

TIP140 TIP141 TIP142 NPN
TIP145 TIP146 TIP147 PNP

**COMPLEMENTARY
SILICON
POWER DARLINGTON TRANSISTORS**



TO-218 TRANSISTOR CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR TIP140 and TIP145 series devices are complementary silicon power Darlington transistors manufactured by the epitaxial base process, designed for general purpose amplifier and low speed switching applications where high gain is required.

MARKING: FULL PART NUMBER

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

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

| SYMBOL | TIP140 | TIP141 | TIP142 | UNITS |
|----------------|--------|-------------|--------|--------------------|
| | TIP145 | TIP146 | TIP147 | |
| V_{CBO} | 60 | 80 | 100 | V |
| V_{CEO} | 60 | 80 | 100 | V |
| V_{EBO} | | 5.0 | | V |
| I_C | | 10 | | A |
| I_{CM} | | 20 | | A |
| I_B | | 0.5 | | A |
| P_D | | 125 | | W |
| T_J, T_{stg} | | -65 to +150 | | $^\circ\text{C}$ |
| θ_{JC} | | 1.0 | | $^\circ\text{C/W}$ |

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

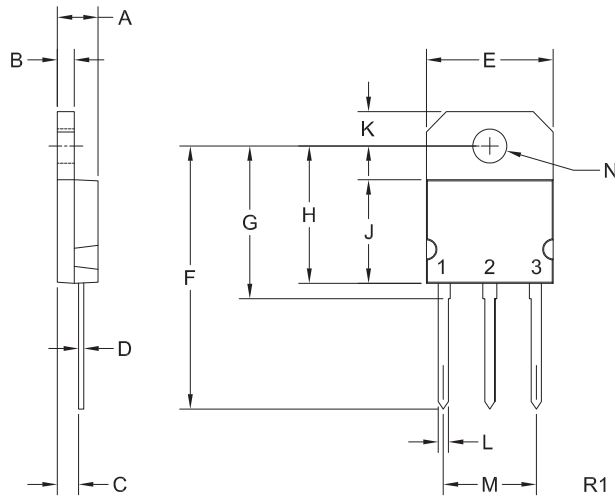
| SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|---------------|--|------|-----|-----|---------------|
| I_{CBO} | $V_{CB}=\text{Rated } V_{CBO}$ | | | 1.0 | mA |
| I_{CEO} | $V_{CE}=\frac{1}{2}\text{Rated } V_{CEO}$ | | | 2.0 | mA |
| I_{EBO} | $V_{EB}=5.0\text{V}$ | | | 2.0 | mA |
| BV_{CEO} | $I_C=30\text{mA}$ (TIP140, TIP145) | 60 | | | V |
| BV_{CEO} | $I_C=30\text{mA}$ (TIP141, TIP146) | 80 | | | V |
| BV_{CEO} | $I_C=30\text{mA}$ (TIP142, TIP147) | 100 | | | V |
| $V_{CE(SAT)}$ | $I_C=5.0\text{A}, I_B=10\text{mA}$ | | | 2.0 | V |
| $V_{CE(SAT)}$ | $I_C=10\text{A}, I_B=40\text{mA}$ | | | 3.0 | V |
| $V_{BE(ON)}$ | $V_{CE}=4.0\text{V}, I_C=10\text{A}$ | | | 3.0 | V |
| V_F | $I_F=10\text{A}$ | | | 2.8 | V |
| h_{FE} | $V_{CE}=4.0\text{V}, I_C=5.0\text{A}$ | 1.0K | | | |
| h_{FE} | $V_{CE}=4.0\text{V}, I_C=10\text{A}$ | 500 | | | |
| t_{on} | $I_C=10\text{A}, I_{B1}=I_{B2}=40\text{mA}, R_L=3.0\Omega$ | | 0.9 | | μs |
| t_{off} | $I_C=10\text{A}, I_{B1}=I_{B2}=40\text{mA}, R_L=3.0\Omega$ | | 4.0 | | μs |

TIP140 TIP141 TIP142 NPN
 TIP145 TIP146 TIP147 PNP



**COMPLEMENTARY
 SILICON
 POWER DARLINGTON TRANSISTORS**

TO-218 TRANSISTOR CASE - MECHANICAL OUTLINE



LEAD CODE:
 1) Base
 2) Collector
 3) Emitter
 Tab) Collector

**MARKING:
 FULL PART NUMBER**

| SYMBOL | INCHES | | MILLIMETERS | |
|--------|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.185 | 0.193 | 4.70 | 4.90 |
| B | 0.047 | 0.082 | 1.20 | 2.08 |
| C | 0.098 | | 2.49 | |
| D | 0.019 | 0.030 | 0.48 | 0.76 |
| E | 0.578 | 0.598 | 14.68 | 15.19 |
| F | 1.220 | | 30.99 | |
| G | 0.708 | | 17.98 | |
| H | - | 0.637 | - | 16.18 |
| J | - | 0.480 | - | 12.19 |
| K | 0.155 | 0.163 | 3.94 | 4.14 |
| L | 0.043 | 0.051 | 1.09 | 1.30 |
| M | 0.425 | 0.437 | 10.80 | 11.10 |
| N | 0.157 | 0.161 | 3.99 | 4.09 |

TO-218 Transistor (REV: R1)

R3 (23-December 2015)

OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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

DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2nd 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

CONTACT US

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centalsemi.com

Worldwide Field Representatives:
www.centalsemi.com/wwreps

Worldwide Distributors:
www.centalsemi.com/wwdistributors

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.centalsemi.com/terms

Product End of Life Notification

| | |
|---------------------------|----------|
| PDN ID: | PDN01022 |
| Notification Date: | 4/04/16 |
| Last Buy Date: | 10/04/16 |
| Last Shipment Date | 4/04/17 |

Summary: All devices manufactured in the TO-218 package are discontinued and now classified as End of Life (EOL). Central is in the process of qualifying replacements for certain TO-218 devices in the TO-247 package; items with planned replacements are shown below. This qualification is expected to be completed by Q3-2016.

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.

| Central Part Number | Replacement |
|----------------------------|--------------------|
| BDV64 | N/A |
| BDV64A | N/A |
| BDV64B | N/A |
| BDV65 | N/A |
| BDV65A | N/A |
| BDV65B | N/A |
| BDW83A | N/A |
| BDW83B | N/A |
| BDW83C | N/A |
| BDW84A | N/A |
| BDW84B | N/A |
| BDW84C | N/A |
| BUV47A | N/A |
| BU426 | N/A |
| CEN1356 | N/A |
| CQ218-45B | N/A |
| CQ218-45D | N/A |
| CQ218-45M | N/A |
| CQ218-45N | N/A |
| CQ218I-25B | N/A |
| CQ218I-25D | N/A |
| CQ218I-25M | N/A |
| CQ218I-25N | N/A |
| CQ218I-40B | N/A |
| CQ218I-40D | N/A |
| CQ218I-40M | N/A |
| CQ218I-40N | N/A |
| CS218-35B | N/A |
| CS218-35D | N/A |
| CS218-35M | N/A |
| CS218-35N | N/A |
| CS218-35P | N/A |
| CS218-35PB | N/A |
| CS218-55B | N/A |
| CS218-55D | N/A |
| CS218-55M | N/A |

*** CONTINUED ***

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.

Product End of Life Notification

| | |
|--------------------|----------|
| PDN ID: | PDN01022 |
| Notification Date: | 4/04/16 |
| Last Buy Date: | 10/04/16 |
| Last Shipment Date | 4/04/17 |

*** CONTINUED FROM PRIOR PAGE ***

| Central Part Number | Replacement |
|---------------------|-----------------|
| CS218-55N | N/A |
| CS218-55P | N/A |
| CS218-55PB | N/A |
| CS218I-30B | N/A |
| CS218I-30D | N/A |
| CS218I-30M | N/A |
| CS218I-30N | N/A |
| CS218I-30P | N/A |
| CS218I-30PB | N/A |
| CS218I-50B | N/A |
| CS218I-50D | N/A |
| CS218I-50M | N/A |
| CS218I-50N | N/A |
| CS218I-50P | N/A |
| CS218I-50PB | N/A |
| TIP140 | TIP142 TO-247 H |
| TIP141 | TIP142 TO-247 H |
| TIP142 | TIP142 TO-247 H |
| TIP145 | TIP147 TO-247 H |
| TIP146 | TIP147 TO-247 H |
| TIP147 | TIP147 TO-247 H |
| TIP2955 | N/A |
| TIP3055 | N/A |
| TIP33A | TIP35C TO-247 H |
| TIP33B | TIP35C TO-247 H |
| TIP33C | TIP35C TO-247 H |
| TIP34A | TIP36C TO-247 H |
| TIP34B | TIP36C TO-247 H |
| TIP34C | TIP36C TO-247 H |
| TIP35A | TIP35C TO-247 H |
| TIP35B | TIP35C TO-247 H |
| TIP35C | TIP35C TO-247 H |
| TIP35C SL | TIP35C TO-247 H |
| TIP36 | TIP36C TO-247 H |
| TIP36A | TIP36C TO-247 H |
| TIP36B | TIP36C TO-247 H |
| TIP36B SL | TIP36C TO-247 H |
| TIP36C | TIP36C TO-247 H |
| TIP36C SL | TIP36C TO-247 H |

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@centralsemi.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.