

# NJD2873T4

## Plastic Power Transistors

### NPN Silicon DPAK For Surface Mount Applications

Designed for high-gain audio amplifier applications.

#### Features

- Pb-Free Package is Available
- 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

#### 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	$I_C$	2 3	Adc
Base Current	$I_B$	0.4	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	12.5 0.1	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_A = 25^\circ\text{C}^*$ Derate above $25^\circ\text{C}$	$P_D$	1.4 0.011	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction–to–Case Junction–to–Ambient*	$R_{\theta JC}$ $R_{\theta JA}$	10 89.3	$^\circ\text{C}/\text{W}$

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

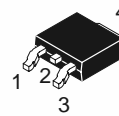


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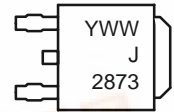
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**SILICON  
POWER TRANSISTORS  
2 AMPERES  
50 VOLTS  
12.5 WATTS**

#### MARKING DIAGRAM



DPAK  
CASE 369C  
STYLE 1



Y = Year  
WW = Work Week

#### ORDERING INFORMATION

Device	Package	Shipping†
NJD2873T4	DPAK	2500 Units / Reel
NJD2873T4G	DPAK (Pb-Free)	2500 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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## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage (Note 1) (I <sub>C</sub> = 10 mAdc, I <sub>B</sub> = 0)	V <sub>CEO(sus)</sub>	50	–	Vdc
Collector Cutoff Current (V <sub>CB</sub> = 50 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	–	100	nAdc
Emitter Cutoff Current (V <sub>BE</sub> = 5 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	–	100	nAdc

### ON CHARACTERISTICS

DC Current Gain (Note 1) (I <sub>C</sub> = 0.5 A, V <sub>CE</sub> = 2 V) (I <sub>C</sub> = 2 Adc, V <sub>CE</sub> = 2 Vdc)	h <sub>FE</sub>	120 40	360 –	–
Collector–Emitter Saturation Voltage (Note 1) (I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.05 A)	V <sub>CE(sat)</sub>	–	0.3	Vdc
Base–Emitter Saturation Voltage (Note 1) (I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.05 Adc)	V <sub>BE(sat)</sub>	–	1.2	Vdc
Base–Emitter On Voltage (Note 1) (I <sub>C</sub> = 1 Adc, V <sub>CE</sub> = 2 Vdc)	V <sub>BE(on)</sub>	–	1.2	Vdc

### DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product (Note 2) (I <sub>C</sub> = 100 mAdc, V <sub>CE</sub> = 10 Vdc, f <sub>test</sub> = 10 MHz)	f <sub>T</sub>	65	–	MHz
Output Capacitance (V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 0.1 MHz)	C <sub>ob</sub>	–	80	pF

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≈ 2%.
2. f<sub>T</sub> = |h<sub>fe</sub>| • f<sub>test</sub>.

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## TYPICAL CHARACTERISTICS

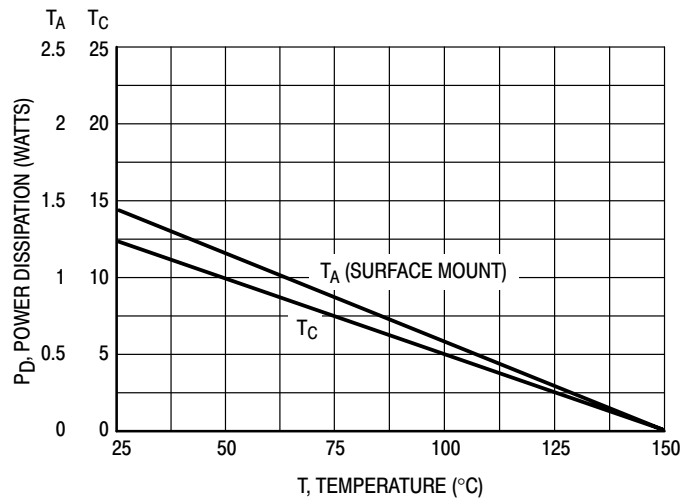


Figure 1. Power Derating

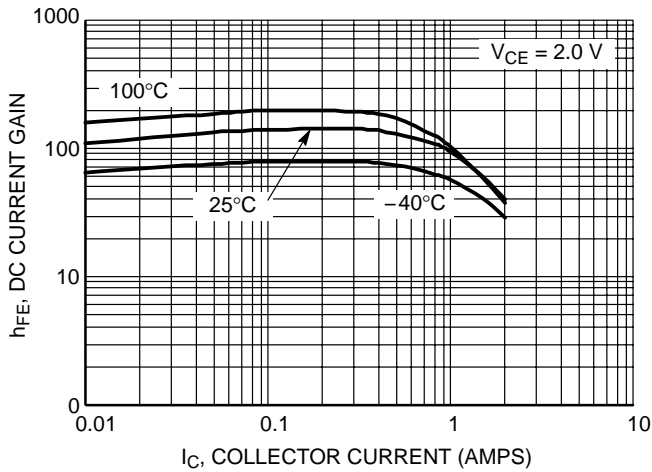


Figure 2. DC Current Gain

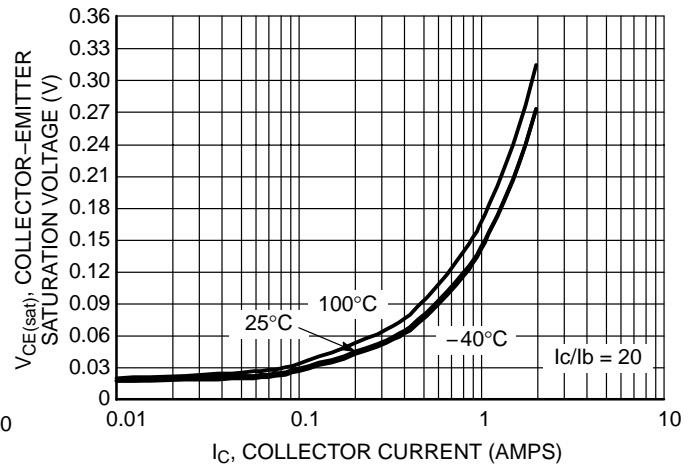


Figure 3. Collector-Emitter Saturation Voltage

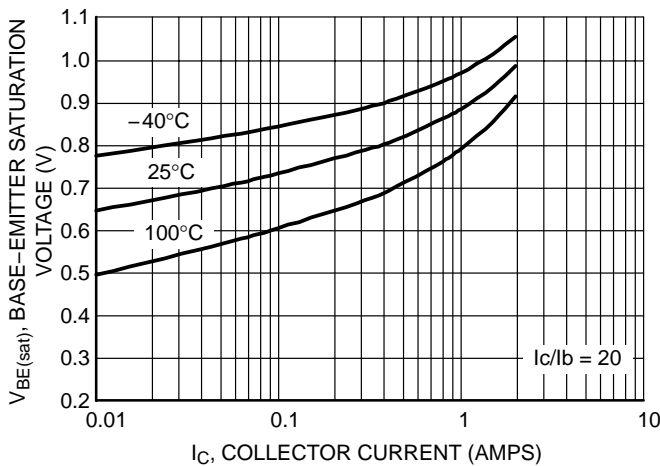


Figure 4. Base-Emitter Saturation Voltage

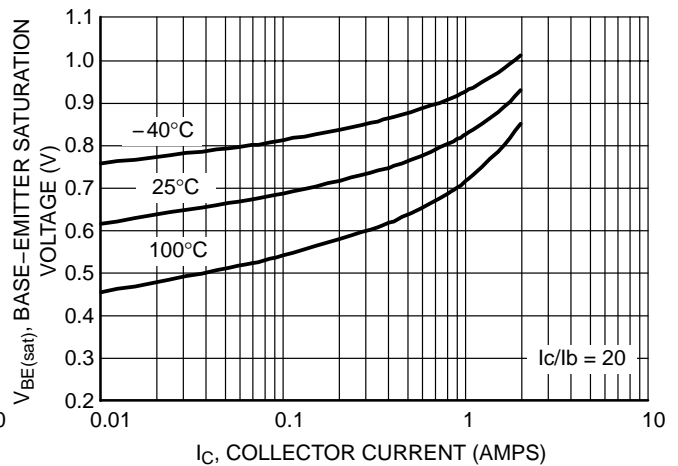


Figure 5. Base-Emitter Saturation Voltage

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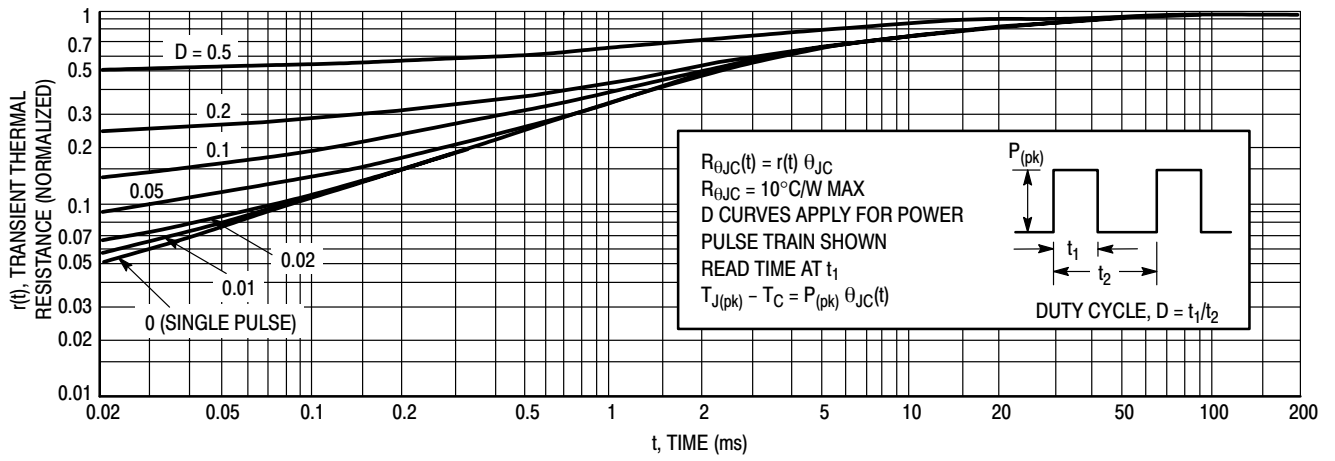
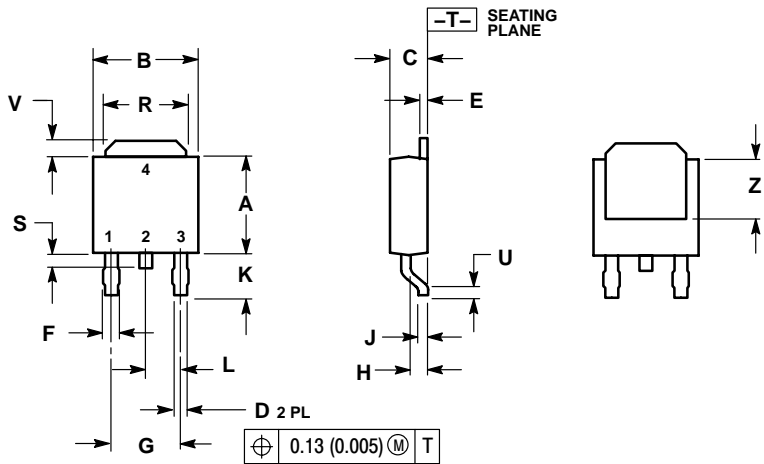


Figure 6. Thermal Response

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## PACKAGE DIMENSIONS

**DPAK**  
CASE 369C-01  
ISSUE O

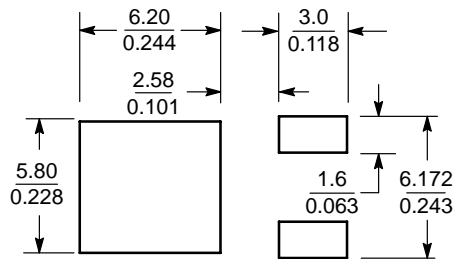


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.245	5.97	6.22
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
S	0.025	0.040	0.63	1.01
U	0.020	---	0.51	---
V	0.035	0.050	0.89	1.27
Z	0.155	---	3.93	---

- STYLE 1:  
PIN 1: BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR


## SOLDERING FOOTPRINT\*



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

\*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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