

# NJD2873T4G, NJVNJD2873T4G

## Power Transistors

### NPN Silicon DPAK For Surface Mount Applications

Designed for high-gain audio amplifier applications.

#### Features

- High DC Current Gain
- Low Collector-Emitter Saturation Voltage
- High Current-Gain – Bandwidth Product
- 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 and are RoHS Compliant

#### 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	$I_C$	2	Adc
Collector Current – Peak	$I_{CM}$	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	$^\circ\text{C}$
ESD – Human Body Model	HBM	3B	V
ESD – Machine Model	MM	C	V

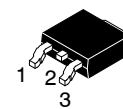
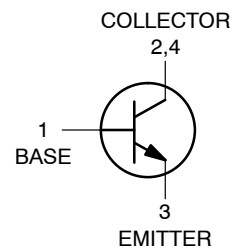
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



ON Semiconductor®

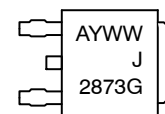
<http://onsemi.com>

**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.

# NJD2873T4G, NJVNJD2873T4G

## 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
----------------	--------	-----	-----	------

### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (Note 2) ( $I_C = 10 \text{ mAdc}$ , $I_B = 0$ )	$V_{CE(sus)}$	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 -	-
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

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

# NJD2873T4G, NJVNJD2873T4G

## TYPICAL CHARACTERISTICS

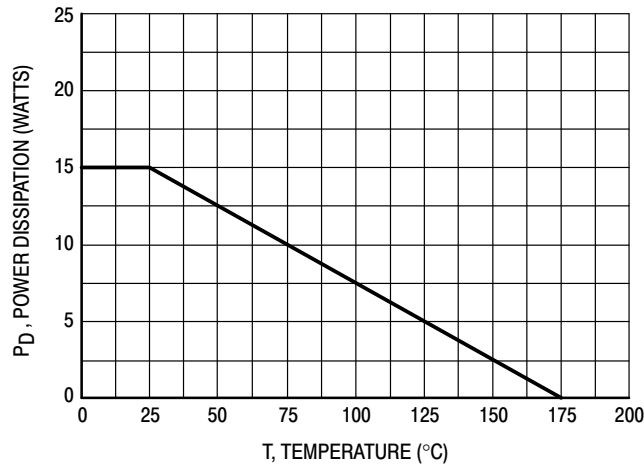


Figure 1. Power Derating

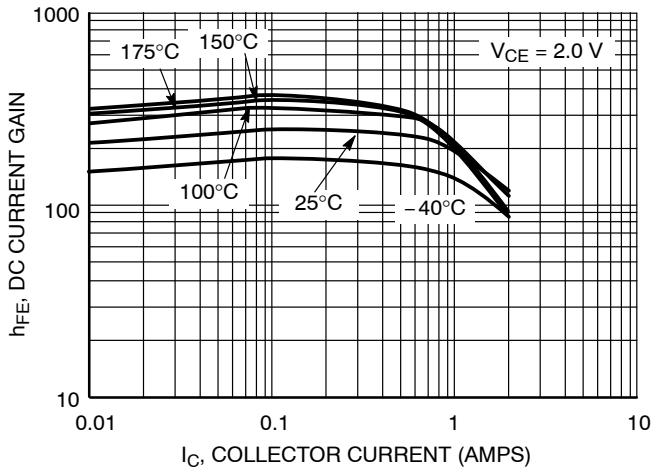


Figure 2. DC Current Gain

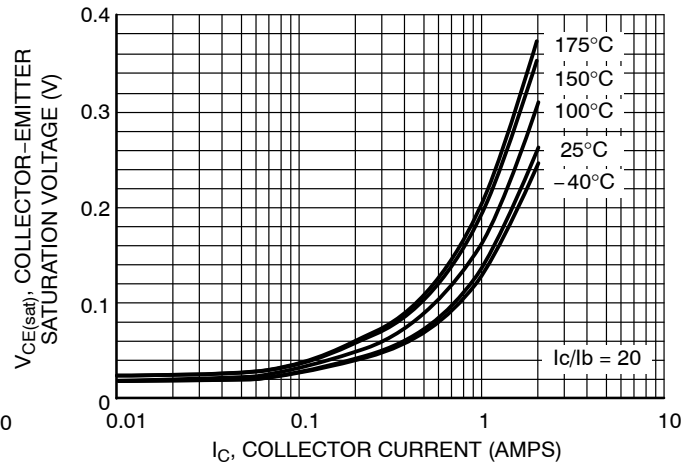


Figure 3. Collector-Emitter Saturation Voltage

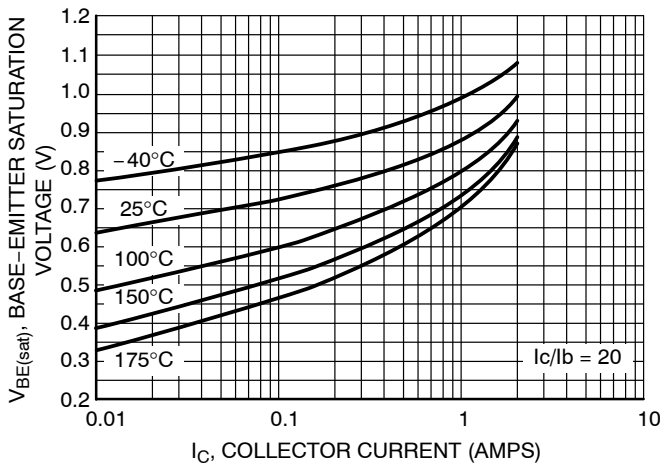


Figure 4. Base-Emitter Saturation Voltage

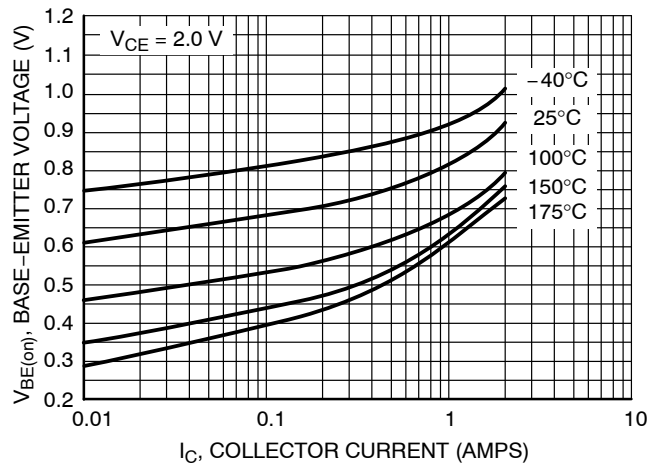


Figure 5. Base-Emitter Voltage

# NJD2873T4G, NJVNJD2873T4G

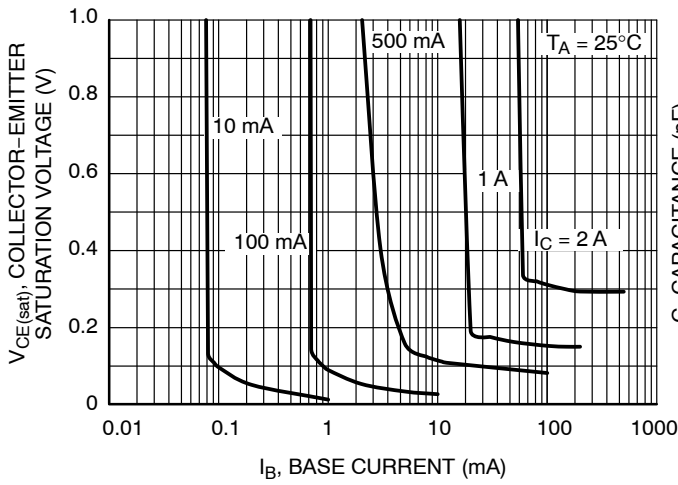


Figure 6. Saturation Region

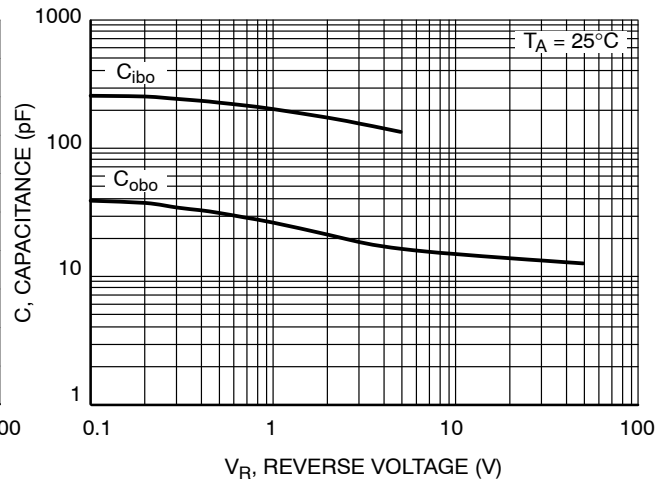


Figure 7. Capacitance

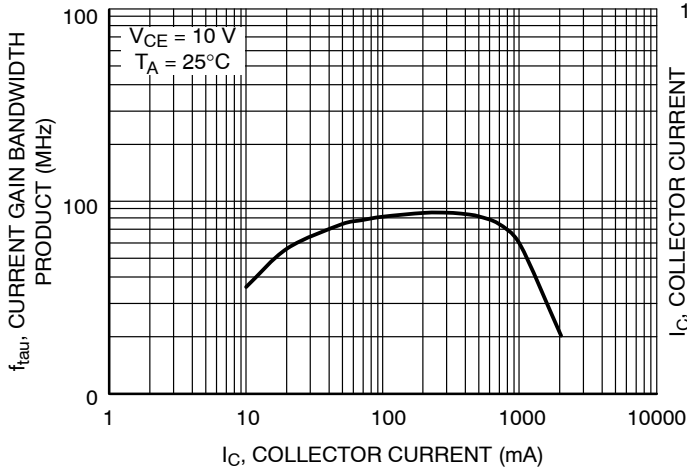


Figure 8. Saturation Region

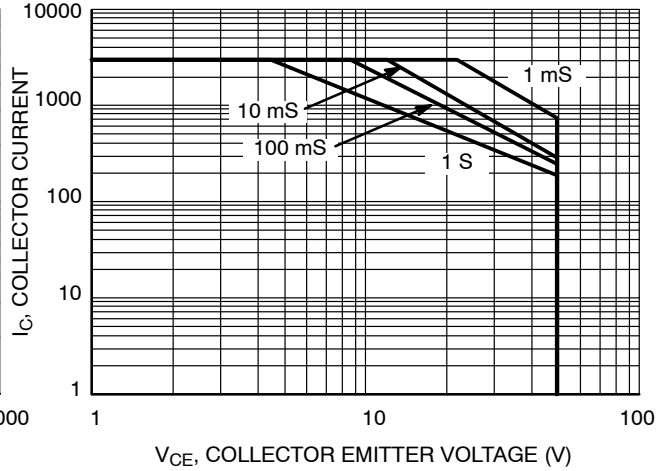


Figure 9. Capacitance

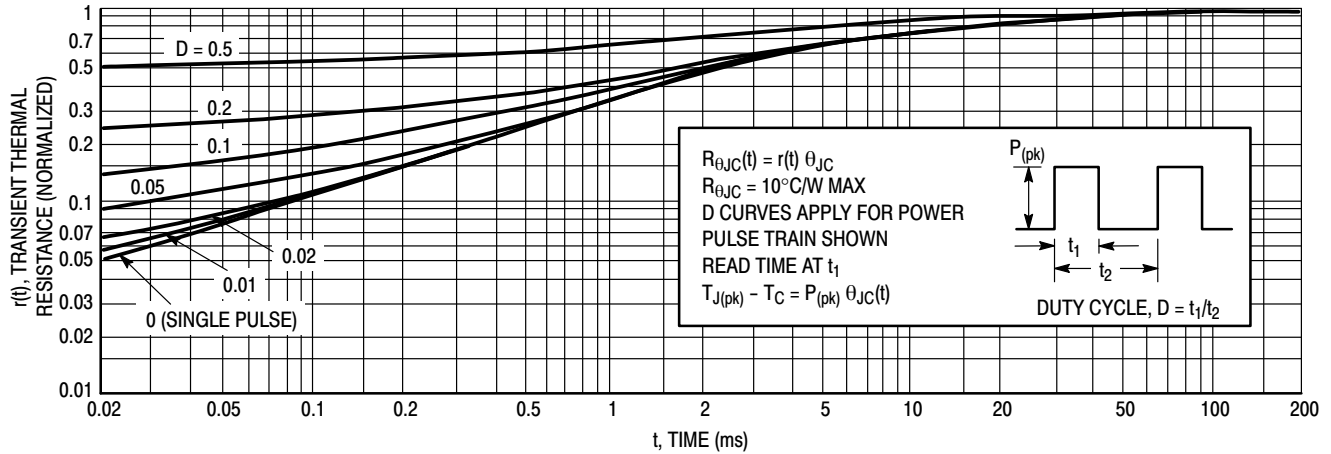
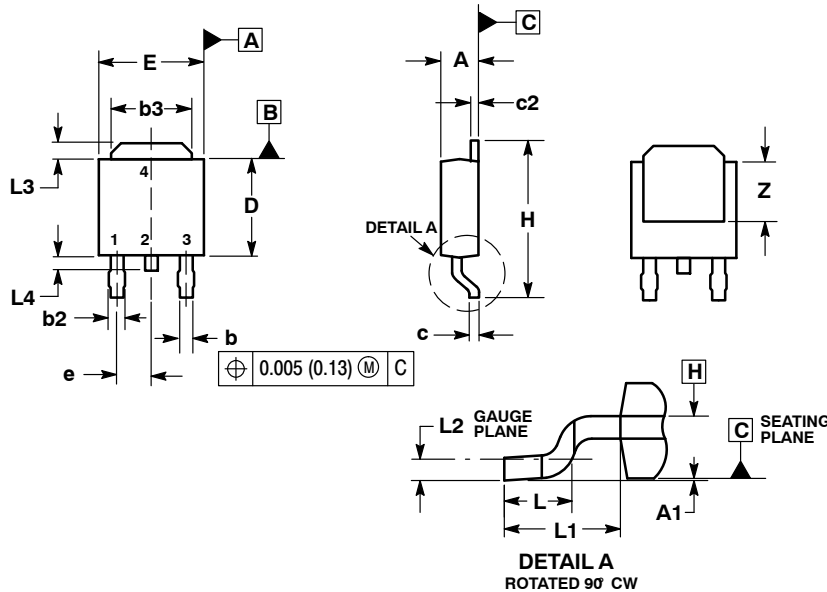


Figure 10. Thermal Response

# NJD2873T4G, NJVNJD2873T4G

## PACKAGE DIMENSIONS

### DKPAK CASE 369C ISSUE D

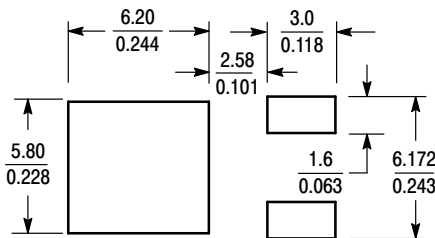


**NOTES:**

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:**

- PIN 1. BASE
- COLLECTOR
- EMITTER
- 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.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marketing.pdf](http://www.onsemi.com/site/pdf/Patent-Marketing.pdf). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**LITERATURE FULFILLMENT:**

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative