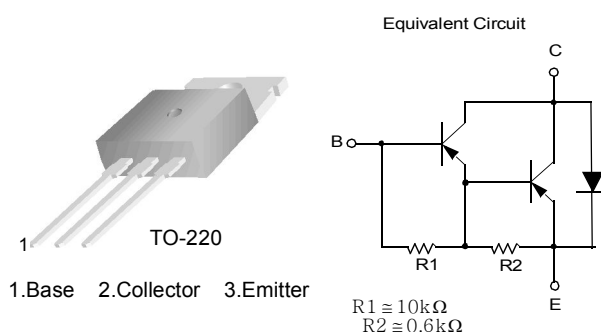


TIP115/TIP116/TIP117

PNP Epitaxial Silicon Darlington Transistor

- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : $h_{FE}=1000$ @ $V_{CE}=-4V$, $I_C=-1A$ (Min.)
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP110/111/112



Absolute Maximum Ratings* $T_a = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{CBO}	Collector-Base Voltage : TIP115	- 60	V
	: TIP116	- 80	V
	: TIP117	- 100	V
V_{CEO}	Collector-Emitter Voltage : TIP115	- 60	V
	: TIP116	- 80	V
	: TIP117	- 100	V
V_{EBO}	Emitter-Base Voltage	- 5	V
I_C	Collector Current (DC)	- 2	A
I_{CP}	Collector Current (Pulse)	- 4	A
I_B	Base Current (DC)	- 50	mA
P_C	Collector Dissipation ($T_a=25^\circ C$)	2	W
	Collector Dissipation ($T_C=25^\circ C$)	50	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ C$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Electrical Characteristics* $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : TIP115 : TIP116 : TIP117	$I_C = -30\text{mA}$, $I_B = 0$	-60 -80 -100			V V V
I_{CEO}	Collector Cut-off Current : TIP115 : TIP116 : TIP117	$V_{CE} = -30\text{V}$, $I_B = 0$ $V_{CE} = -40\text{V}$, $I_B = 0$ $V_{CE} = -50\text{V}$, $I_B = 0$			-2 -2 -2	mA mA mA
I_{CBO}	Collector Cut-off Current : TIP115 : TIP116 : TIP117	$V_{CB} = -60\text{V}$, $I_E = 0$ $V_{CB} = -80\text{V}$, $I_E = 0$ $V_{CB} = -100\text{V}$, $I_E = 0$			-1 -1 -1	mA mA mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = -5\text{V}$, $I_C = 0$			-2	mA
h_{FE}	DC Current Gain	$V_{CE} = -4\text{V}$, $I_C = -1\text{A}$ $V_{CE} = -4\text{V}$, $I_C = -2\text{A}$	1000 500			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -2\text{A}$, $I_B = -8\text{mA}$			-2.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -4\text{V}$, $I_C = -2\text{A}$			-2.8	V
C_{ob}	Output Capacitance	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 0.1\text{MHz}$			200	pF

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Characteristics

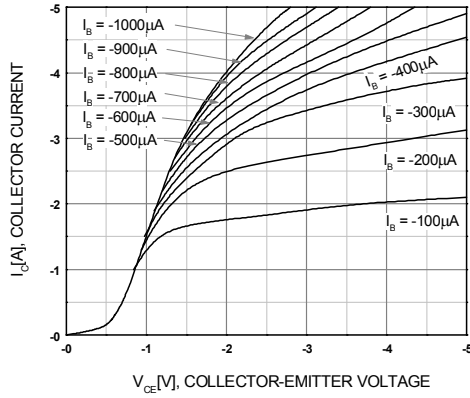


Figure 1. Static Characteristic

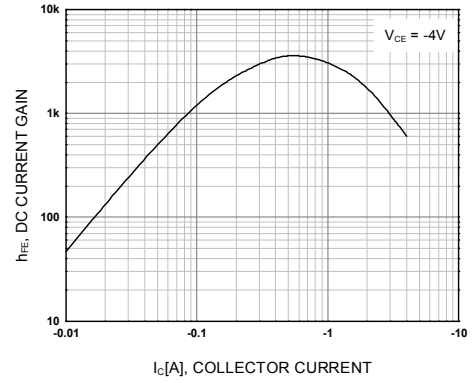


Figure 2. DC current Gain

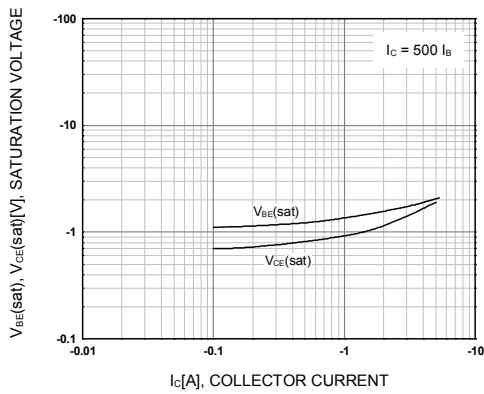


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

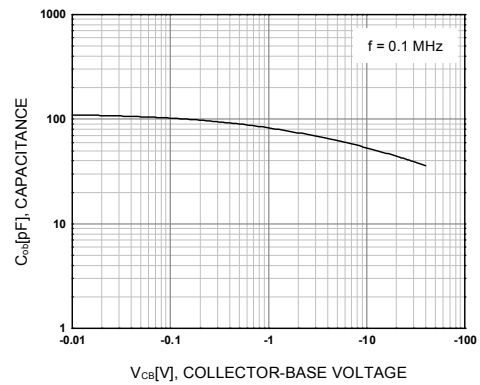


Figure 4. Collector Output Capacitance

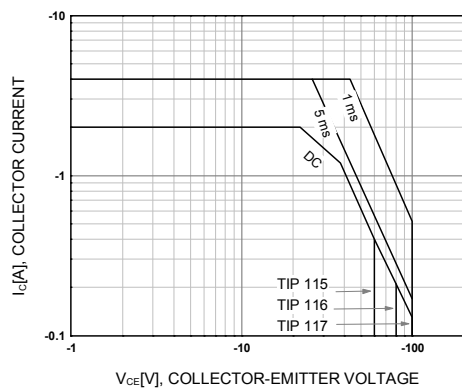


Figure 5. Safe Operating Area

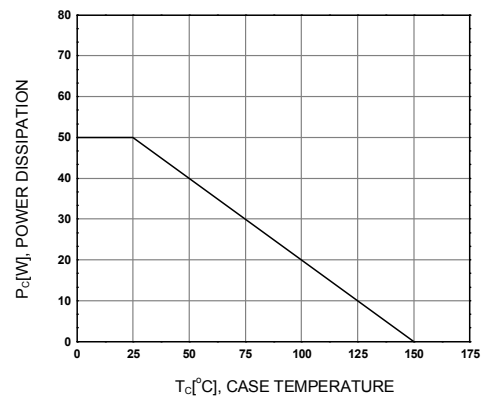


Figure 6. Power Derating



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