# 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 Continuous<br>Peak | $I_C$ | 2<br>3 | Adc |
| Base Current | $I_B$ | 0.4 | Adc |
| Total Device Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | 15<br>0.1 | W<br>W/°C |
| Total Device Dissipation @ $T_A$ = 25°C*<br>Derate above 25°C | $P_D$ | 1.68<br>0.011 | W<br>W/°C |
| Operating and Storage Junction Temperature Range | $T_J$, $T_{stg}$ | −65 to +175 | °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.

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance Junction−to−Case<br>Junction−to−Ambient* | $R_{\theta JC}$<br>$R_{\theta JA}$ | 10<br>89.3 | °C/W |

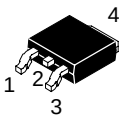
*These ratings are applicable when surface mounted on the minimum pad sizes recommended.

**ON Semiconductor®**

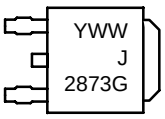
**http://onsemi.com**

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

**MARKING DIAGRAM**




**DPAK**
**CASE 369C**
**STYLE 1**




Y = Year
WW = Work Week
G = Pb−Free Device

**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| NJD2873 | DPAK | 75 Units / Rail |
| NJD2873G | DPAK<br>(Pb−Free) | 75 Units / Rail |
| NJD2873RL | DPAK | 1800 Units / Reel |
| NJD2873RLG | DPAK<br>(Pb−Free) | 1800 Units / Reel |
| NJD2873T4 | DPAK | 2500 Units / Reel |
| NJD2873T4G | DPAK<br>(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.

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

| Characteristic | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | |
| Collector−Emitter Sustaining Voltage (Note 1)<br>($I_C$ = 10 mAdc, $I_B$ = 0) | $V_{CEO(sus)}$ | 50 | − | Vdc |
| Collector Cutoff Current<br>($V_{CB}$ = 50 Vdc, $I_E$ = 0) | $I_{CBO}$ | − | 100 | nAdc |
| Emitter Cutoff Current ($V_{BE}$ = 5 Vdc, $I_C$ = 0) | $I_{EBO}$ | − | 100 | nAdc |
| **ON CHARACTERISTICS** | | | | |
| DC Current Gain (Note 1)<br>($I_C$ = 0.5 A, $V_{CE}$ = 2 V)<br>($I_C$ = 2 Adc, $V_{CE}$ = 2 Vdc)<br>($I_C$ = 0.75 Adc, $V_{CE}$ = 1.6 Vdc, −40°C ≤ $T_J$ ≤ 150°C) | $h_{FE}$ | <br>120<br>40<br>80 | <br>360<br>−<br>360 | − |
| Collector−Emitter Saturation Voltage (Note 1)<br>($I_C$ = 1 A, $I_B$ = 0.05 A) | $V_{CE(sat)}$ | − | 0.3 | Vdc |
| Base−Emitter Saturation Voltage (Note 1) ($I_C$ = 1 A, $I_B$ = 0.05 Adc) | $V_{BE(sat)}$ | − | 1.2 | Vdc |
| Base−Emitter On Voltage (Note 1)<br>($I_C$ = 1 Adc, $V_{CE}$ = 2 Vdc)<br>($I_C$ = 0.75 Adc, $V_{CE}$ = 1.6 Vdc, −40°C ≤ $T_J$ ≤ 150°C) | $V_{BE(on)}$ | <br>−<br>− | <br>1.2<br>0.95 | Vdc |
| **DYNAMIC CHARACTERISTICS** | | | | |
| Current−Gain − Bandwidth Product (Note 2)<br>($I_C$ = 100 mAdc, $V_{CE}$ = 10 Vdc, $f_{test}$ = 10 MHz) | $f_T$ | 65 | − | MHz |
| Output Capacitance<br>($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 0.1 MHz) | $C_{ob}$ | − | 80 | pF |

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≈ 2%.
2. $f_T = |h_{fe}| \bullet f_{test}$.

## TYPICAL CHARACTERISTICS

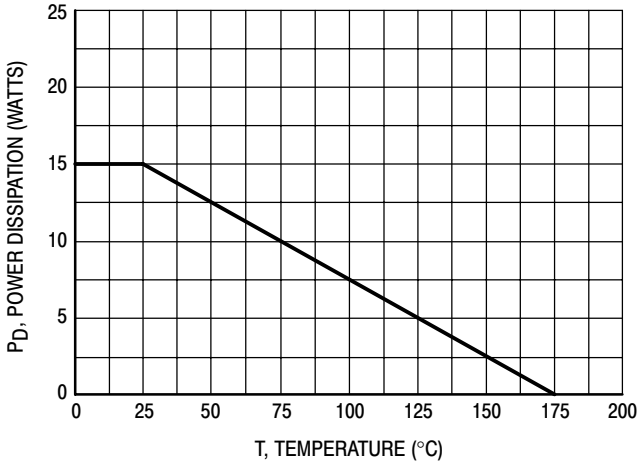



**Figure 1. Power Derating**

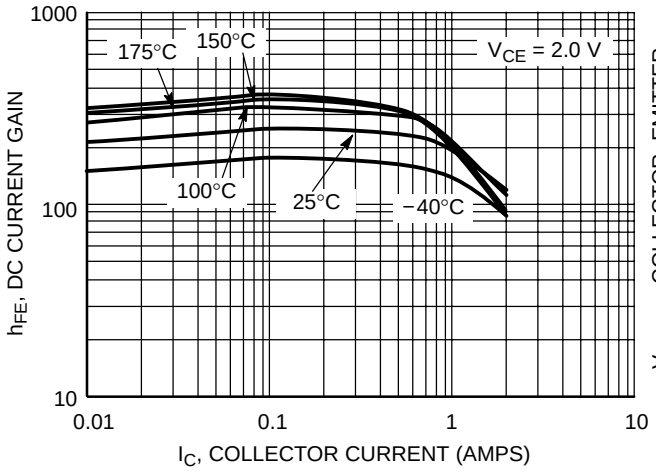



**Figure 2. DC Current Gain**

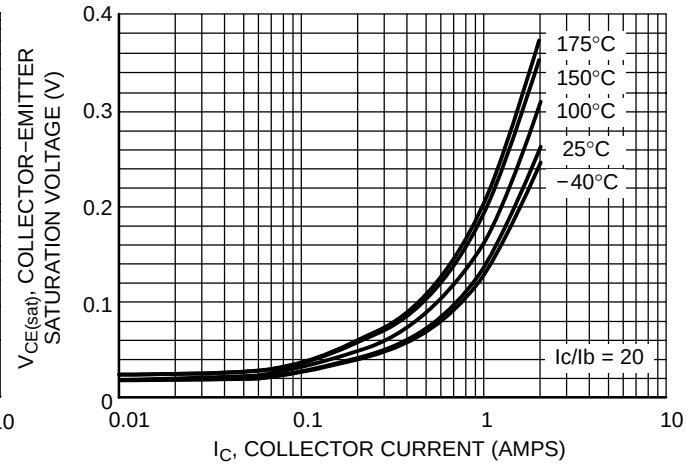



**Figure 3. Collector−Emitter Saturation Voltage**

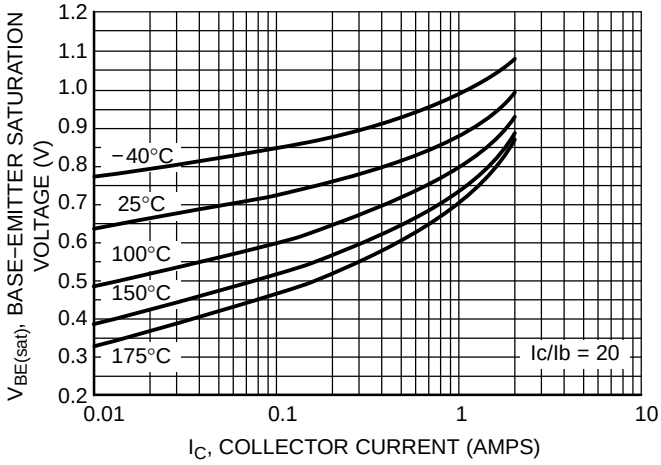



**Figure 4. Base−Emitter Saturation Voltage**

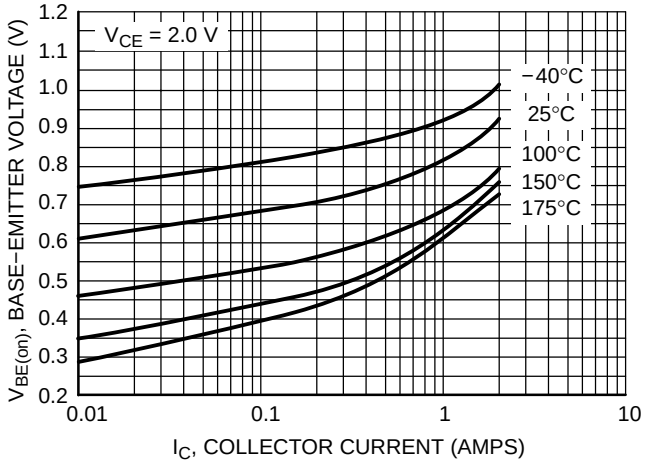



**Figure 5. Base−Emitter Voltage**

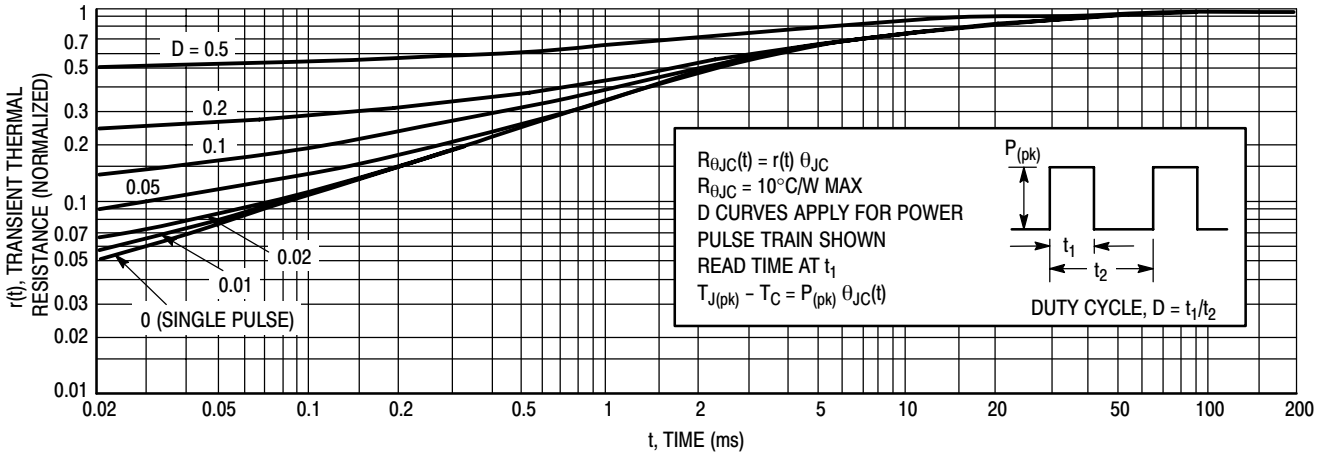
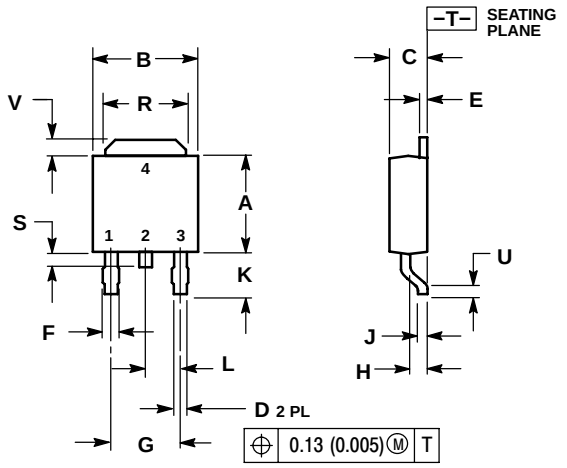



**Figure 6. Thermal Response**

# NJD2873T4

## PACKAGE DIMENSIONS

**DPAK**
CASE 369C−01
ISSUE O

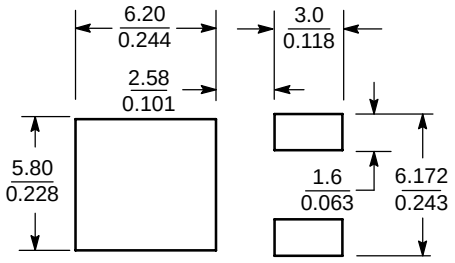



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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.



**PUBLICATION ORDERING INFORMATION**

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