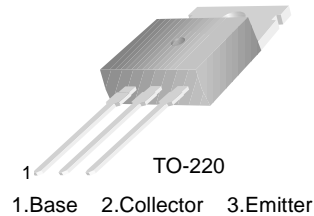


## TIP145T/146T/147T

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

- High DC Current Gain :  $h_{FE} = 1000 @ V_{CE} = -4V, I_C = -5A$  (Min.)
- Industrial Use
- Complement to TIP140T/141T/142T

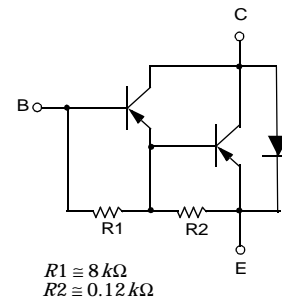


### PNP Epitaxial Silicon Darlington Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage : TIP145T	- 60	V
	: TIP146T	- 80	V
	: TIP147T	- 100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP145T	- 60	V
	: TIP146T	- 80	V
	: TIP147T	- 100	V
$V_{EBO}$	Emitter-Base Voltage	- 5	V
$I_C$	Collector Current (DC)	- 10	A
$I_{CP}$	Collector Current (Pulse)	- 15	A
$I_B$	Base Current (DC)	- 0.5	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	80	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Equivalent Circuit



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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units	
$V_{CE(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -30\text{mA}, I_B = 0$	- 60 - 80 - 100			V V V	
	: TIP145T						
	: TIP146T						
	: TIP147T						
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = -30V, I_B = 0$ $V_{CE} = -40V, I_B = 0$ $V_{CE} = -50V, I_B = 0$				mA mA mA	
	: TIP145T						
	: TIP146T						
	: TIP147T						
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -60V, I_E = 0$ $V_{CB} = -80V, I_E = 0$ $V_{CB} = -100V, I_E = 0$				mA mA mA	
	: TIP145T						
	: TIP146T						
	: TIP147T						
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -5V, I_C = 0$				- 2 mA	
$h_{FE}$	DC Current Gain	$V_{CE} = -4V, I_C = -5A$	1000				
		$V_{CE} = -4V, I_C = -10A$	500				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -5A, I_B = -10\text{mA}$				- 2 V	
		$I_C = -10A, I_B = -40\text{mA}$				- 3 V	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -10A, I_B = -40\text{mA}$				- 3.5 V	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -4V, I_C = -10A$				- 3 V	
$t_D$	Delay Time	$V_{CC} = -30V, I_C = -5A$ $I_{B1} = -20\text{mA}, I_{B2} = 20\text{mA}$ $R_L = 6\Omega$		0.15		$\mu\text{s}$	
$t_R$	Rise Time			0.55		$\mu\text{s}$	
$t_{STG}$	Storage Time			2.5		$\mu\text{s}$	
$t_F$	Fall Time				2.5		$\mu\text{s}$

# Typical Characteristics

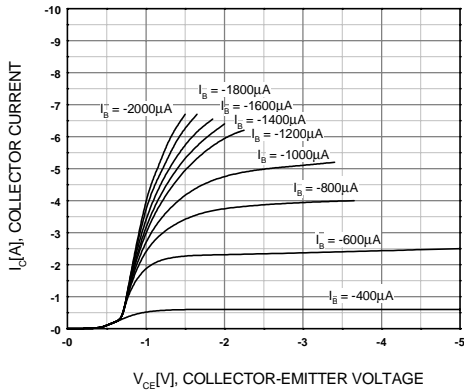


Figure 1. Static Characteristic

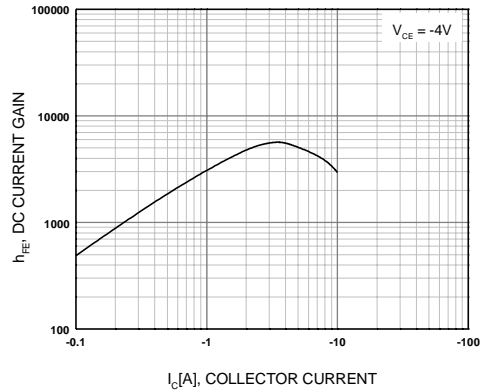


Figure 2. DC current Gain

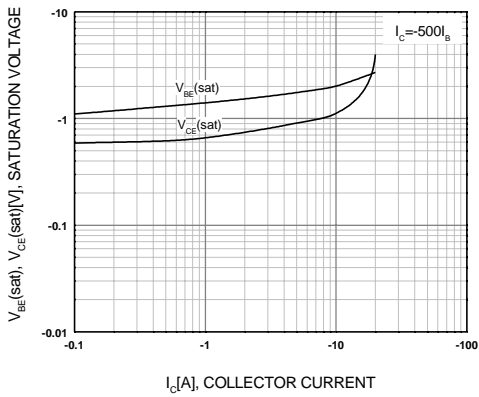


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

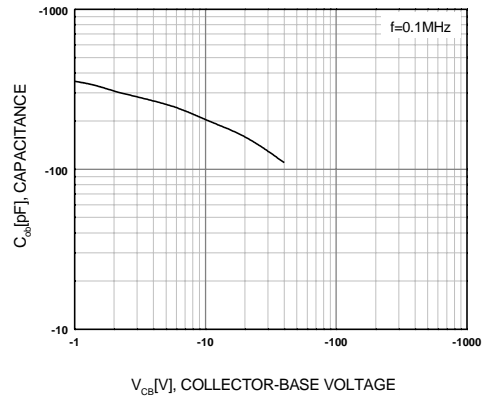


Figure 4. Collector Output Capacitance

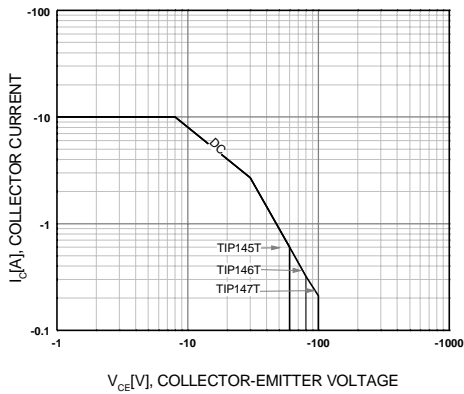


Figure 5. Safe Operating Area

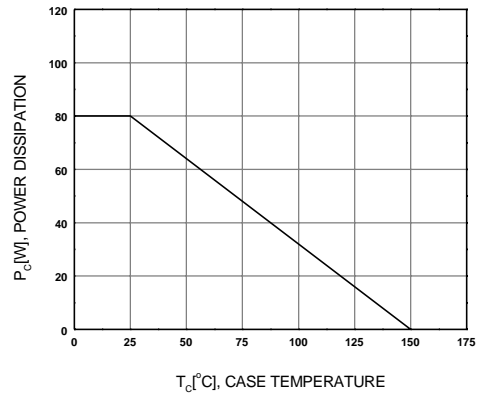
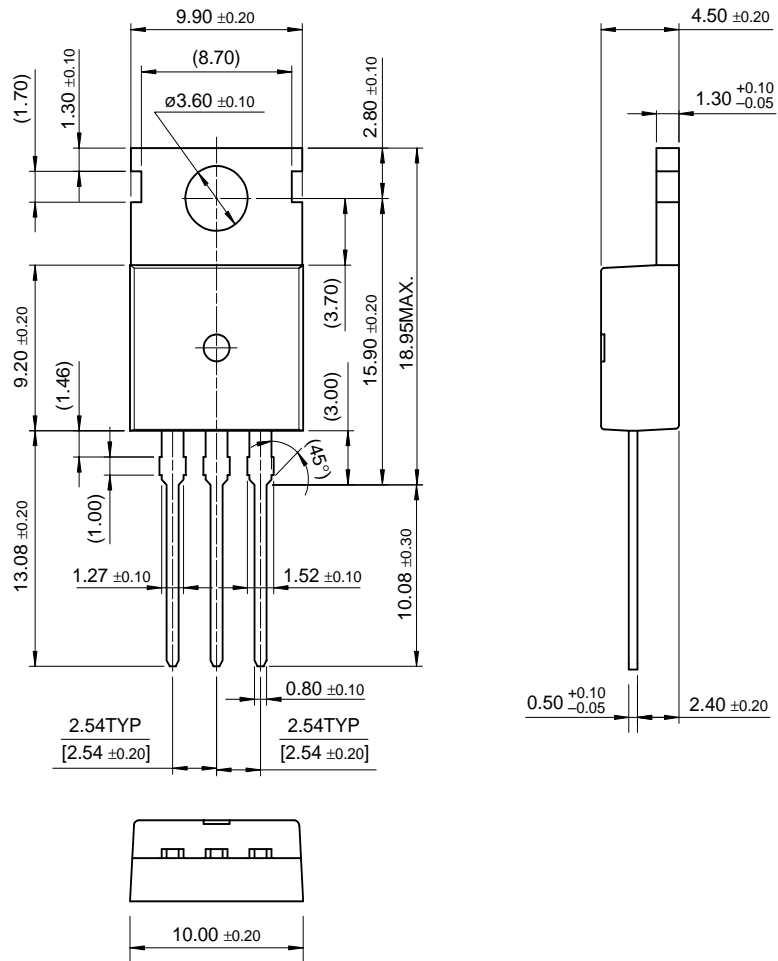


Figure 6. Power Derating

# Package Dimensions

## TO-220

TIP145T/146T/147T



Dimensions in Millimeters

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