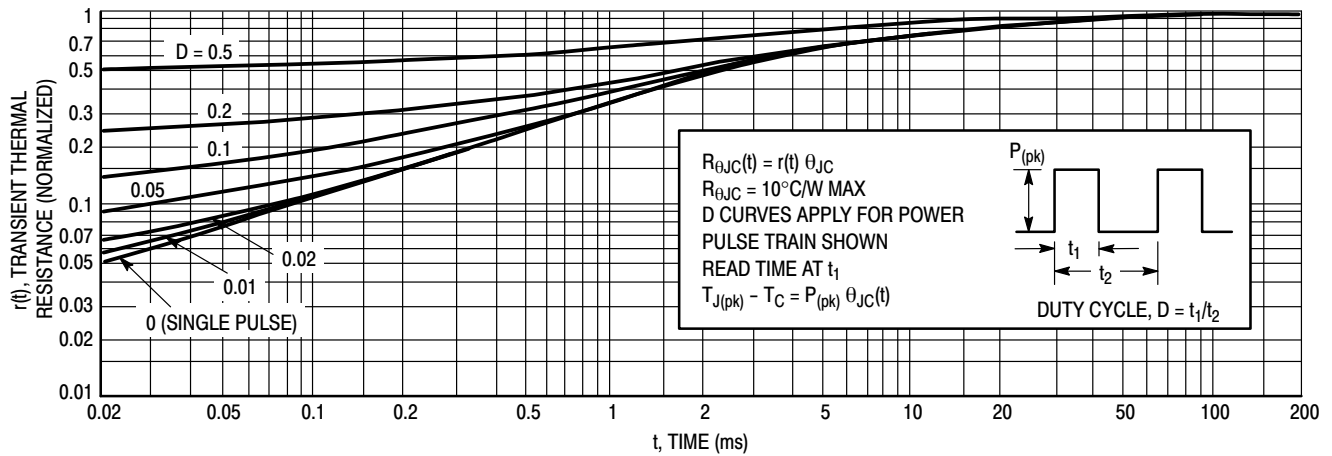
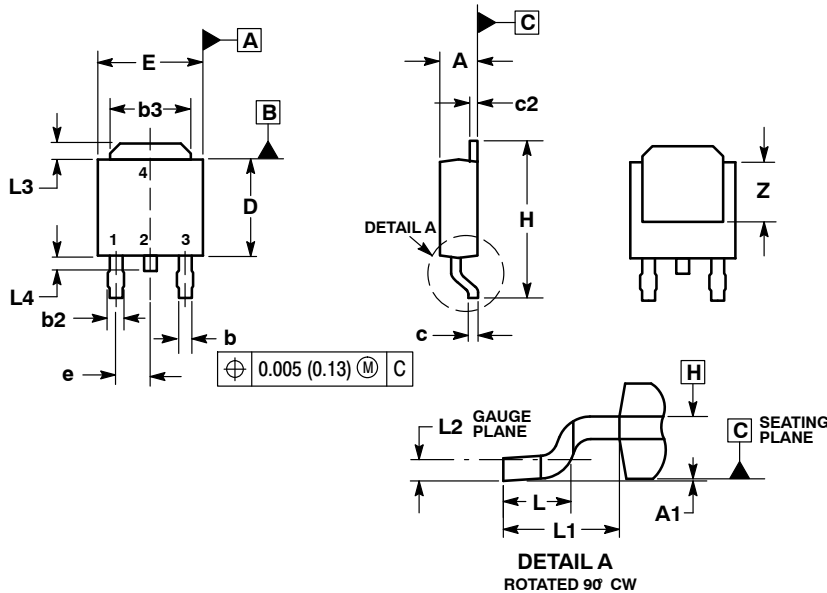


Figure 10. Thermal Response

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## PACKAGE DIMENSIONS

### DPAK CASE 369C ISSUE D

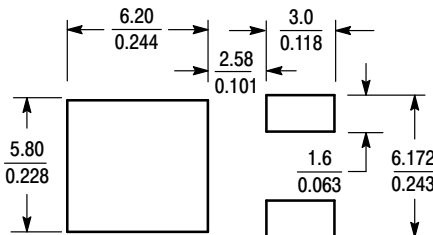


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---	0.040	---	1.01
Z	0.155	---	3.93	---

### SOLDERING FOOTPRINT\*



SCALE 3:1  $\left(\frac{\text{mm}}{\text{inches}}\right)$

**STYLE 1:**

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

\*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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