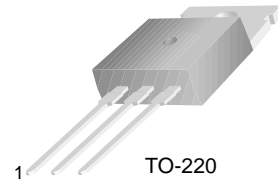


## TIP115/116/117

### 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



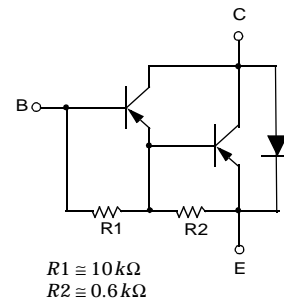
1.Base 2.Collector 3.Emmitter

### 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



$R1 \cong 10k\Omega$   
 $R2 \cong 0.6k\Omega$

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

Symbol	Parameter	Test Condition	Min.	Max.	Units	
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -30mA$ , $I_B = 0$	-60		V	
			-80		V	
			-100		V	
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = -30V$ , $I_B = 0$		-2	mA	
			$V_{CE} = -40V$ , $I_B = 0$		-2	mA
			$V_{CE} = -50V$ , $I_B = 0$		-2	mA
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -60V$ , $I_E = 0$		-1	mA	
			$V_{CB} = -80V$ , $I_E = 0$		-1	mA
			$V_{CB} = -100V$ , $I_E = 0$		-1	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -5V$ , $I_C = 0$		-2	mA	
$h_{FE}$	DC Current Gain	$V_{CE} = -4V$ , $I_C = -1A$	1000			
		$V_{CE} = -4V$ , $I_C = -2A$	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

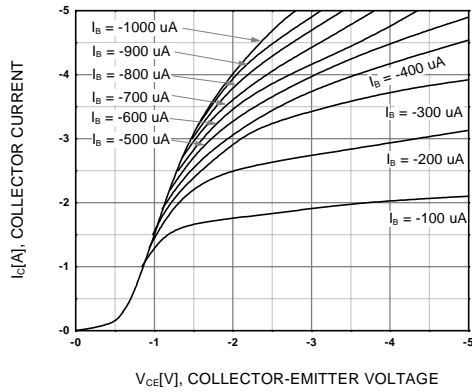


Figure 1. Static Characteristic

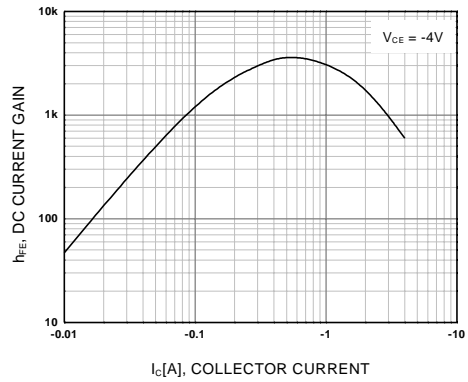


Figure 2. DC current Gain

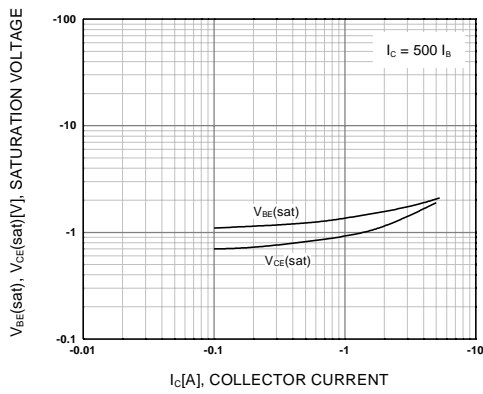


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

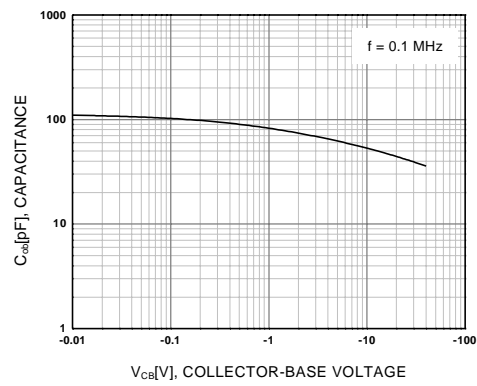


Figure 4. Collector Output Capacitance

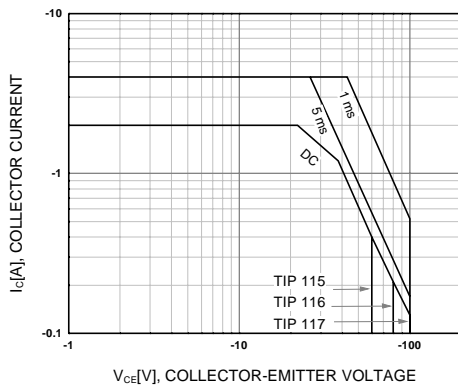


Figure 5. Safe Operating Area

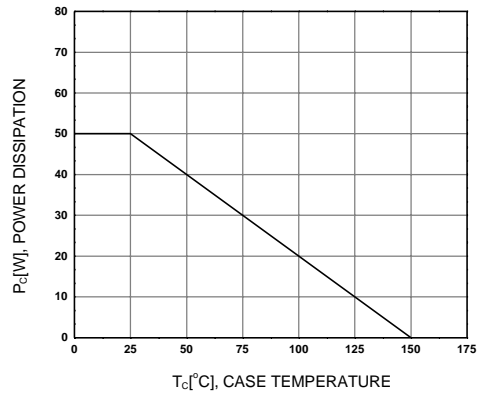
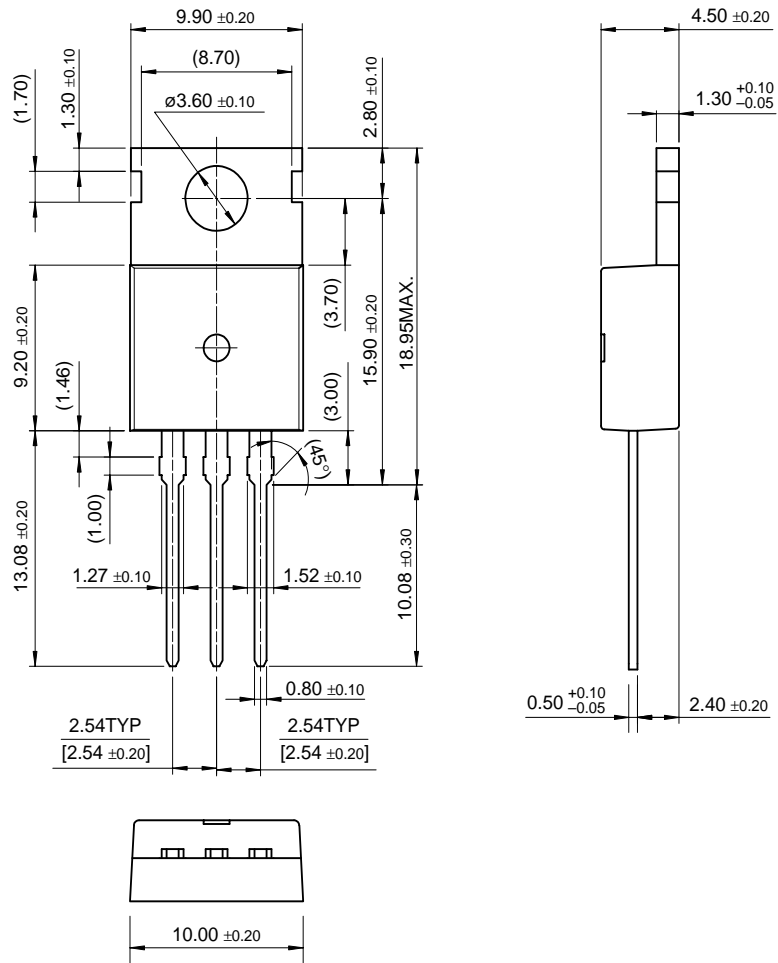


Figure 6. Power Derating

# Package Dimensions

## TO-220

TIP115/116/117



Dimensions in Millimeters

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