

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

145 Adams Avenue, Hauppauge, NY 11788 USA

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Manufacturers of World Class Discrete Semiconductors

TIP110 TIP111 TIP112 NPN  
TIP115 TIP116 TIP117 PNPSILICON POWER DARLINGTON  
COMPLEMENTARY TRANSISTORS

JEDEC TO-220 AB CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR TIP110, TIP115 series types are Complementary Silicon Power Darlington Transistors designed low speed switching and amplifier applications.

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

|   | <u>SYMBOL</u>  | TIP110<br>TIP115 | TIP111<br>TIP116 | TIP112<br>TIP117 | <u>UNITS</u>       |
|---|----------------|------------------|------------------|------------------|--------------------|
| Collector-Base Voltage                        | $V_{CB0}$      | 60               | 80               | 100              | V                  |
| Collector-Emitter Voltage                     | $V_{CEO}$      | 80               | 80               | 100              | V                  |
| Emitter-Base Voltage                          | $V_{EBO}$      | 5.0              | 5.0              | 5.0              | V                  |
| Collector Current                             | $I_C$          |                  | 2.0              |                  | A                  |
| Collector Current (Peak)                      | $I_{CM}$       |                  | 4.0              |                  | A                  |
| Base Current                                  | $I_B$          |                  | 50               |                  | mA                 |
| Power Dissipation                             | $P_D$          |                  | 50               |                  | W                  |
| Operating and Storage<br>Junction Temperature | $T_J, T_{stg}$ |                  | -65 to +150      |                  | $^\circ\text{C}$   |
| Thermal Resistance                            | $\theta_{JC}$  |                  | 2.5              |                  | $^\circ\text{C/W}$ |

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

| <u>SYMBOL</u> | <u>TEST CONDITIONS</u>                                       | TIP110<br>TIP115 |            | TIP111<br>TIP116 |            | TIP112<br>TIP117 |            | <u>UNITS</u> |
|---------------|--|------------------|------------|------------------|------------|------------------|------------|--------------|
|               |  | <u>MIN</u>       | <u>MAX</u> | <u>MIN</u>       | <u>MAX</u> | <u>MIN</u>       | <u>MAX</u> |              |
| $I_{CBO}$     | $V_{CB} = 60\text{V}$  |                  | 1.0        |                  | -          |                  | -          | mA           |
| $I_{CBO}$     | $V_{CB} = 80\text{V}$  |                  | -          |                  | 1.0        |                  | -          | mA           |
| $I_{CBO}$     | $V_{CB} = 100\text{V}$                                       |                  | -          |                  | -          |                  | 1.0        | mA           |
| $I_{CEO}$     | $V_{CE} = 30\text{V}$  |                  | 2.0        |                  | -          |                  | -          | mA           |
| $I_{CEO}$     | $V_{CE} = 40\text{V}$  |                  | -          |                  | 2.0        |                  | -          | mA           |
| $I_{CEO}$     | $V_{CE} = 50\text{V}$  |                  | -          |                  | -          |                  | 2.0        | mA           |
| $I_{EBO}$     | $V_{BE} = 5.0\text{V}$                                       |                  | 2.0        |                  | 2.0        |                  | 2.0        | mA           |
| $BV_{CEO}$    | $I_C = 30\text{mA}$  | 60               |            | 80               |            | 100              |            | V            |
| $V_{CE(SAT)}$ | $I_C = 2.0\text{A}, I_B = 8.0\text{mA}$                      |                  | 2.5        |                  | 2.5        |                  | 2.5        | V            |
| $V_{BE(ON)}$  | $V_{CE} = 4.0\text{V}, I_C = 2.0\text{A}$                    |                  | 2.8        |                  | 2.8        |                  | 2.8        | V            |
| $h_{FE}$      | $V_{CE} = 4.0\text{V}, I_C = 1.0\text{A}$                    | 1000             |            | 1000             |            | 1000             |            |              |
| $h_{FE}$      | $V_{CE} = 4.0\text{V}, I_C = 2.0\text{A}$                    | 500              |            | 500              |            | 500              |            |              |
| $f_T$         | $V_{CE} = 10\text{V}, I_C = 750\text{mA}, f = 1.0\text{MHz}$ | 25               |            | 25               |            | 25               |            | MHz          |

(Continued on reverse side)

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

|          |   | <u>MIN</u> | <u>MAX</u> | <u>UNITS</u> |
|----------|---|------------|------------|--------------|
| $C_{ob}$ | $V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$<br>TIP110, TIP111, TIP112 |            | 100        | pF           |
| $C_{ob}$ | $V_{CB} = 10\text{V}, I_E = 0, f = 0.1\text{MHz}$<br>TIP115, TIP116, TIP117 |            | 200        | pF           |

**Central**<sup>™</sup>  
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[www.centalsemi.com](http://www.centalsemi.com)

## 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

#### Corporate Headquarters & Customer Support Team

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**Worldwide Distributors:**  
[www.centrasemi.com/wwdistributors](http://www.centrasemi.com/wwdistributors)

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For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: [www.centrasemi.com/terms](http://www.centrasemi.com/terms)



<http://www.centrasemi.com>

# Product End of Life Notification

|                           |          |
|---------------------------|----------|
| <b>PDN ID:</b>            | PDN01042 |
| <b>Notification Date:</b> | 8/15/16  |
| <b>Last Buy Date:</b>     | 2/15/17  |
| <b>Last Shipment Date</b> | 8/15/17  |

Summary: The TIP110 series of NPN and PNP Darlington power transistors, with the exception of TIP112 and TIP117, is discontinued and now classified as End of Life (EOL).

Although Central Semiconductor Corp. makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by various manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's Product Management Process. Any replacement product will be noted below. The effective date for placing the last purchase order will be six(6) months from the date of this notice and twelve(12) months from the notice date for final shipments; this may be extended if inventory is available.

| <u>Central Part Number</u> | <u>Replacement</u> |
|----------------------------|--------------------|
| TIP110                     | TIP112             |
| TIP111                     | TIP112             |
| TIP115                     | TIP117             |
| TIP116                     | TIP117             |

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. Please email your requests to [engineering@centrasemi.com](mailto:engineering@centrasemi.com).

DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor Corp. will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.