



Micro Commercial Components

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## TIP110/111/112

### Features

- The complementary PNP types are the TIP115/116/117 respectively
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1
- Marking: Part number

### Silicon NPN

### Darlington Power Transistor

#### Absolute Maximum Ratings @ $T_A = 25^\circ\text{C}$ (unless otherwise noted)

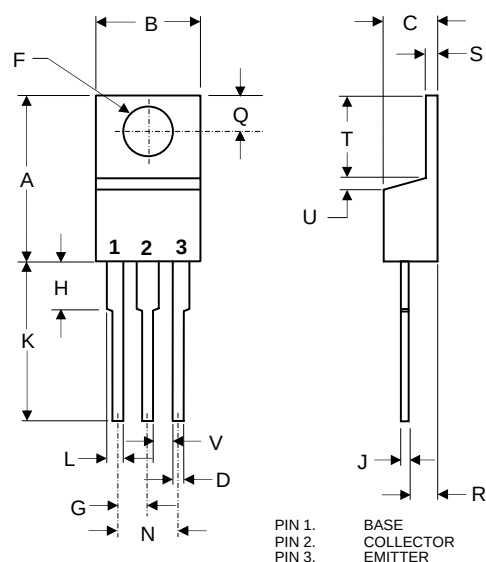
| Symbol                                  | Parameter                                          | Value           | Unit             |
|-----------------------------------------|----------------------------------------------------|-----------------|------------------|
| $V_{CB0}$<br>TIP110<br>TIP111<br>TIP112 | Collector-base voltage<br>(Open emitter)           | 60<br>80<br>100 | V                |
| $V_{CEO}$<br>TIP110<br>TIP111<br>TIP112 | Collector-emitter voltage<br>(Open base)           | 60<br>80<br>100 | V                |
| $V_{EBO}$                               | Emitter-base Voltage(Open collector)               | 5               | V                |
| $I_C$                                   | Collector Current                                  | 2               | A                |
| $I_{CM}$                                | Collector Current Pulse                            | 4               | A                |
| $I_B$                                   | Base Current                                       | 0.05            | A                |
| $P_C$                                   | Total Device Dissipation( $T_A=25^\circ\text{C}$ ) | 2               | W                |
|                                         | Total Device Dissipation( $T_C=25^\circ\text{C}$ ) | 50              | W                |
| $T_J$                                   | Junction Temperature                               | 150             | $^\circ\text{C}$ |
| $T_{STG}$                               | Storage Temperature Range                          | -65 to +150     | $^\circ\text{C}$ |

#### Electrical Characteristics @ $25^\circ\text{C}$ Unless Otherwise Specified

| Symbol                                      | Parameter                                                                                                                                         | Min             | Max | Units |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----|-------|
| $V_{CE(SUS)}$<br>TIP110<br>TIP111<br>TIP112 | Collector-emitter sustaining voltage<br>( $I_C=30\text{mA}$ ; $I_B=0$ )                                                                           | 60<br>80<br>100 |     | V     |
| $V_{CE(sat)}$                               | Collector-emitter Saturation Voltage<br>( $I_C=2\text{A}$ ; $I_B=0.008\text{A}$ )                                                                 |                 | 2.5 | V     |
| $V_{BE}$                                    | Base-emitter Voltage<br>( $I_C=2\text{A}$ ; $V_{CE}=4\text{V}$ )                                                                                  |                 | 2.8 | V     |
| $I_{CBO}$<br>TIP110<br>TIP111<br>TIP112     | Collector cut-off current<br>( $V_{CB}=60\text{V}$ ; $I_E=0$ )<br>( $V_{CB}=80\text{V}$ ; $I_E=0$ )<br>( $V_{CB}=100\text{V}$ ; $I_E=0$ )         | 1               |     | mA    |
| $I_{CEO}$<br>TIP110<br>TIP111<br>TIP112     | Collector cut-off current<br>( $V_{CE}=30\text{V}$ ; $V_{EB}=0$ )<br>( $V_{CE}=40\text{V}$ ; $V_{EB}=0$ )<br>( $V_{CE}=50\text{V}$ ; $V_{EB}=0$ ) | 2               |     | mA    |
| $I_{EBO}$                                   | Emitter cut-off current<br>( $V_{EB}=5\text{V}$ ; $I_C=0$ )                                                                                       |                 | 2.0 | mA    |
| $h_{fe}$                                    | DC current gain<br>( $I_C=1\text{A}$ ; $V_{CE}=4\text{V}$ )<br>( $I_C=2\text{A}$ ; $V_{CE}=4\text{V}$ )                                           | 1000<br>500     |     |       |
| $C_{OB}$                                    | Output capacitance<br>( $I_E=0$ ; $V_{CB}=-10\text{V}$ ; $f=0.1\text{MHz}$ )                                                                      |                 | 100 | PF    |

Notes:1.High Temperature Solder Exemption Applied, see EU Directive Annex 7.

### TO-220AB



| DIM | INCHES |      | MM    |       | NOTE |
|-----|--------|------|-------|-------|------|
|     | MIN    | MAX  | MIN   | MAX   |      |
| A   | .560   | .625 | 14.22 | 15.88 |      |
| B   | .380   | .420 | 9.65  | 10.67 |      |
| C   | .140   | .190 | 3.56  | 4.82  |      |
| D   | .020   | .045 | 0.51  | 1.14  |      |
| F   | .139   | .161 | 3.53  | 4.09  | Ø    |
| G   | .190   | .110 | 2.29  | 2.79  |      |
| H   | ---    | .250 | ---   | 6.35  |      |
| J   | .012   | .025 | 0.30  | 0.64  |      |
| K   | .500   | .580 | 12.70 | 14.73 |      |
| L   | .045   | .060 | 1.14  | 1.52  |      |
| N   | .190   | .210 | 4.83  | 5.33  |      |
| Q   | .100   | .135 | 2.54  | 3.43  |      |
| R   | .080   | .115 | 2.04  | 2.92  |      |
| S   | .045   | .055 | 1.14  | 1.39  |      |
| T   | .230   | .270 | 5.84  | 6.86  |      |
| U   | ----   | .050 | ----  | 1.27  |      |
| V   | .045   | ---- | 1.15  | ----  |      |

## Ordering Information

| Device           | Packing        |
|------------------|----------------|
| (Part Number)-BP | Bulk;1Kpcs/Box |

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