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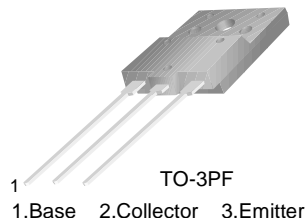
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## TIP145F/146F/147F

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

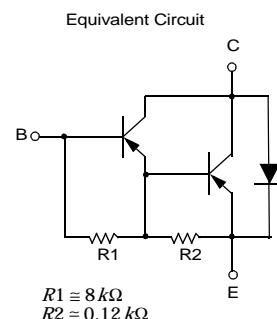
- High DC Current Gain :  $h_{FE} = 1000$  @  $V_{CE} = -4V$ ,  $I_C = -5A$  (Min.)
- Industrial Use
- Complement to TIP140F/141F/142F



### PNP Epitaxial Darlington Transistor

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

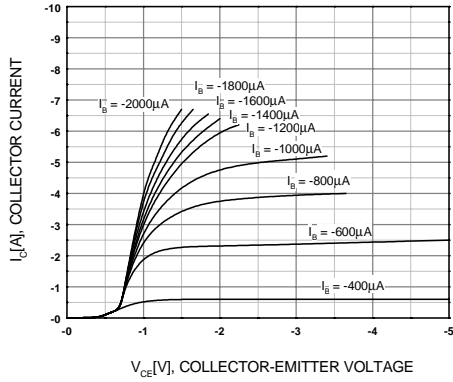
Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Emitter Voltage : TIP145F	- 60	V
	: TIP146F	- 80	V
	: TIP147F	- 100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP145F	- 60	V
	: TIP146F	- 80	V
	: TIP147F	- 100	V
$V_{EBO}$	Emitter-Base Voltage	- 5	V
$I_C$	Collector Current (DC)	- 10	A
$I_{CP}$	Collector Current (Pulse)	- 15	A
$I_B$	Base Current (DC)	- 0.5	A
$P_C$	Collector Dissipation ( $T_C=25^\circ C$ )	60	W
$T_J$	Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ C$



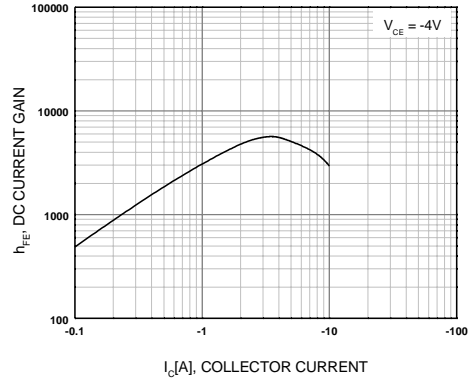
#### Electrical Characteristics $T_C=25^\circ C$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units	
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -30mA$ , $I_B = 0$	- 60			V	
	: TIP145F					- 80	V
	: TIP146F					- 100	V
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = -30V$ , $I_B = 0$ $V_{CE} = -40V$ , $I_B = 0$ $V_{CE} = -50V$ , $I_B = 0$				- 2 mA	
	: TIP145F					- 2 mA	
	: TIP146F					- 2 mA	
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -60V$ , $I_E = 0$ $V_{CB} = -80V$ , $I_E = 0$ $V_{CB} = -100V$ , $I_E = 0$				- 1 mA	
	: TIP145F					- 1 mA	
	: TIP146F					- 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				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -5A$ , $I_B = -10mA$ $I_C = -10A$ , $I_B = -40mA$				- 2 V	
						- 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 $\mu s$	

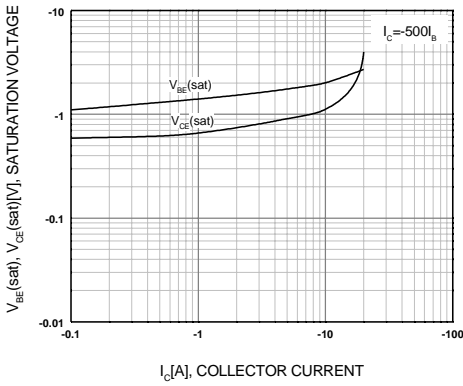
**Typical Characteristics**



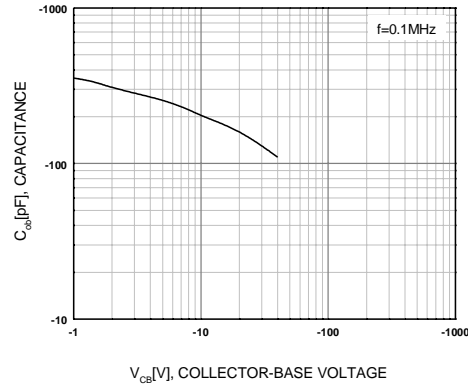
**Figure 1. Static Characteristic**



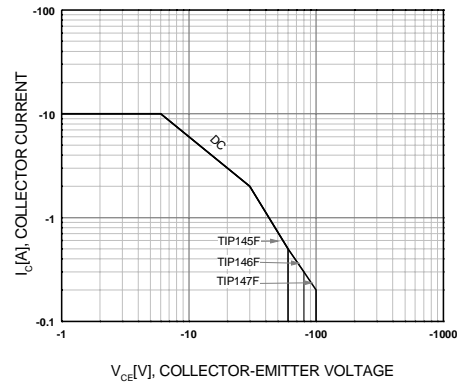
**Figure 2. DC current Gain**



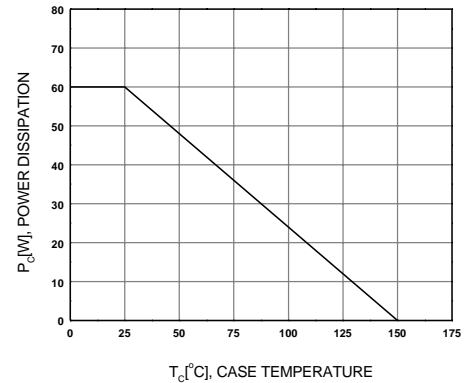
**Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage**



**Figure 4. Collector Output Capacitance**



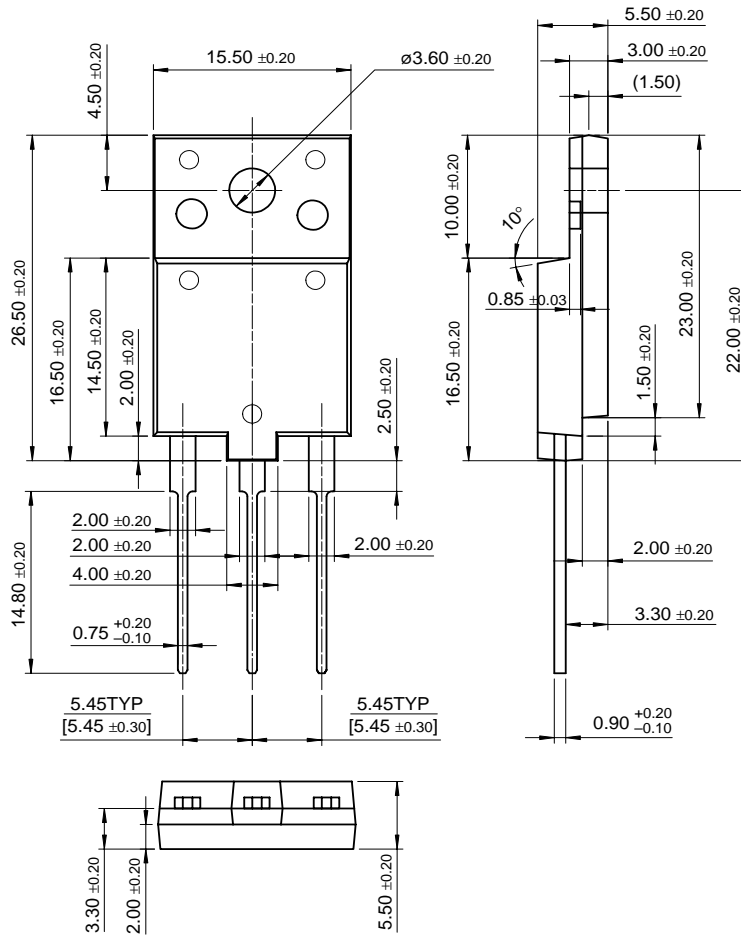
**Figure 5. Safe Operating Area**



**Figure 6. Power Derating**

**Package Dimensions**

**TO-3PF**



Dimensions in Millimeters

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CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
E <sup>2</sup> C MOS™	HiSeC™	MSXPro™	Quiet Series™	TruTranslation™
EnSigna™	I <sup>2</sup> C™	OCX™	RapidConfigure™	UHC™
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Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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