

CJD13003

SURFACE MOUNT SILICON  
NPN POWER TRANSISTOR

DPAK  
POWER!



DPAK CASE



www.centrasemi.com

#### DESCRIPTION:

The CENTRAL SEMICONDUCTOR CJD13003 is a silicon NPN power transistor manufactured in a surface mount package and designed for high voltage, high speed power switching inductive applications.

#### MARKING: FULL PART NUMBER

#### MAXIMUM RATINGS: ( $T_C=25^\circ\text{C}$ unless otherwise noted)

|                                              | SYMBOL         |             | UNITS              |
|----------------------------------------------|----------------|-------------|--------------------|
| Collector-Emitter Voltage                    | $V_{CEV}$      | 700         | V                  |
| Collector-Emitter Voltage                    | $V_{CEO}$      | 400         | V                  |
| Emitter-Base Voltage                         | $V_{EBO}$      | 9.0         | V                  |
| Continuous Collector Current                 | $I_C$          | 1.5         | A                  |
| Peak Collector Current                       | $I_{CM}$       | 3.0         | A                  |
| Continuous Base Current                      | $I_B$          | 750         | mA                 |
| Peak Base Current                            | $I_{BM}$       | 1.5         | A                  |
| Continuous Emitter Current                   | $I_E$          | 2.25        | A                  |
| Peak Emitter Current                         | $I_{EM}$       | 4.5         | A                  |
| Power Dissipation                            | $P_D$          | 15          | W                  |
| Power Dissipation ( $T_A=25^\circ\text{C}$ ) | $P_D$          | 1.56        | W                  |
| Operating and Storage Junction Temperature   | $T_J, T_{stg}$ | -65 to +150 | $^\circ\text{C}$   |
| Thermal Resistance                           | $\theta_{JC}$  | 8.33        | $^\circ\text{C/W}$ |
| Thermal Resistance                           | $\theta_{JA}$  | 80.1        | $^\circ\text{C/W}$ |

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

| SYMBOL               | TEST CONDITIONS                                                             | MIN | TYP | MAX | UNITS         |
|----------------------|-----------------------------------------------------------------------------|-----|-----|-----|---------------|
| $I_{CEV}$            | $V_{CE}=700\text{V}, V_{BE(\text{off})}=1.5\text{V}$                        |     |     | 100 | $\mu\text{A}$ |
| $I_{CEV}$            | $V_{CE}=700\text{V}, V_{BE(\text{off})}=1.5\text{V}, T_C=100^\circ\text{C}$ |     |     | 2.0 | mA            |
| $I_{EBO}$            | $V_{EB}=9.0\text{V}$                                                        |     |     | 1.0 | mA            |
| $BV_{CEO}$           | $I_C=10\text{mA}$                                                           | 400 |     |     | V             |
| $V_{CE(\text{SAT})}$ | $I_C=500\text{mA}, I_B=100\text{mA}$                                        |     |     | 0.5 | V             |
| $V_{CE(\text{SAT})}$ | $I_C=1.0\text{A}, I_B=250\text{mA}$                                         |     |     | 1.0 | V             |
| $V_{CE(\text{SAT})}$ | $I_C=1.5\text{A}, I_B=500\text{mA}$                                         |     |     | 3.0 | V             |
| $V_{CE(\text{SAT})}$ | $I_C=1.0\text{A}, I_B=250\text{mA}, T_C=100^\circ\text{C}$                  |     |     | 1.0 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=500\text{mA}, I_B=100\text{mA}$                                        |     |     | 1.0 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=1.0\text{A}, I_B=250\text{mA}$                                         |     |     | 1.2 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=1.0\text{A}, I_B=250\text{mA}, T_C=100^\circ\text{C}$                  |     |     | 1.1 | V             |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=500\text{mA}$                                      | 8.0 |     | 40  |               |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=1.0\text{A}$                                       | 5.0 |     | 25  |               |
| $f_T$                | $V_{CE}=10\text{V}, I_C=100\text{mA}, f=1.0\text{MHz}$                      | 4.0 |     |     | MHz           |
| $C_{ob}$             | $V_{CB}=10\text{V}, I_E=0, f=0.1\text{MHz}$                                 |     | 20  |     | pF            |

R3 (21-January 2013)

CJD13003

**SURFACE MOUNT SILICON  
NPN POWER TRANSISTOR**

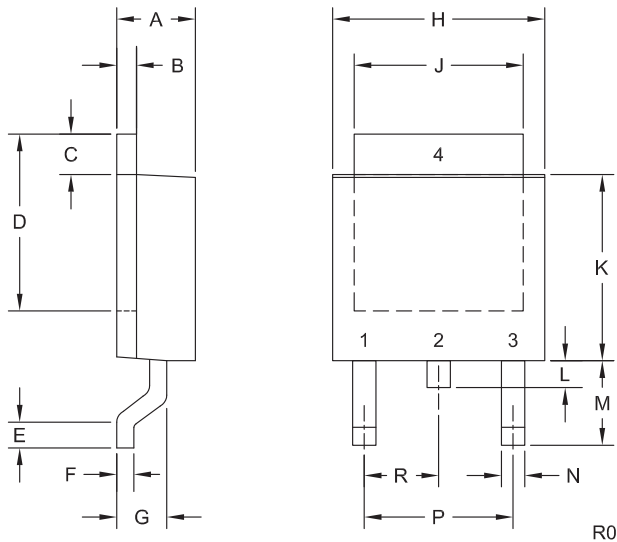


**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

| SYMBOL         | TEST CONDITIONS                                                         | MAX | UNITS         |
|----------------|-------------------------------------------------------------------------|-----|---------------|
| $t_d$ (Note 1) | $V_{CC}=125\text{V}$ , $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$ | 0.1 | $\mu\text{s}$ |
| $t_r$ (Note 1) | $V_{CC}=125\text{V}$ , $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$ | 1.0 | $\mu\text{s}$ |
| $t_s$ (Note 1) | $V_{CC}=125\text{V}$ , $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$ | 4.0 | $\mu\text{s}$ |
| $t_f$ (Note 1) | $V_{CC}=125\text{V}$ , $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=200\text{mA}$ | 0.7 | $\mu\text{s}$ |

Notes (1)  $t_p=25\mu\text{s}$ , Duty Cycle $\leq 1\%$

**DPAK CASE - MECHANICAL OUTLINE**



| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | INCHES |       | MILLIMETERS |      |
|            | MIN    | MAX   | MIN         | MAX  |
| A          | 0.083  | 0.108 | 2.10        | 2.75 |
| B          | 0.016  | 0.032 | 0.40        | 0.81 |
| C          | 0.035  | 0.063 | 0.89        | 1.60 |
| D          | 0.203  | 0.228 | 5.15        | 5.79 |
| E          | 0.020  | -     | 0.51        | -    |
| F          | 0.018  | 0.024 | 0.45        | 0.60 |
| G          | 0.051  | 0.071 | 1.30        | 1.80 |
| H          | 0.248  | 0.268 | 6.30        | 6.81 |
| J          | 0.197  | 0.217 | 5.00        | 5.50 |
| K          | 0.209  | 0.245 | 5.30        | 6.22 |
| L          | 0.025  | 0.040 | 0.64        | 1.02 |
| M          | 0.090  | 0.115 | 2.30        | 2.91 |
| N          | 0.012  | 0.045 | 0.30        | 1.14 |
| P          | 0.180  |       | 4.60        |      |
| R          | 0.090  |       | 2.30        |      |

DPAK (REV: R0)

**LEAD CODE:**

- 1) Base
- 2) Collector
- 3) Emitter
- 4) Collector

**MARKING:**

**FULL PART NUMBER**

R3 (21-January 2013)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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