

2N3713 2N3715  
2N3714 2N3716

**SILICON  
NPN TRANSISTORS**



**TO-3 CASE**



[www.centrasemi.com](http://www.centrasemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N3713, 2N3714, 2N3715, and 2N3716 are silicon NPN power transistors manufactured by the epitaxial-base process, mounted in a hermetically sealed metal package designed for medium speed switching and amplifier applications.

**MARKING: FULL PART NUMBER**

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

|                                            | SYMBOL         | 2N3713<br>2N3715 | 2N3714<br>2N3716 | UNITS                |
|--------------------------------------------|----------------|------------------|------------------|----------------------|
| Collector-Base Voltage                     | $V_{CBO}$      | 80               | 100              | V                    |
| Collector-Emitter Voltage                  | $V_{CEO}$      | 60               | 80               | V                    |
| Emitter-Base Voltage                       | $V_{EBO}$      | 7.0              |                  | V                    |
| Continuous Collector Current               | $I_C$          | 10               |                  | A                    |
| Continuous Base Current                    | $I_B$          | 4.0              |                  | A                    |
| Power Dissipation                          | $P_D$          | 150              |                  | W                    |
| Operating and Storage Junction Temperature | $T_J, T_{stg}$ | -65 to +200      |                  | $^{\circ}\text{C}$   |
| Thermal Resistance                         | $\theta_{JC}$  | 1.17             |                  | $^{\circ}\text{C/W}$ |

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

| SYMBOL               | TEST CONDITIONS                                                             | MIN | TYP | MAX | UNITS         |
|----------------------|-----------------------------------------------------------------------------|-----|-----|-----|---------------|
| $I_{CEV}$            | $V_{CE}=\text{Rated } V_{CBO}, V_{BE}=1.5\text{V}$                          |     |     | 1.0 | mA            |
| $I_{CEV}$            | $V_{CE}=\text{Rated } V_{CEO}, V_{BE}=1.5\text{V}, T_C=150^{\circ}\text{C}$ |     |     | 10  | mA            |
| $I_{EBO}$            | $V_{EB}=7.0\text{V}$                                                        |     |     | 5.0 | mA            |
| $BV_{CEO}$           | $I_C=200\text{mA}$ (2N3713, 2N3715)                                         | 60  |     |     | V             |
| $BV_{CEO}$           | $I_C=200\text{mA}$ (2N3714, 2N3716)                                         | 80  |     |     | V             |
| $V_{CE(\text{SAT})}$ | $I_C=5.0\text{A}, I_B=0.5\text{A}$ (2N3713, 2N3714)                         |     |     | 1.0 | V             |
| $V_{CE(\text{SAT})}$ | $I_C=5.0\text{A}, I_B=0.5\text{A}$ (2N3715, 2N3716)                         |     |     | 0.8 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=5.0\text{A}, I_B=0.5\text{A}$ (2N3713, 2N3714)                         |     |     | 2.0 | V             |
| $V_{BE(\text{SAT})}$ | $I_C=5.0\text{A}, I_B=0.5\text{A}$ (2N3715, 2N3716)                         |     |     | 1.5 | V             |
| $V_{BE(\text{ON})}$  | $V_{CE}=2.0\text{V}, I_C=3.0\text{A}$                                       |     |     | 1.5 | V             |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=1.0\text{A}$ (2N3713, 2N3714)                      | 40  |     | 120 |               |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=1.0\text{A}$ (2N3715, 2N3716)                      | 50  |     | 150 |               |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=3.0\text{A}$ (2N3713, 2N3714)                      | 15  |     |     |               |
| $h_{FE}$             | $V_{CE}=2.0\text{V}, I_C=3.0\text{A}$ (2N3715, 2N3716)                      | 30  |     |     |               |
| $f_T$                | $V_{CE}=10\text{V}, I_C=0.5\text{A}, f=1.0\text{MHz}$                       | 4.0 |     |     | MHz           |
| $t_r$                | $I_C=5.0\text{A}, I_{B1}=I_{B2}=0.5\text{A}$                                |     | 0.4 |     | $\mu\text{s}$ |
| $t_s$                | $I_C=5.0\text{A}, I_{B1}=I_{B2}=0.5\text{A}$                                |     | 0.3 |     | $\mu\text{s}$ |
| $t_f$                | $I_C=5.0\text{A}, I_{B1}=I_{B2}=0.5\text{A}$                                |     | 0.4 |     | $\mu\text{s}$ |

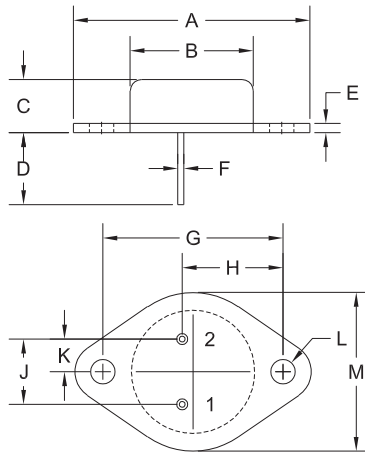
R2 (18-June 2013)

2N3713 2N3715  
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### TO-3 CASE - MECHANICAL OUTLINE



R2

| DIMENSIONS |        |       |             |       |
|------------|--------|-------|-------------|-------|
| SYMBOL     | 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
- Case) Collector

#### MARKING:

FULL PART NUMBER

R2 (18-June 2013)

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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.

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- 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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