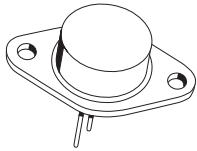


2N6383  
2N6384  
2N6385

**NPN SILICON POWER  
DARLINGTON TRANSISTOR**



**TO-3 CASE**

**Central**<sup>TM</sup>  
**Semiconductor Corp.**

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3683 SERIES types are NPN Silicon Power Darlington Transistors designed for power amplifier applications.

**MARKING: FULL PART NUMBER**

**MAXIMUM RATINGS:** ( $T_C=25^{\circ}\text{C}$ )

Collector-Base Voltage  
Collector-Emitter Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Collector Current  
Peak Collector Current  
Base Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

| SYMBOL         | 2N6383 | 2N6384      | 2N6385 | UNITS                |
|----------------|--------|-------------|--------|----------------------|
| $V_{CBO}$      | 40     | 60          | 80     | V                    |
| $V_{CEX}$      | 40     | 60          | 80     | V                    |
| $V_{CEO}$      | 40     | 60          | 80     | V                    |
| $V_{EBO}$      |        | 5.0         |        | V                    |
| $I_C$          |        | 10          |        | A                    |
| $I_{CM}$       |        | 15          |        | A                    |
| $I_B$          |        | 250         |        | mA                   |
| $P_D$          |        | 100         |        | W                    |
| $T_J, T_{stg}$ |        | -65 to +200 |        | $^{\circ}\text{C}$   |
| $\Theta_{JC}$  |        | 1.75        |        | $^{\circ}\text{C/W}$ |

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

| SYMBOL     | TEST CONDITIONS                                                                          | MIN | MAX | UNITS         |
|------------|------------------------------------------------------------------------------------------|-----|-----|---------------|
| $I_{CEV}$  | $V_{CEV}=\text{Rated } V_{CEO}, V_{BE(\text{off})}=1.5\text{V}$                          |     | 300 | $\mu\text{A}$ |
| $I_{CEV}$  | $V_{CEV}=\text{Rated } V_{CEO}, V_{BE(\text{off})}=1.5\text{V}, T_C=150^{\circ}\text{C}$ |     | 3.0 | mA            |
| $I_{CEO}$  | $V_{CE}=\text{Rated } V_{CEO}$                                                           |     | 1.0 | mA            |
| $I_{EBO}$  | $V_{EB}=5.0\text{V}$                                                                     |     | 10  | mA            |
| $BV_{CEO}$ | $I_C=200\text{mA}$ (2N6383)                                                              | 40  |     | V             |
| $BV_{CEO}$ | $I_C=200\text{mA}$ (2N6384)                                                              | 60  |     | V             |
| $BV_{CEO}$ | $I_C=200\text{mA}$ (2N6385)                                                              | 80  |     | V             |
| $BV_{CER}$ | $I_C=200\text{mA}, R_{BE}=100\Omega$ (2N6383)                                            | 40  |     | V             |
| $BV_{CER}$ | $I_C=200\text{mA}, R_{BE}=100\Omega$ (2N6384)                                            | 60  |     | V             |
| $BV_{CER}$ | $I_C=200\text{mA}, R_{BE}=100\Omega$ (2N6385)                                            | 80  |     | V             |
| $BV_{CEV}$ | $I_C=200\text{mA}, V_{BE(\text{off})}=1.5\text{V}$ (2N6383)                              | 40  |     | V             |
| $BV_{CEV}$ | $I_C=200\text{mA}, V_{BE(\text{off})}=1.5\text{V}$ (2N6384)                              | 60  |     | V             |
| $BV_{CEV}$ | $I_C=200\text{mA}, V_{BE(\text{off})}=1.5\text{V}$ (2N6385)                              | 80  |     | V             |

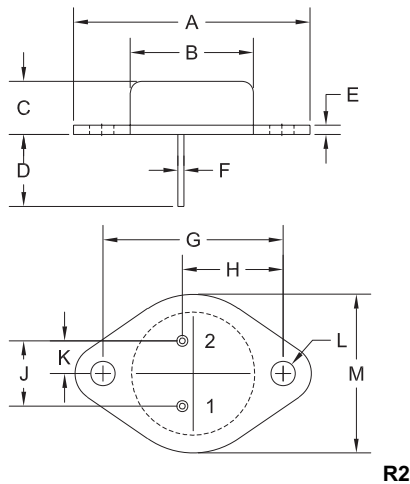
R1 (28-August 2008)

## NPN SILICON POWER DARLINGTON TRANSISTOR

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

| SYMBOL        | TEST CONDITIONS                                              | MIN | MAX | UNITS |
|---------------|--------------------------------------------------------------|-----|-----|-------|
| $V_{CE(SAT)}$ | $I_C=5.0\text{A}$ , $I_B=10\text{mA}$                        |     | 2.0 | V     |
| $V_{CE(SAT)}$ | $I_C=10\text{A}$ , $I_B=100\text{mA}$                        |     | 3.0 | V     |
| $V_{BE(ON)}$  | $V_{CE}=3.0\text{V}$ , $I_C=5.0\text{A}$                     |     | 2.8 | V     |
| $V_{BE(ON)}$  | $V_{CE}=3.0\text{V}$ , $I_C=10\text{A}$                      |     | 4.5 | V     |
| $h_{FE}$      | $V_{CE}=3.0\text{V}$ , $I_C=5.0\text{A}$                     | 1K  | 20K |       |
| $h_{FE}$      | $V_{CE}=3.0\text{V}$ , $I_C=10\text{A}$                      | 100 |     |       |
| $V_F$         | $I_F=10\text{A}$                                             |     | 4.0 | V     |
| $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$            |     | 200 | pF    |
| $ h_{he} $    | $V_{CE}=5.0\text{V}$ , $I_C=1.0\text{A}$ , $f=1.0\text{MHz}$ | 20  |     |       |
| $h_{he}$      | $V_{CE}=5.0\text{V}$ , $I_C=1.0\text{A}$ , $f=1.0\text{kHz}$ | 1K  |     |       |

### TO-3 CASE - MECHANICAL OUTLINE



| SYMBOL  | DIMENSIONS |       |             |       |
|---------|------------|-------|-------------|-------|
|         | INCHES     |       | MILLIMETERS |       |
|         | MIN        | MAX   | MIN         | MAX   |
| A       | 1.516      | 1.573 | 38.50       | 39.96 |
| B (DIA) | 0.748      | 0.875 | 19.00       | 22.23 |
| C       | 0.250      | 0.450 | 6.35        | 11.43 |
| D       | 0.433      | 0.516 | 11.00       | 13.10 |
| E       | 0.054      | 0.065 | 1.38        | 1.65  |
| F       | 0.035      | 0.045 | 0.90        | 1.15  |
| G       | 1.177      | 1.197 | 29.90       | 30.40 |
| H       | 0.650      | 0.681 | 16.50       | 17.30 |
| J       | 0.420      | 0.440 | 10.67       | 11.18 |
| K       | 0.205      | 0.225 | 5.21        | 5.72  |
| L (DIA) | 0.151      | 0.172 | 3.84        | 4.36  |
| M       | 0.984      | 1.050 | 25.00       | 26.67 |

TO-3 (REV: R2)

#### LEAD CODE:

- 1) Base
- 2) Emitter
- C) Collector

#### MARKING: FULL PART NUMBER

R1 (28-August 2008)

## 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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**Worldwide Distributors:**  
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