

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°C	P_D	15 0.1	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_A = 25^\circ\text{C}^*$ Derate above 25°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	$^\circ\text{C}$

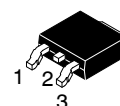
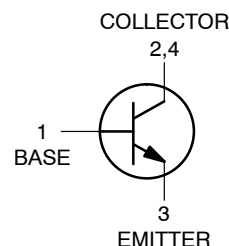
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



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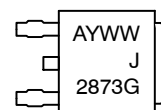
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**SILICON
POWER TRANSISTORS
2 AMPERES
50 VOLTS
15 WATTS**



**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	$^{\circ}\text{C/W}$

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) ($I_C = 10 \text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	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 – 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 μs , Duty Cycle $\approx 2\%$.

3. $f_T = |h_{fe}| \cdot f_{test}$.

TYPICAL CHARACTERISTICS

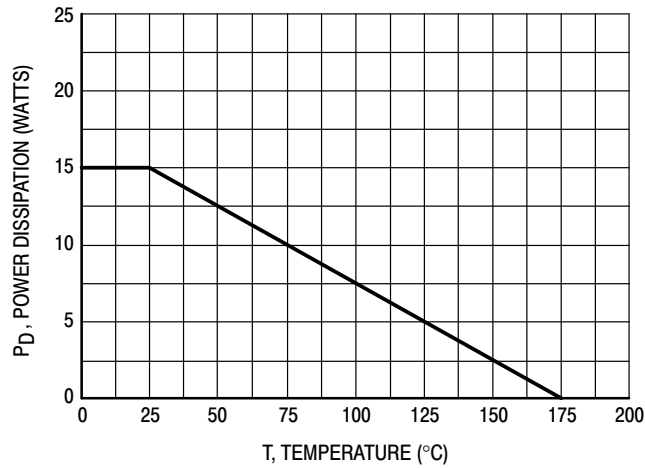


Figure 1. Power Derating

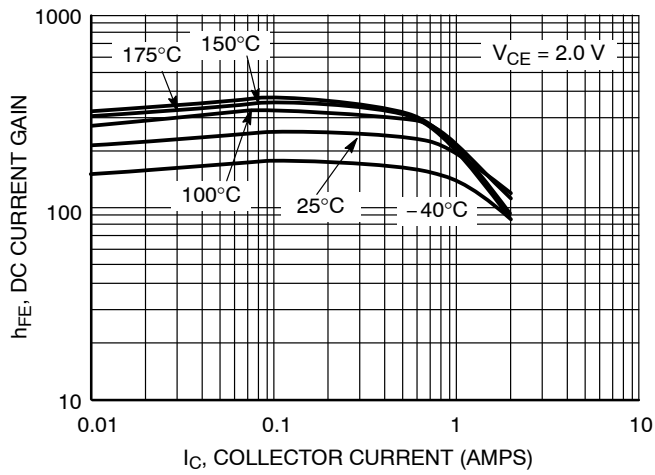


Figure 2. DC Current Gain

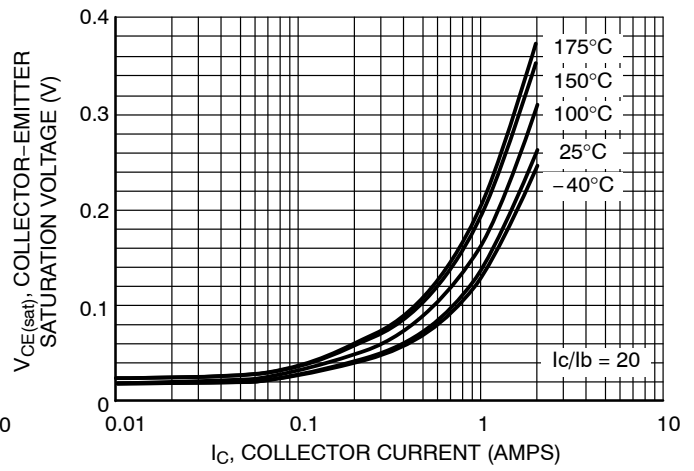


Figure 3. Collector-Emitter Saturation Voltage

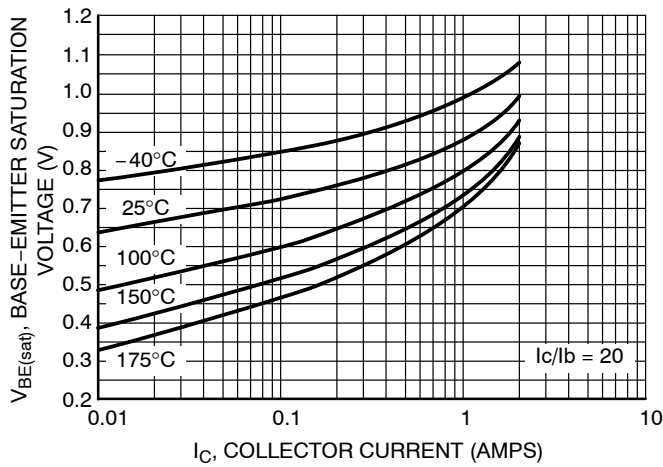


Figure 4. Base-Emitter Saturation Voltage

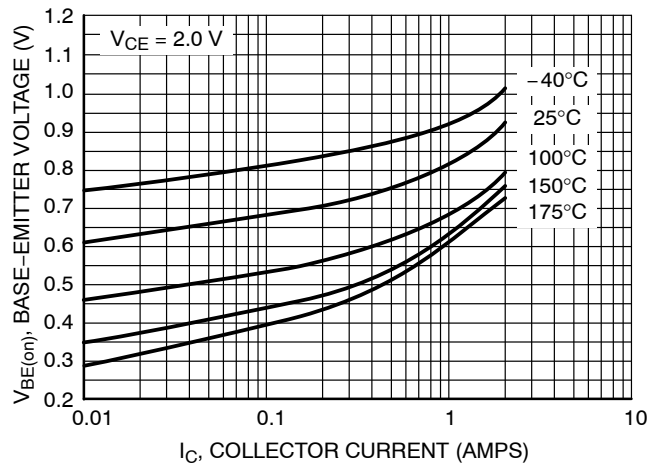


Figure 5. Base-Emitter Voltage

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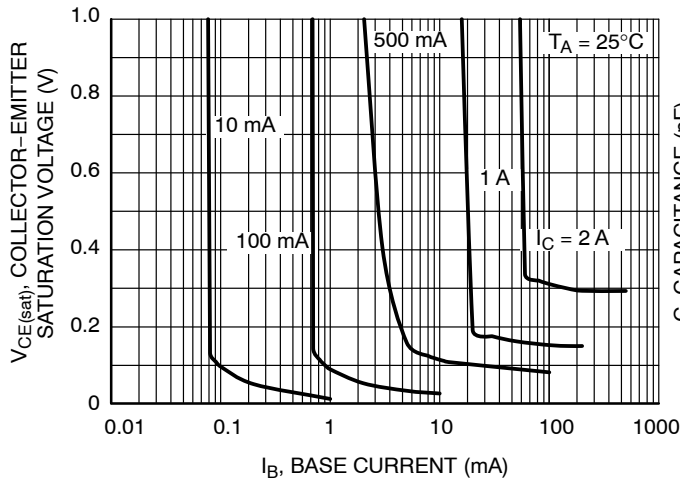


Figure 6. Saturation Region

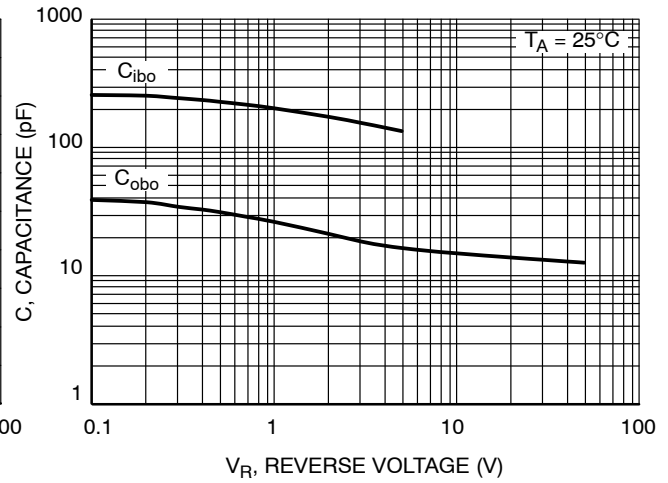


Figure 7. Capacitance

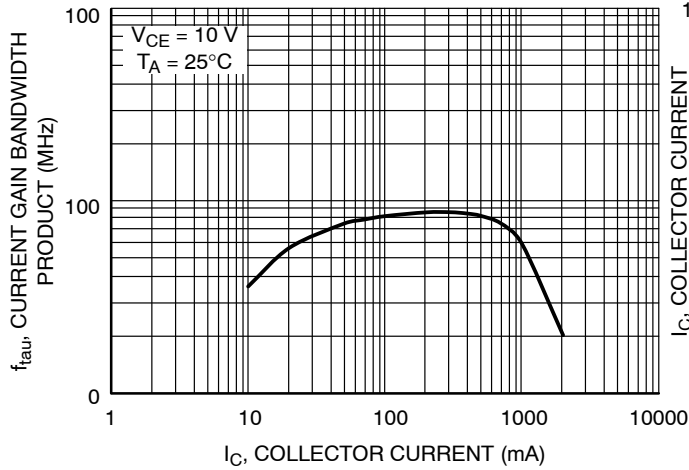


Figure 8. Saturation Region

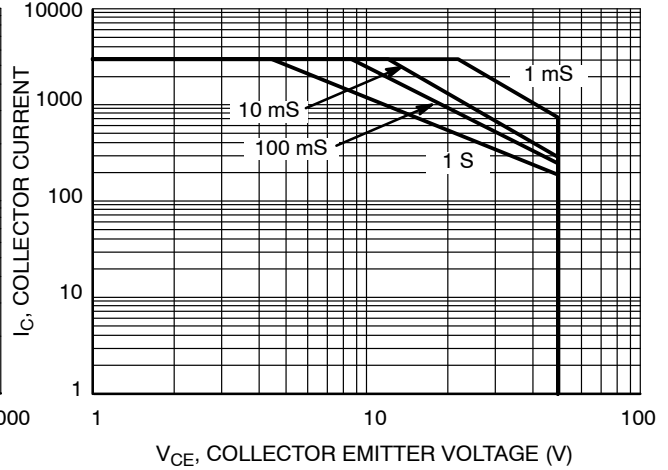


Figure 9. Capacitance

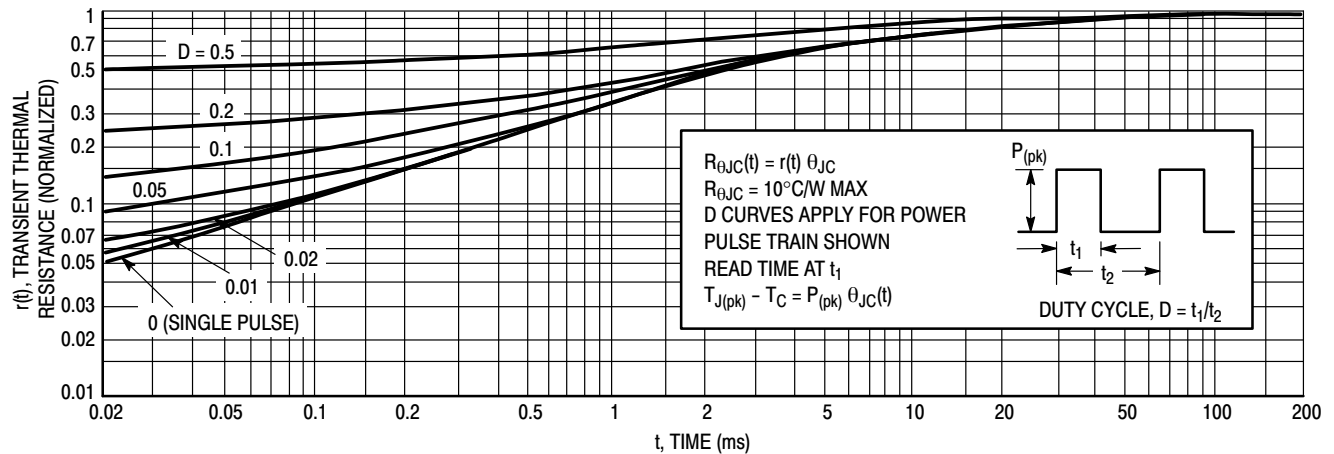
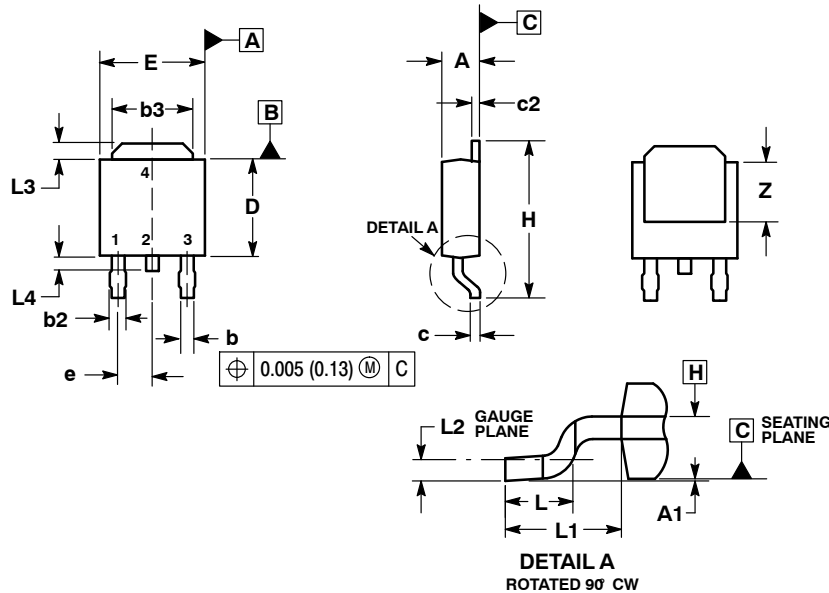


Figure 10. Thermal Response

NJD2873T4G, NJVNJD2873T4G

PACKAGE DIMENSIONS

DPAK CASE 369C ISSUE D

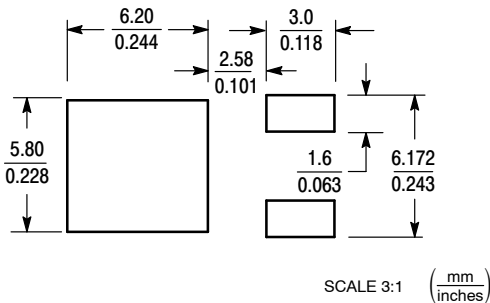


NOTES:

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*



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.

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