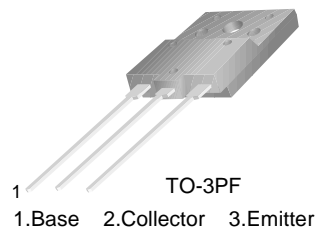


TIP145F/146F/147F

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 TIP140F/141F/142F

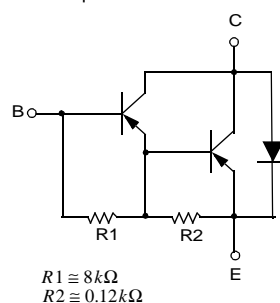


PNP Epitaxial Darlington Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Emitter Voltage : TIP145F	- 60	V
	: TIP146F	- 80	V
	: TIP147F	- 100	V
V_{CEO}	Collector-Emitter Voltage : TIP145F	- 60	V
	: TIP146F	- 80	V
	: TIP147F	- 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 ($T_C=25^\circ\text{C}$)	60	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		
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -30\text{mA}$, $I_B = 0$	- 60			V		
	: TIP145F					- 80	V	
	: TIP146F					- 100	V	
I_{CEO}	Collector Cut-off Current	$V_{CE} = -30V$, $I_B = 0$			- 2	mA		
	: TIP145F					$V_{CE} = -40V$, $I_B = 0$	- 2	mA
	: TIP146F					$V_{CE} = -50V$, $I_B = 0$	- 2	mA
I_{CBO}	Collector Cut-off Current	$V_{CB} = -60V$, $I_E = 0$			- 1	mA		
	: TIP145F					$V_{CB} = -80V$, $I_E = 0$	- 1	mA
	: TIP146F					$V_{CB} = -100V$, $I_E = 0$	- 1	mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = -5V$, $I_C = 0$			- 2	mA		
h_{FE}	DC Current Gain	$V_{CE} = -4V$, $I_C = -5A$	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		μs		
t_R	Rise Time			0.55		μs		
t_{STG}	Storage Time			2.5		μs		
t_f	Fall Time			2.5		μs		

Typical Characteristics

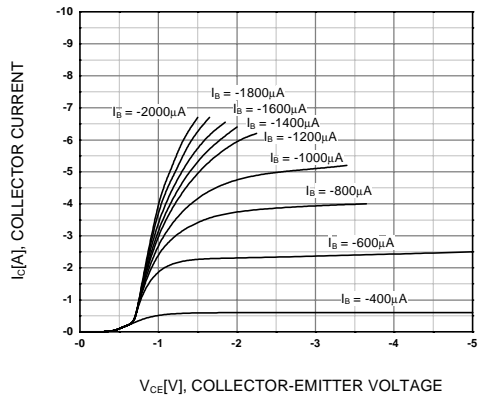


Figure 1. Static Characteristic

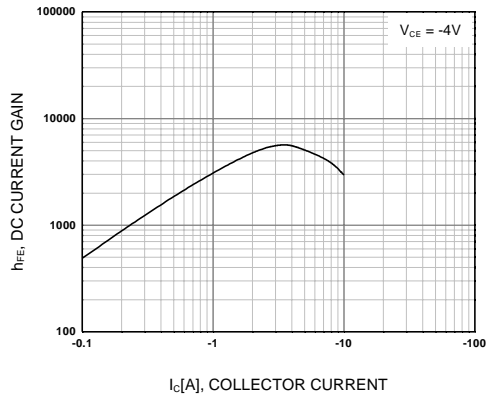


Figure 2. DC current Gain

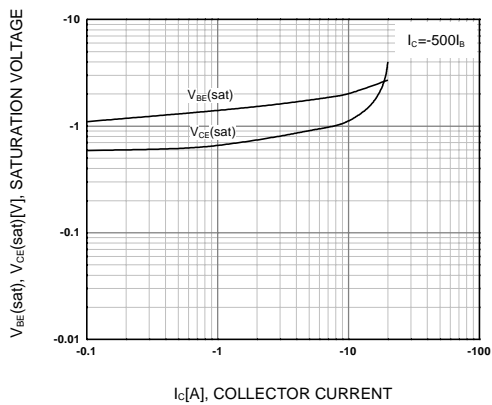


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

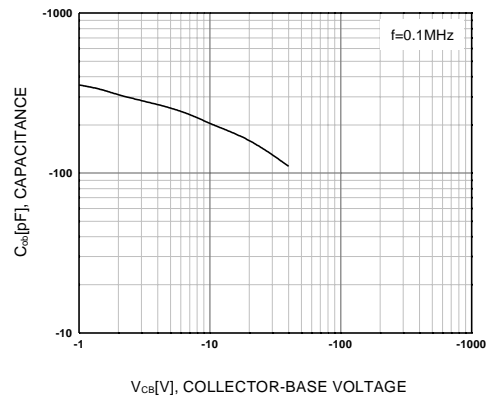


Figure 4. Collector Output Capacitance

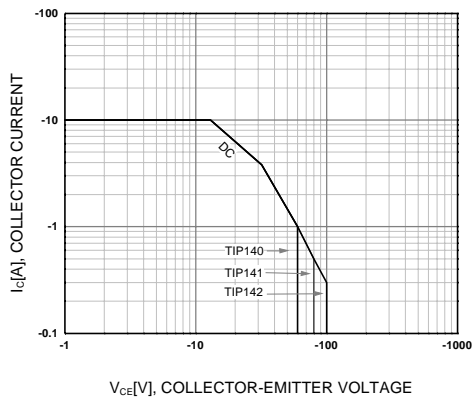


Figure 5. Safe Operating Area

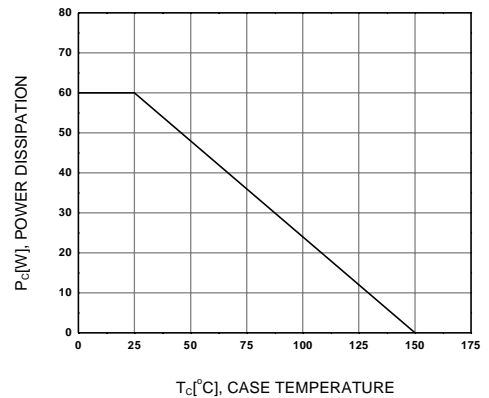
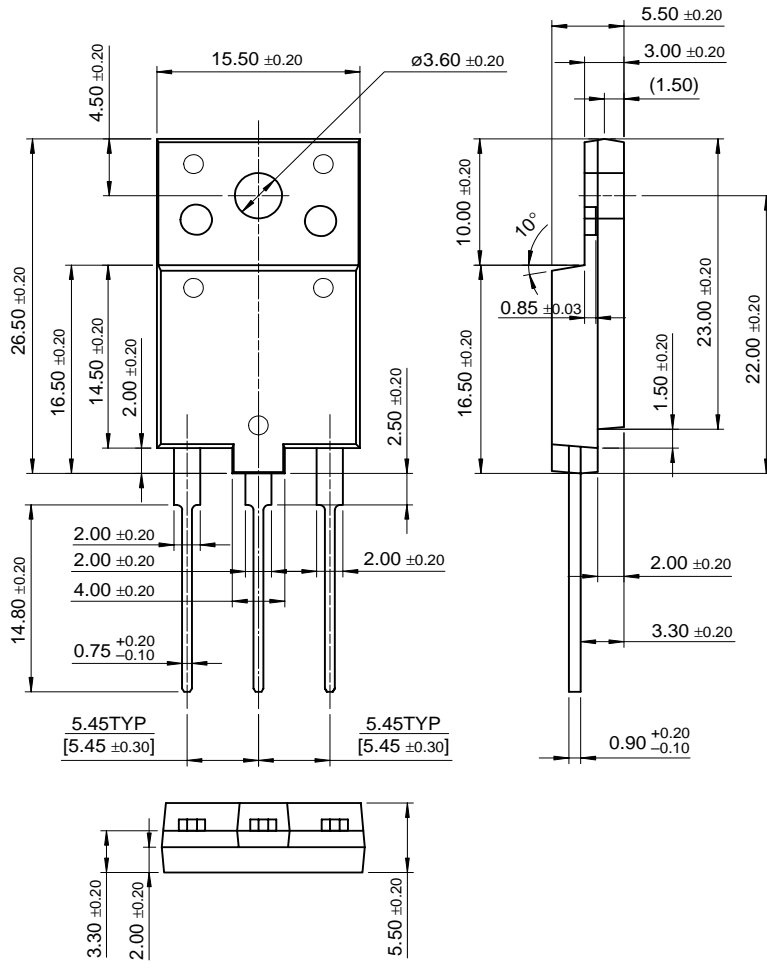


Figure 6. Power Derating

Package Dimensions

TO-3PF

TIP145F/146F/147F



Dimensions in Millimeters

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