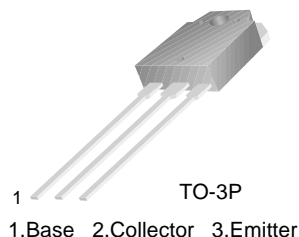


## TIP145/146/147

### 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 TIP140/141/142

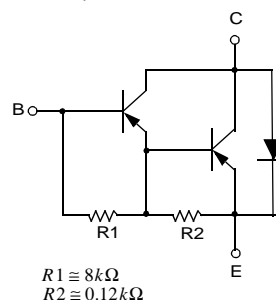


### PNP Epitaxial Silicon Darlington Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage : TIP145	- 60	V
	: TIP146	- 80	V
	: TIP147	- 100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP145	- 60	V
	: TIP146	- 80	V
	: TIP147	- 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 ( $T_C=25^\circ C$ )	125	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.	Typ.	Max.	Units	
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : TIP145	$I_C = -30mA, I_B = 0$	- 60			V	
	: TIP146					- 80	V
	: TIP147					- 100	V
$I_{CEO}$	Collector Cut-off Current : TIP145	$V_{CE} = -30V, I_B = 0$			- 2	mA	
	: TIP146	$V_{CE} = -40V, I_B = 0$			- 2	mA	
	: TIP147	$V_{CE} = -50V, I_B = 0$			- 2	mA	
$I_{CBO}$	Collector Cut-off Current : TIP145	$V_{CB} = -60V, I_E = 0$			- 1	mA	
	: TIP146	$V_{CB} = -80V, I_E = 0$			- 1	mA	
	: TIP147	$V_{CB} = -100V, I_E = 0$			- 1	mA	
$I_{EBO}$	Emitter Cut-off Current	$V_{BE} = -5V, I_C = 0$			- 2	mA	
$h_{FE}$	DC Current Gain	$V_{CE} = -4V, I_C = -5A$ $V_{CE} = -4V, I_C = -10A$	1000 500				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -5A, I_B = -10mA$			- 2	V	
		$I_C = -10A, I_B = -40mA$			- 3	V	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -10A, I_B = -40mA$			- 3.5	V	
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = -4V, I_C = -10A$			- 3	V	
$t_D$	Delay Time	$V_{CC} = -30V, I_C = -5A$ $I_{B1} = -20mA, I_{B2} = 20mA$ $R_L = 6\Omega$		0.15		$\mu s$	
$t_R$	Rise Time			0.55		$\mu s$	
$t_{STG}$	Storage Time			2.5		$\mu s$	
$t_F$	Fall Time			2.5		$\mu s$	

# Typical Characteristics

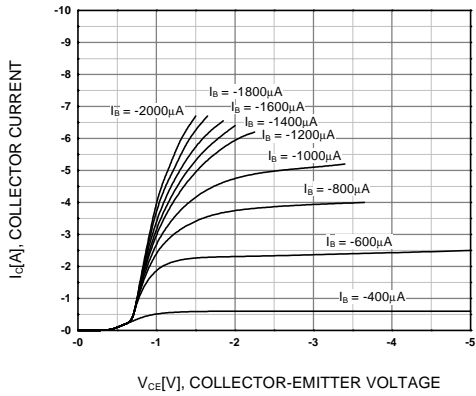


Figure 1. Static Characteristic

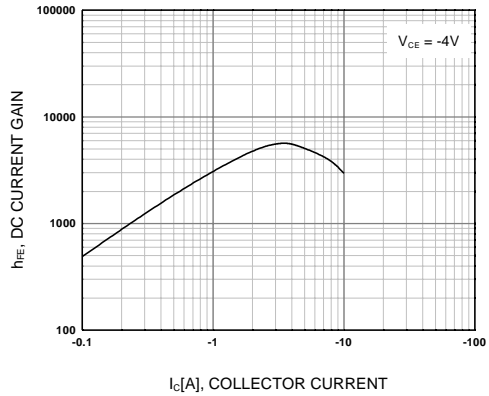


Figure 2. DC current Gain

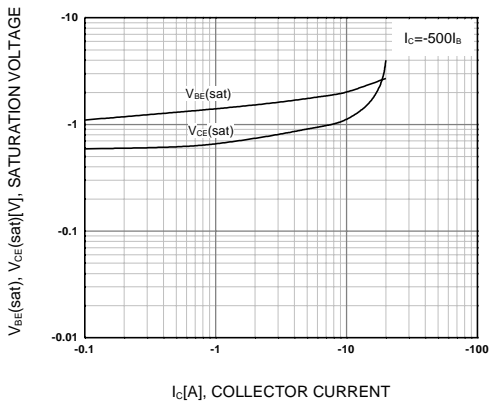


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

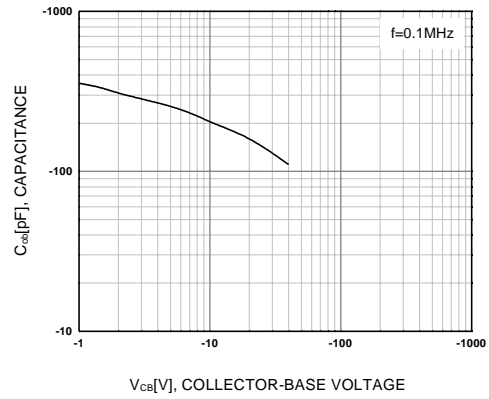


Figure 4. Collector Output Capacitance

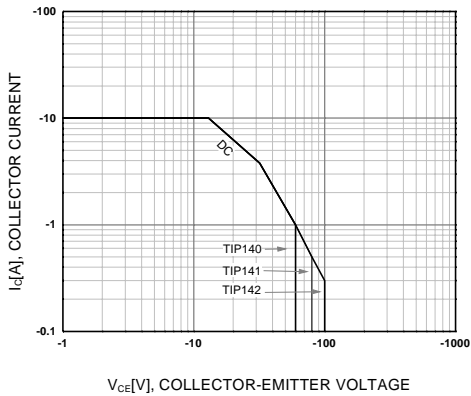


Figure 5. Safe Operating Area

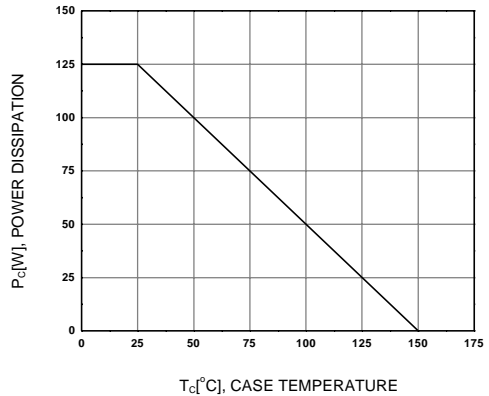
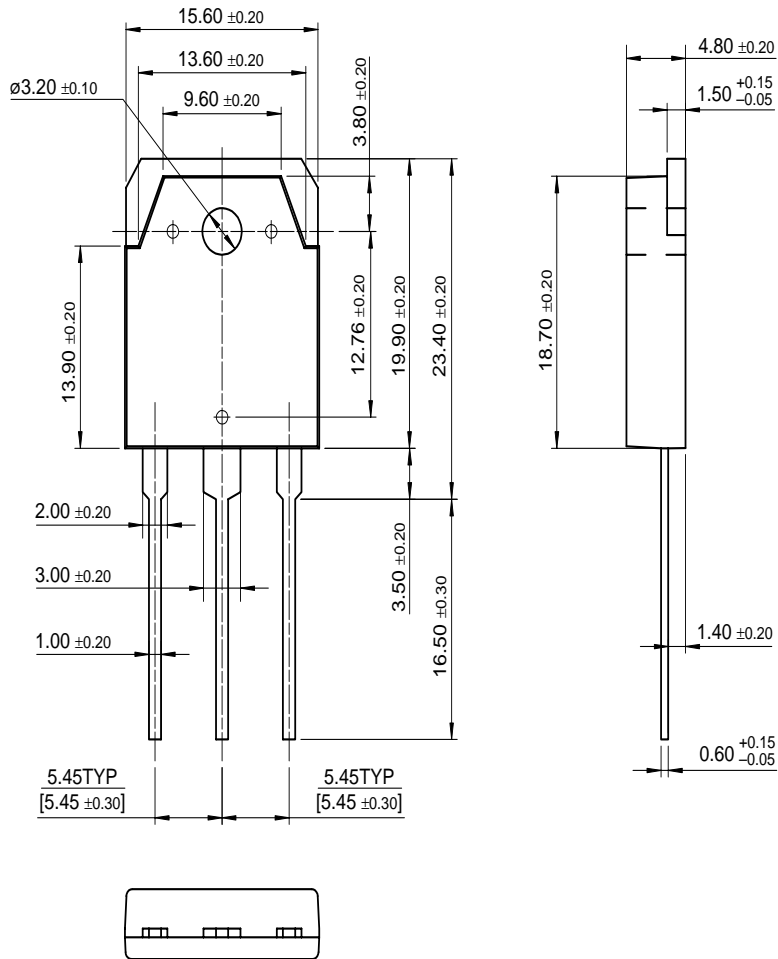


Figure 6. Power Derating

# Package Dimensions

## TO-3P



TIP145/146/147

Dimensions in Millimeters

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E <sup>2</sup> CMOS™	PowerTrench®	VCX™
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