



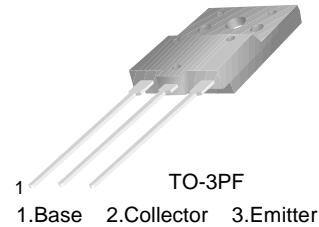
THE DATASHEET OF TIP142FTU



TIP140F/141F/142F

Monolithic Construction With Built In Base-Emitter Shunt Resistors

- Complement to TIP145F/146F/147F
- High DC Current Gain : $h_{FE} = 1000$ @ $V_{CE} = 4V$, $I_C = 5A$ (Min.)
- Industrial Use

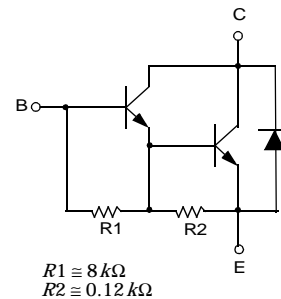


NPN Epitaxial Darlington Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP140F	60	V
	: TIP141F	80	V
	: TIP142F	100	V
V_{CEO}	Collector-Emitter Voltage : TIP140F	60	V
	: TIP141F	80	V
	: TIP142F	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 80 100			V	
	: TIP140F					V	
	: TIP141F					V	
	: TIP142F					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 2 2	mA mA mA	
	: TIP140F					mA	
	: TIP141F					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 1 1	mA mA mA	
	: TIP140F					mA	
	: TIP141F					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	$I_C = 5A$, $I_B = 10\text{mA}$ $I_C = 10A$, $I_B = 40\text{mA}$			2 3	V V	
						$I_C = 10A$, $I_B = 40\text{mA}$	3.5
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 4V$, $I_C = 10A$			3	V	
t_D	Delay Time	$V_{CC} = 30V$, $I_C = 5A$ $I_B 1 = 20\text{mA}$, $I_B 2 = -20\text{mA}$ $R_L = 6\Omega$		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

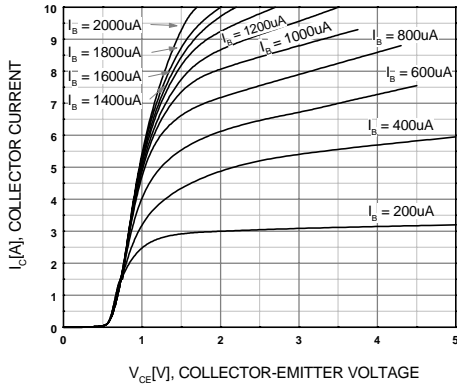


Figure 1. Static Characteristics

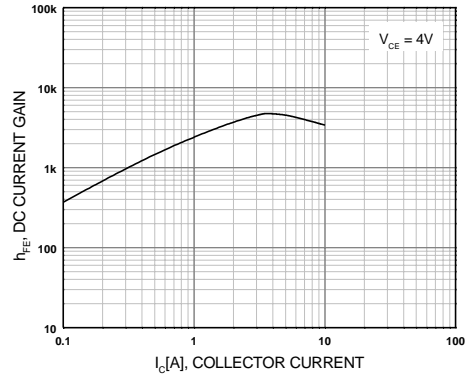


Figure 2. DC current Gain

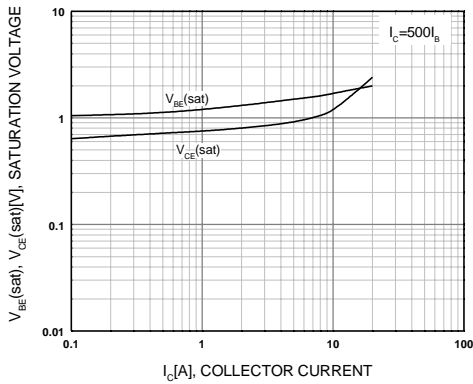


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

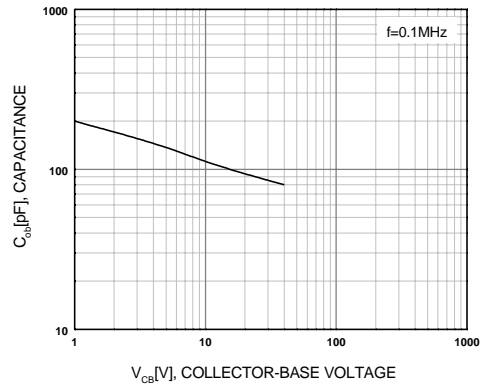


Figure 4. Collector Output Capacitance

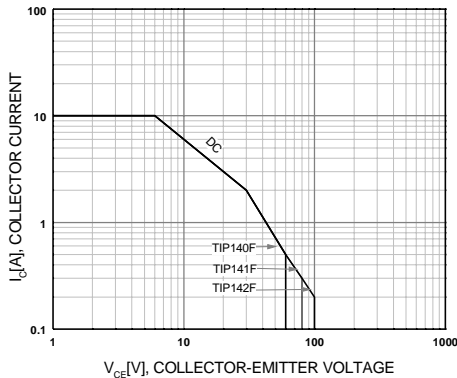


Figure 5. Safe Operating Area

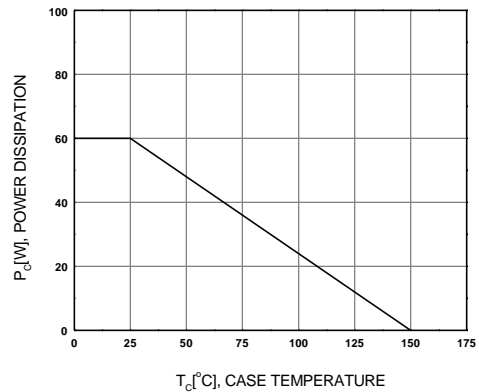
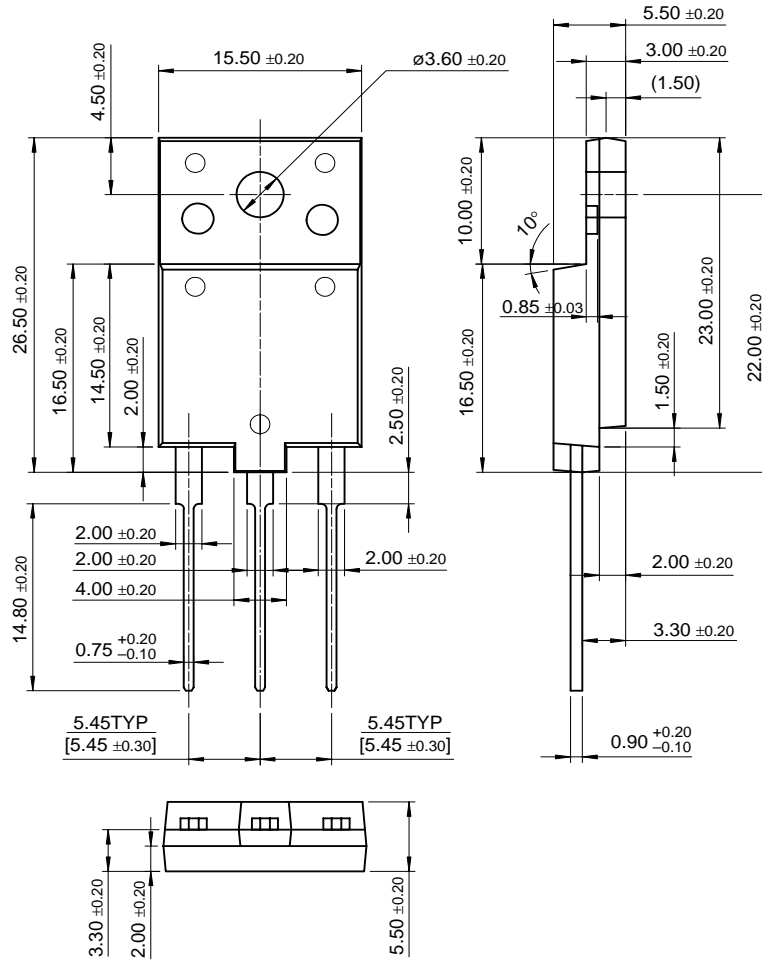


Figure 6. Power Derating

Package Dimensions

TO-3PF

TIP140F/141F/142F



Dimensions in Millimeters

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