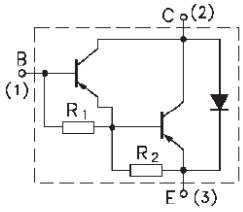
# TIP117

**Darlington Amplifier Transistor(PNP)**

## FEATURES

- Monolithic Construction With Built in Base -Emitter Shunt Resistors.
- Complementary to TIP112.
- High DC Current Gain:$h_{FE}$=1000@$V_{CE}$=-4V,$I_C$=-1A.
- Low Collector-Emitter Saturation Voltage.
- Industrial Use.




$R_1$ Typ.= 4K Ω
$R_2$ Typ.= 200




**TO-220AB**

## MAXIMUM RATING operating temperature range applies unless otherwise specified

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | | -100 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | | -100 | V |
| $V_{EBO}$ | Emitter-Base Voltage | | -5 | V |
| $I_C$ | Collector Current | DC<br>Pulse | -2<br>-4 | A |
| $I_B$ | Base Crrent | | -50 | mA |
| $P_C$ | Collector Dissipation | $T_a$=25℃<br>$T_c$=25℃ | 2<br>50 | W |
| $T_j$, $T_{stg}$ | Junction and Storage Temperature | | -65 to +150 | ℃ |

# TIP117

**Darlington Amplifier Transistor(PNP)**

## ELECTRICAL CHARACTERISTICS Ratings at 25℃ ambient temperature unless otherwise specified.

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector-emitter Sustaining Voltage | $V_{CEO(SUS)}$ | $I_C$=-30mA,$I_B$=0 | -100 | | | V |
| Collector Cut-off Current | $I_{CEO}$ | $V_{CE}$=-50V,$I_B$=0 | | | -2 | mA |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CE}$=-100V, $V_{EB}$=0 | | | -1 | mA |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$=-5V,$I_C$=0 | | | -2 | mA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=-4V,$I_C$=-1A<br>$V_{CE}$=-4V,$I_C$=-2A | 1000<br>500 | | | |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=-2A, $I_B$=-8mA | | | -2.5 | V |
| Base-emitter on Voltage | $V_{BE(on)}$ | $V_{CE}$=-4V ,$I_C$=-2A | | | -2.8 | V |
| Output Capacitance | $C_{ob}$ | $V_{CB}$=-10V, $I_E$=0, f=0.1MHz | | | 200 | pF |

## TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

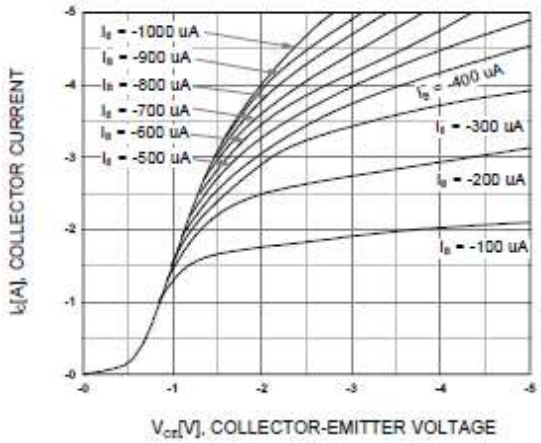



Figure 1. Static Characteristic

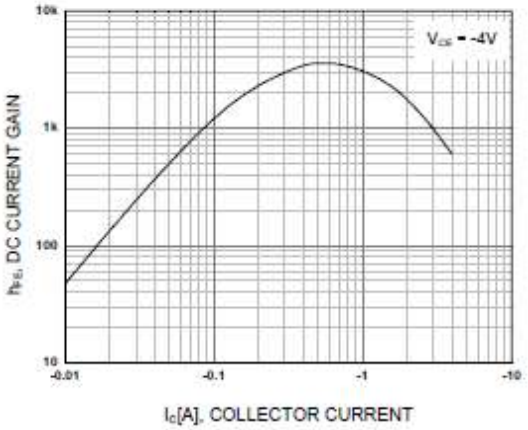



Figure 2. DC current Gain

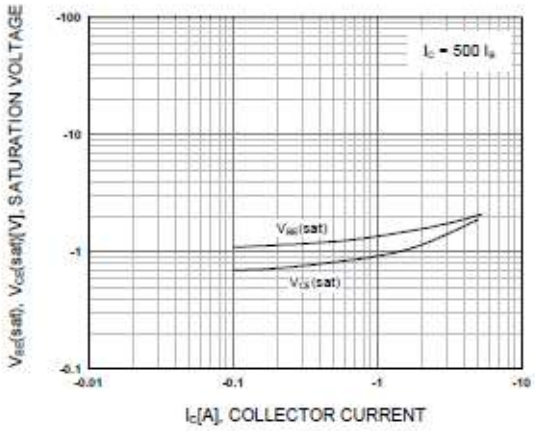



Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

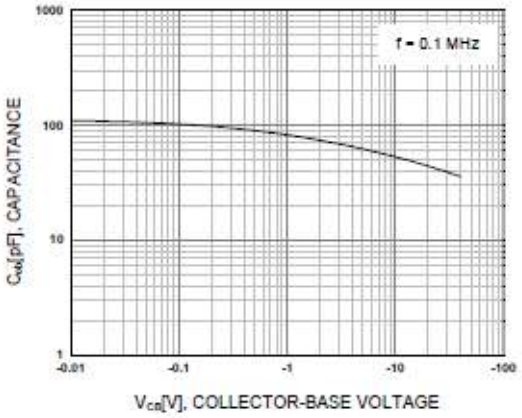



Figure 4. Collector Output Capacitance

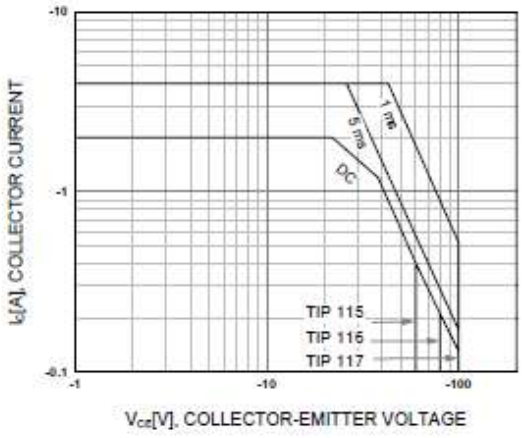



Figure 5. Safe Operating Area

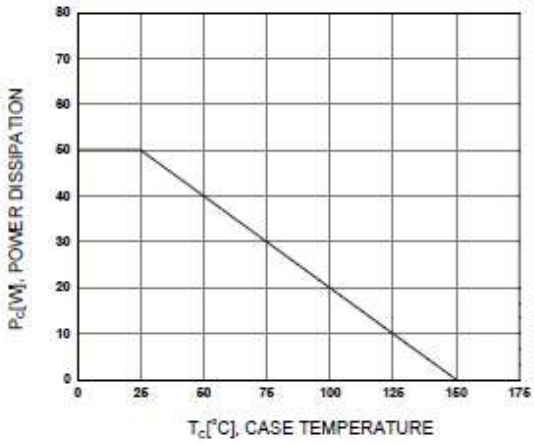


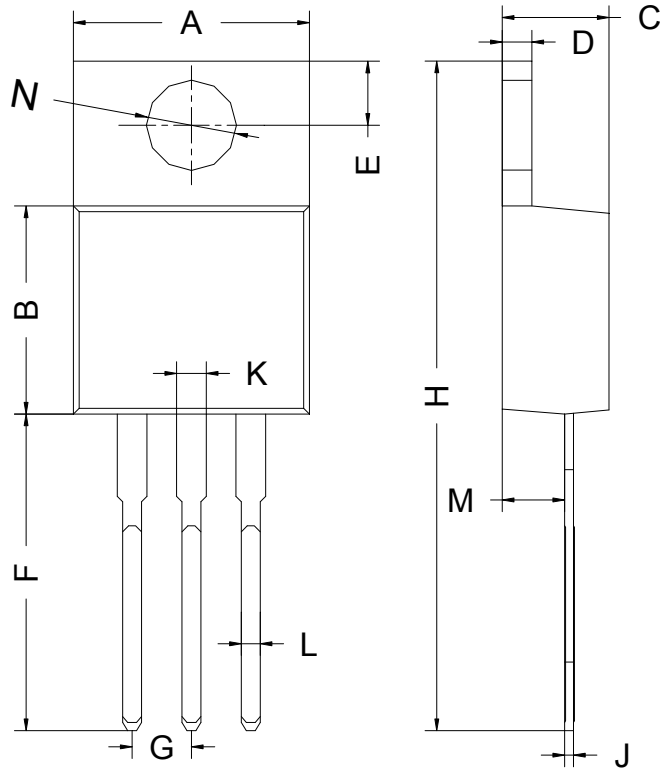

Figure 6. Power Derating

# TIP117

**Darlington Amplifier Transistor(PNP)**

## PACKAGE OUTLINE

Plastic surface mounted package TO-220AB




| TO-220AB | | |
|---|---|---|
| Dim | Min | Max |
| A | 9.80 | 10.30 |
| B | 8.70 | 9.10 |
| C | 4.57 Typical | |
| D | 1.27 Typical | |
| E | 2.64 | 2.84 |
| F | 13.14 | 13.74 |
| G | 2.44 | 2.64 |
| H | 28.03 | 28.83 |
| J | 0.38 Typical | |
| K | 1.22 | 1.32 |
| L | 0.71 | 0.91 |
| M | 2.50 Typical | |
| N | 3.86 Typical | |
| All Dimensions in mm | | |