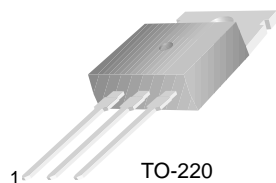


## TIP115/116/117

### Monolithic Construction With Built In Base-Emitter Shunt Resistors

- High DC Current Gain :  $h_{FE}=1000$  @  $V_{CE} = -4V$ ,  $I_C = -1A$  (Min.)
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP110/111/112



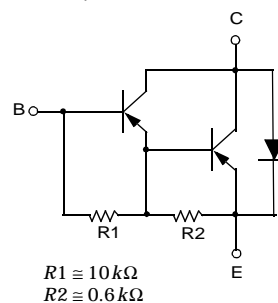
1.Base 2.Collector 3.Emitter

### PNP Epitaxial Silicon Darlington Transistor

#### Absolute Maximum Ratings $T_C=25^\circ C$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage : TIP115	- 60	V
	: TIP116	- 80	V
	: TIP117	- 100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP115	- 60	V
	: TIP116	- 80	V
	: TIP117	- 100	V
$V_{EBO}$	Emitter-Base Voltage	- 5	V
$I_C$	Collector Current (DC)	- 2	A
$I_{CP}$	Collector Current (Pulse)	-4	A
$I_B$	Base Current (DC)	- 50	mA
$P_C$	Collector Dissipation ( $T_a=25^\circ C$ )	2	W
	Collector Dissipation ( $T_C=25^\circ C$ )	50	W
$T_J$	Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ C$

Equivalent Circuit



#### Electrical Characteristics $T_C=25^\circ C$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : TIP115 : TIP116 : TIP117	$I_C = -30mA$ , $I_B = 0$	-60		V
			-80		V
			-100		V
					V
$I_{CEO}$	Collector Cut-off Current : TIP115 : TIP116 : TIP117	$V_{CE} = -30V$ , $I_B = 0$ $V_{CE} = -40V$ , $I_B = 0$ $V_{CE} = -50V$ , $I_B = 0$		-2	mA
				-2	mA
				-2	mA
					mA
$I_{CBO}$	Collector Cut-off Current : TIP115 : TIP116 : TIP117	$V_{CB} = -60V$ , $I_E = 0$ $V_{CB} = -80V$ , $I_E = 0$ $V_{CB} = -100V$ , $I_E = 0$		-1	mA
				-1	mA
				-1	mA
					mA
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -5V$ , $I_C = 0$		-2	mA
$h_{FE}$	DC Current Gain	$V_{CE} = -4V$ , $I_C = -1A$ $V_{CE} = -4V$ , $I_C = -2A$	1000 500		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -2A$ , $I_B = -8mA$		-2.5	V
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = -4V$ , $I_C = -2A$		-2.8	V
$C_{ob}$	Output Capacitance	$V_{CB} = -10V$ , $I_E = 0$ , $f = 0.1MHz$		200	pF

## Typical Characteristics

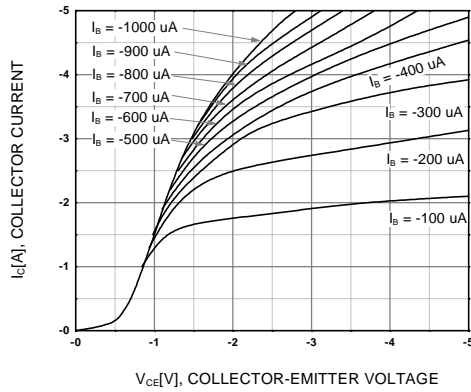


Figure 1. Static Characteristic

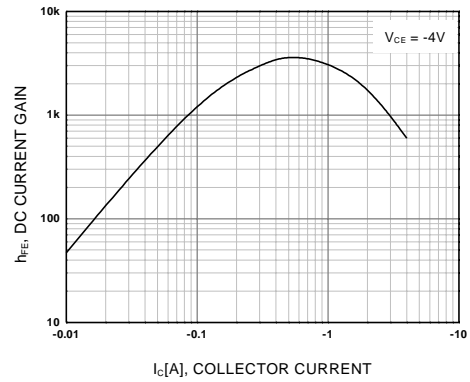


Figure 2. DC current Gain

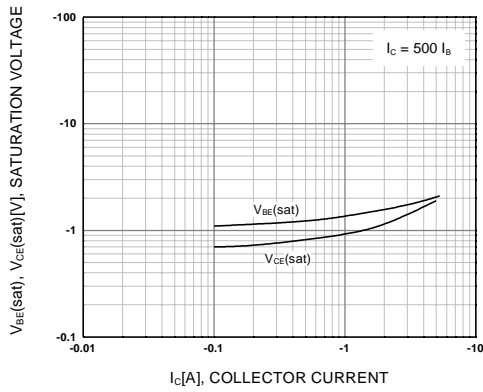


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

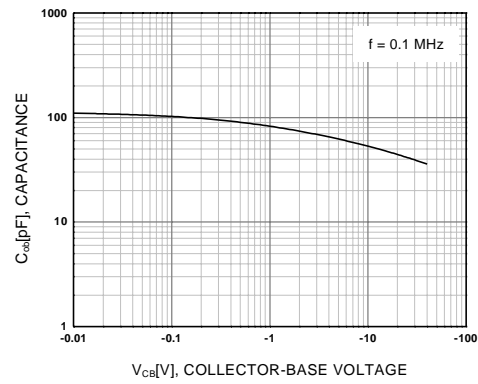


Figure 4. Collector Output Capacitance

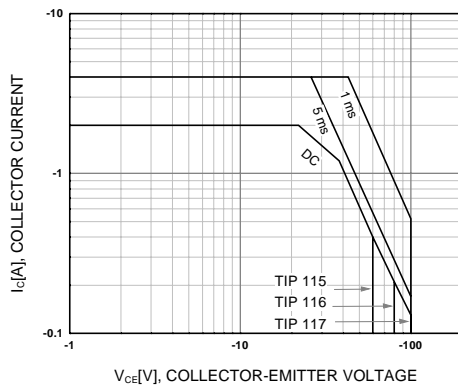


Figure 5. Safe Operating Area

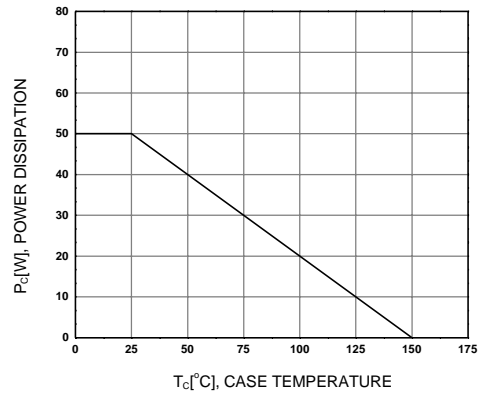
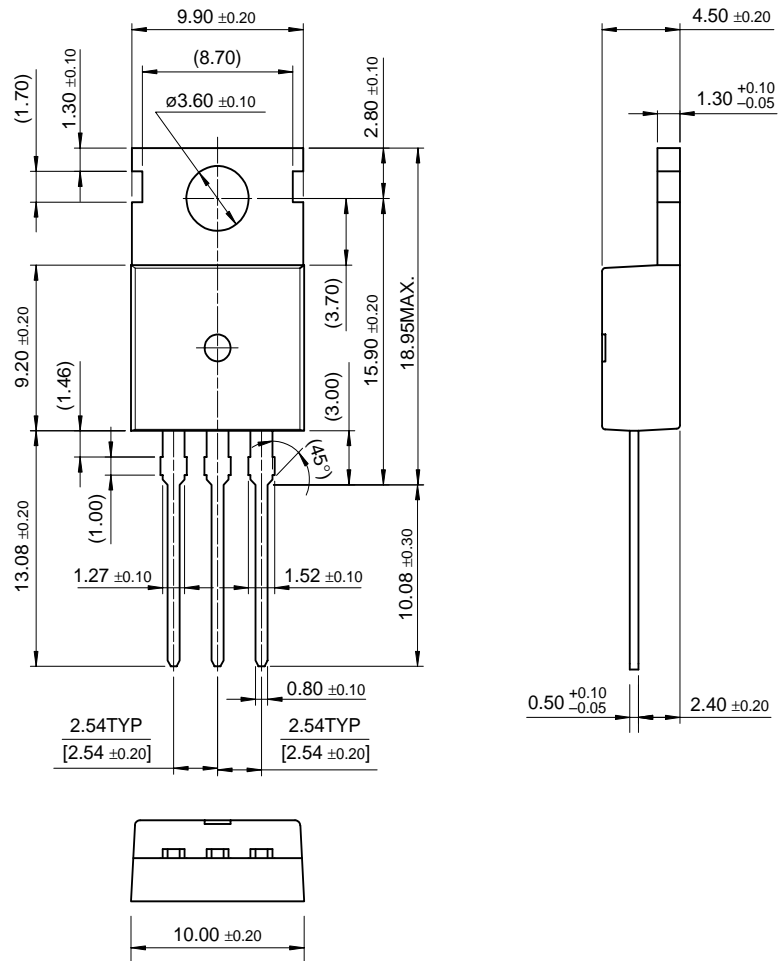


Figure 6. Power Derating

# Package Dimensions

## TO-220



Dimensions in Millimeters

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