

**TIP115
TIP116
TIP117**

**PNP Epitaxial
Silicon Darlington
Transistors**

TO-220

Features

- Halogen free available upon request by adding suffix "-HF"
- High DC Current Gain : $h_{FE}=1000$ @ $V_{CE}=4.0V$, $I_C=1.0A$ (Min.)
- Low Collector-Emitter Saturation Voltage
- Complementary to TIP110/111/112
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Mounting Torque: 5 in-lbs Maximum

| Symbol | Rating | Rating | Unit |
|-----------|---|-------------|-------------|
| V_{CEO} | Collector-Emitter Voltage | TIP115 | 60 |
| | | TIP116 | 80 |
| | | TIP117 | 100 |
| V_{CBO} | Collector-Base Voltage | TIP115 | 60 |
| | | TIP116 | 80 |
| | | TIP117 | 100 |
| V_{EBO} | Emitter-Base Voltage | 5.0 | V |
| I_C | Collector Current (DC) | 2.0 | A |
| I_{CP} | Collector Current (Pulse) | 4.0 | A |
| I_B | Base Current (DC) | 50 | mA |
| P_C | Collector Dissipation @ $T_A=25^{\circ}C$ | 2.0 | W |
| | Collector Dissipation @ $T_C=25^{\circ}C$ | 50 | W |
| T_J | Junction Temperature | -55 to +150 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | -55 to +150 | $^{\circ}C$ |

Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|--------|-----------|-----|-----|-------|
|--------|-----------|-----|-----|-------|

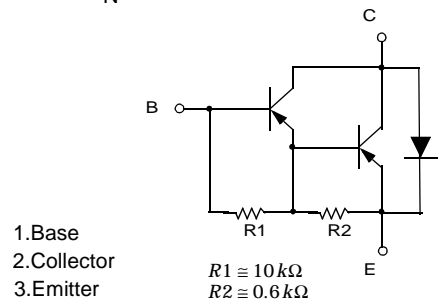
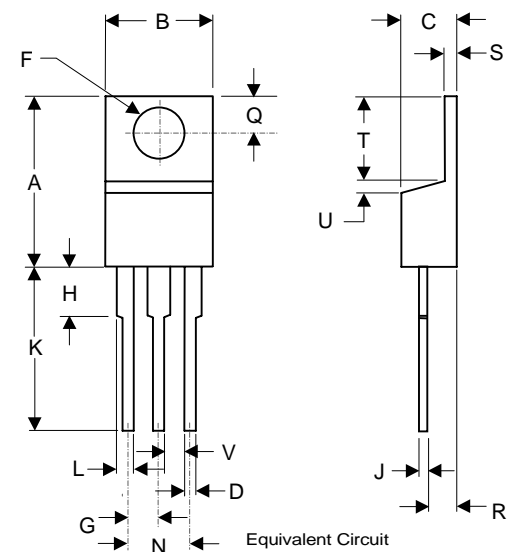
OFF CHARACTERISTICS

| | | | | | |
|----------------|--|--------|-----|-----|-----|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage ($I_C=30mA$, $I_B=0$) | TIP115 | 60 | --- | Vdc |
| | | TIP116 | 80 | --- | |
| | | TIP117 | 100 | --- | |
| I_{CEO} | Collector Cut-off Current ($V_{CE}=30Vdc$, $I_B=0$) ($V_{CE}=40Vdc$, $I_B=0$) ($V_{CE}=50Vdc$, $I_B=0$) | TIP115 | --- | 2.0 | mA |
| | | TIP116 | --- | 2.0 | |
| | | TIP117 | --- | 2.0 | |
| I_{CBO} | Collector Cut-off Current ($V_{CB}=60Vdc$, $I_E=0$) ($V_{CB}=80Vdc$, $I_E=0$) ($V_{CB}=100Vdc$, $I_E=0$) | TIP115 | --- | 1.0 | mA |
| | | TIP116 | --- | 1.0 | |
| | | TIP117 | --- | 1.0 | |
| I_{EBO} | Emitter Cut-off Current ($V_{BE}=5.0Vdc$, $I_C=0$) | --- | 2.0 | mA | |

ON CHARACTERISTICS

| | | | | |
|---------------|---|------|-----|------|
| $h_{FE(1)}$ | DC Current Gain ($I_C=1.0A$, $V_{CE}=4.0Vdc$) ($I_B=2.0A$, $V_{CE}=4.0Vdc$) | 1000 | --- | ---- |
| | | 500 | --- | ---- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage ($I_C=2.0A$, $I_B=8.0mA$) | --- | 2.5 | Vdc |
| $V_{BE(ON)}$ | Base-Emitter On Voltage ($I_C=2.0A$, $V_{CE}=4.0A$) | --- | 2.8 | Vdc |
| C_{ob} | Output Capacitance ($V_{CB}=10V$, $I_E=0$, $f=0.1MHz$) | --- | 200 | pF |

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



| 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 | ∅ |
| 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 |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

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