

2N5306  
2N5308

**SILICON  
NPN DARLINGTON TRANSISTORS**



**TO-92 CASE**



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N5306 and 2N5308 are silicon NPN epitaxial planar Darlington transistors designed for high gain amplifier applications.

**MARKING: FULL PART NUMBER**

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

|  |
|--|
| Collector-Base Voltage                       |
| Collector-Emitter Voltage                    |
| Emitter-Base Voltage                         |
| Continuous Collector Current                 |
| Peak Collector Current                       |
| Continuous Base Current                      |
| Power Dissipation                            |
| Power Dissipation ( $T_C=25^\circ\text{C}$ ) |
| Operating and Storage Junction Temperature   |
| Thermal Resistance                           |
| Thermal Resistance                           |

| SYMBOL         | 2N5306 | 2N5308      | UNITS              |
|----------------|--------|-------------|--------------------|
| $V_{CB0}$      | 25     | 40          | V                  |
| $V_{CEO}$      | 25     | 40          | V                  |
| $V_{EBO}$      |        | 12          | V                  |
| $I_C$          |        | 300         | mA                 |
| $I_{CM}$       |        | 500         | mA                 |
| $I_B$          |        | 100         | mA                 |
| $P_D$          |        | 625         | mW                 |
| $P_D$          |        | 1.5         | W                  |
| $T_J, T_{stg}$ |        | -65 to +150 | $^\circ\text{C}$   |
| $\theta_{JA}$  |        | 200         | $^\circ\text{C/W}$ |
| $\theta_{JC}$  |        | 83.3        | $^\circ\text{C/W}$ |

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

| SYMBOL        | TEST CONDITIONS   | MIN  | TYP | MAX | UNITS         |
|---------------|---|------|-----|-----|---------------|
| $I_{CBO}$     | $V_{CB}=\text{Rated } V_{CB0}$                          |      |     | 100 | nA            |
| $I_{CBO}$     | $V_{CB}=\text{Rated } V_{CB0}, T_A=100^\circ\text{C}$   |      |     | 20  | $\mu\text{A}$ |
| $I_{EBO}$     | $V_{EB}=12\text{V}$                                     |      |     | 100 | nA            |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$ (2N5306)                            | 25   |     |     | V             |
| $BV_{CBO}$    | $I_C=10\mu\text{A}$ (2N5308)                            | 40   |     |     | V             |
| $BV_{CEO}$    | $I_C=10\text{mA}$ (2N5306)                              | 25   |     |     | V             |
| $BV_{CEO}$    | $I_C=10\text{mA}$ (2N5308)                              | 40   |     |     | V             |
| $BV_{EBO}$    | $I_E=10\mu\text{A}$                                     | 12   |     |     | V             |
| $V_{CE(SAT)}$ | $I_C=200\text{mA}, I_B=200\mu\text{A}$                  |      |     | 1.4 | V             |
| $V_{BE(SAT)}$ | $I_C=200\text{mA}, I_B=200\mu\text{A}$                  |      |     | 1.6 | V             |
| $V_{BE(ON)}$  | $V_{CE}=5.0\text{V}, I_C=200\text{mA}$                  |      |     | 1.5 | V             |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}$                  | 7.0K |     | 70K |               |
| $h_{FE}$      | $V_{CE}=5.0\text{V}, I_C=100\text{mA}$                  | 20K  |     |     |               |
| $h_{fe}$      | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=1.0\text{kHz}$ | 7.0K |     |     |               |
| $ h_{fe} $    | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=10\text{MHz}$  | 15.6 |     |     |               |
| $h_{ie}$      | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=1.0\text{kHz}$ |      | 650 |     | k $\Omega$    |
| $f_T$         | $V_{CE}=5.0\text{V}, I_C=2.0\text{mA}, f=10\text{MHz}$  | 60   |     |     | MHz           |
| $C_{cb}$      | $V_{CB}=10\text{V}, f=1.0\text{MHz}$                    |      |     | 10  | pF            |
| $C_{eb}$      | $V_{EB}=0.5\text{V}, f=1.0\text{MHz}$                   |      | 12  |     | pF            |

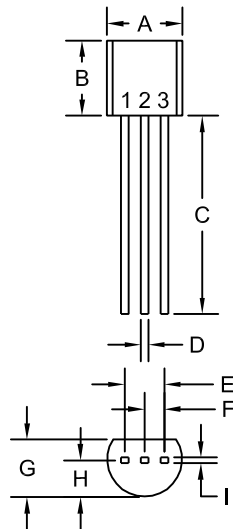
R2 (13-January 2016)

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**TO-92 CASE - MECHANICAL OUTLINE**



R1

| SYMBOL  | INCHES |       | MILLIMETERS |      |
|---------|--------|-------|-------------|------|
|         | MIN    | MAX   | MIN         | MAX  |
| A (DIA) | 0.175  | 0.205 | 4.45        | 5.21 |
| B       | 0.170  | 0.210 | 4.32        | 5.33 |
| C       | 0.500  | -     | 12.70       | -    |
| D       | 0.016  | 0.022 | 0.41        | 0.56 |
| E       | 0.100  |       | 2.54        |      |
| F       | 0.050  |       | 1.27        |      |
| G       | 0.125  | 0.165 | 3.18        | 4.19 |
| H       | 0.080  | 0.105 | 2.03        | 2.67 |
| I       | 0.015  |       | 0.38        |      |

TO-92 (REV: R1)

**LEAD CODE:**

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

**MARKING:  
FULL PART NUMBER**

R2 (13-January 2016)

## 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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