

TIP145T/146T/147T

SemiHow
Know-How for Semiconductor

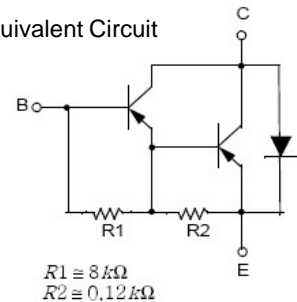
TIP145T/146T/147T

Monolithic Construction With Built In Base-Emitter Shunt Resistors

- High DC Current Gain : $h_{FE}=1000$ @ $V_{CE}=-4V$, $I_C=-3A$ (Min.)
- Collector-Emitter Sustaining Voltage
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP140/141/142

PNP Epitaxial Silicon Darlington Transistor

Equivalent Circuit



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

CHARACTERISTICS	SYMBOL	RATING	UNIT
Collector-Base Voltage : TIP145T : TIP146T : TIP147T	V_{CBO}	-60 -80 -100	V V V
Collector-Emitter Voltage : TIP145T : TIP146T : TIP147T	V_{CEO}	-60 -80 -100	V V V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current(DC)	I_C	-10	A
Collector Current(Pulse)	I_{CP}	-15	A
Base Current	I_B	-0.5	A
Collector Dissipation($T_a=25^\circ\text{C}$)	P_C	2	W
Collector Dissipation($T_c=25^\circ\text{C}$)	P_C	80	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65~150	$^\circ\text{C}$

TO-220

1. Base
2. Collector
3. Emitter



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

CHARACTERISTICS	SYMBOL	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage : TIP145T : TIP146T : TIP147T	$V_{CEO(SUS)}$	$I_C=-30\text{mA}$, $I_B=0$	-60 -80 -100		V V V
Collector Cut-off Current : TIP145T : TIP146T : TIP147T	I_{CEO}	$V_{CE}=-30\text{V}$, $I_B=0$ $V_{CE}=-40\text{V}$, $I_B=0$ $V_{CE}=-50\text{V}$, $I_B=0$		-2 -2 -2	mA mA mA
Collector Cut-off Current : TIP145T : TIP146T : TIP147T	I_{CBO}	$V_{CE}=-60\text{V}$, $I_E=0$ $V_{CE}=-80\text{V}$, $I_E=0$ $V_{CE}=-100\text{V}$, $I_E=0$		-1 -1 -1	mA mA mA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=-5\text{V}$, $I_C=0$		-2	mA
DC Current Gain	h_{FE}	$V_{CE}=-4\text{V}$, $I_C=-5\text{A}$ $V_{CE}=-4\text{V}$, $I_C=-10\text{A}$	1000 500		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-5\text{A}$, $I_B=-10\text{mA}$ $I_C=-10\text{A}$, $I_B=-40\text{mA}$		-2 -3	V V
Base-Emitter ON Voltage	$V_{BE(on)}$	$V_{CE}=-4\text{V}$, $I_C=-10\text{A}$		-3	V
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}$, $I_E=0$, $f=0.1\text{MHz}$		200	pF

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

Typical Characteristics

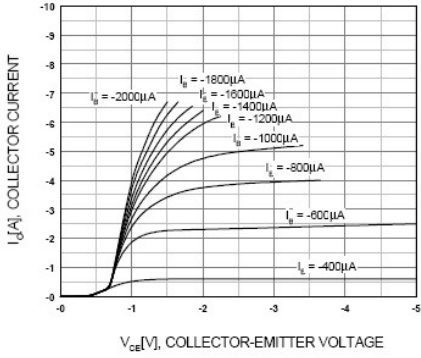


Figure 1. Static Characteristic

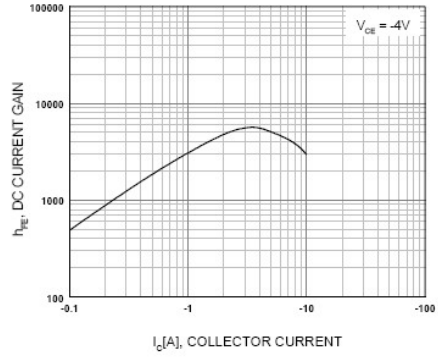


Figure 2. DC current Gain

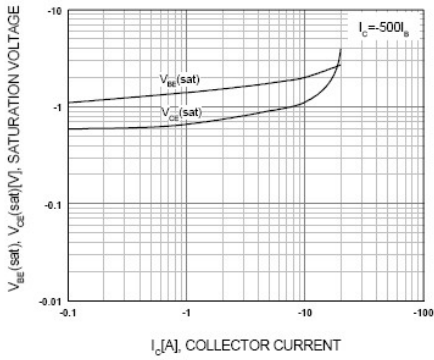


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

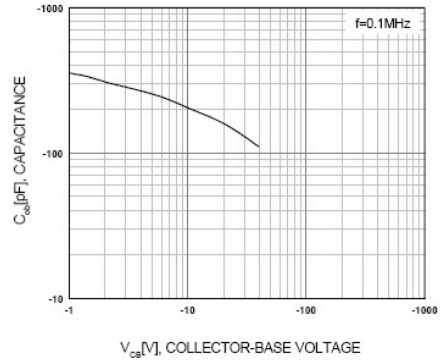


Figure 4. Collector Output Capacitance

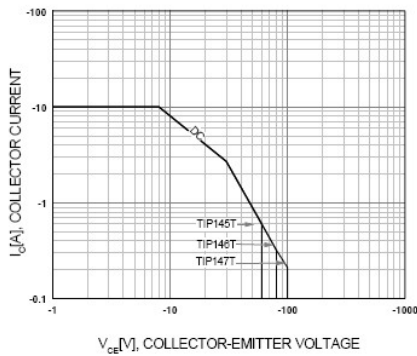


Figure 5. Safe Operating Area

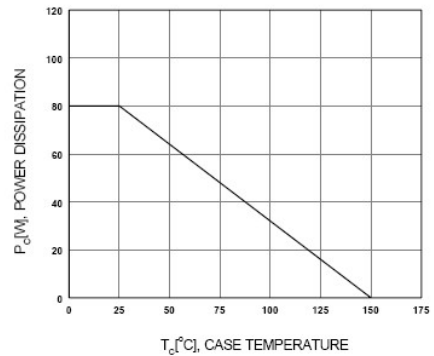
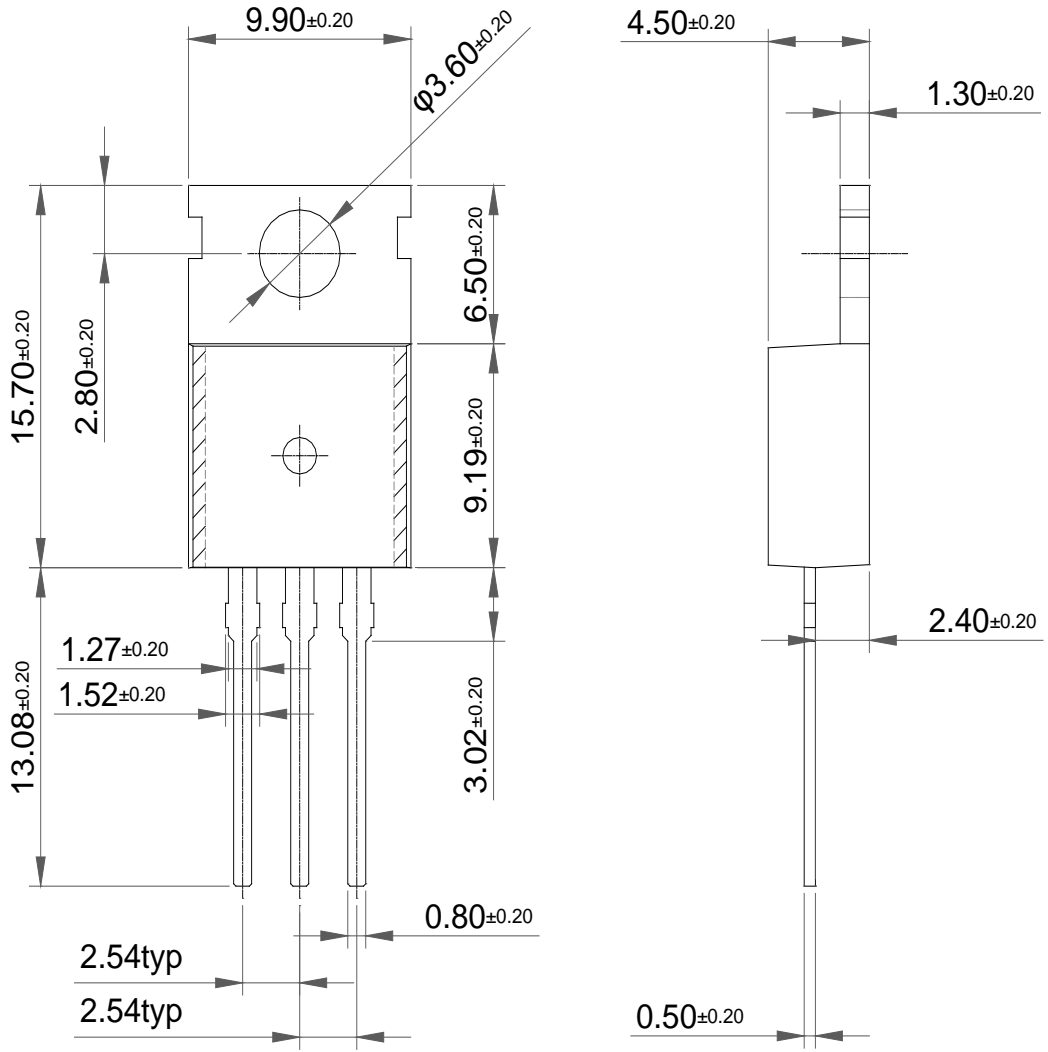


Figure 6. Power Derating

Package Dimension

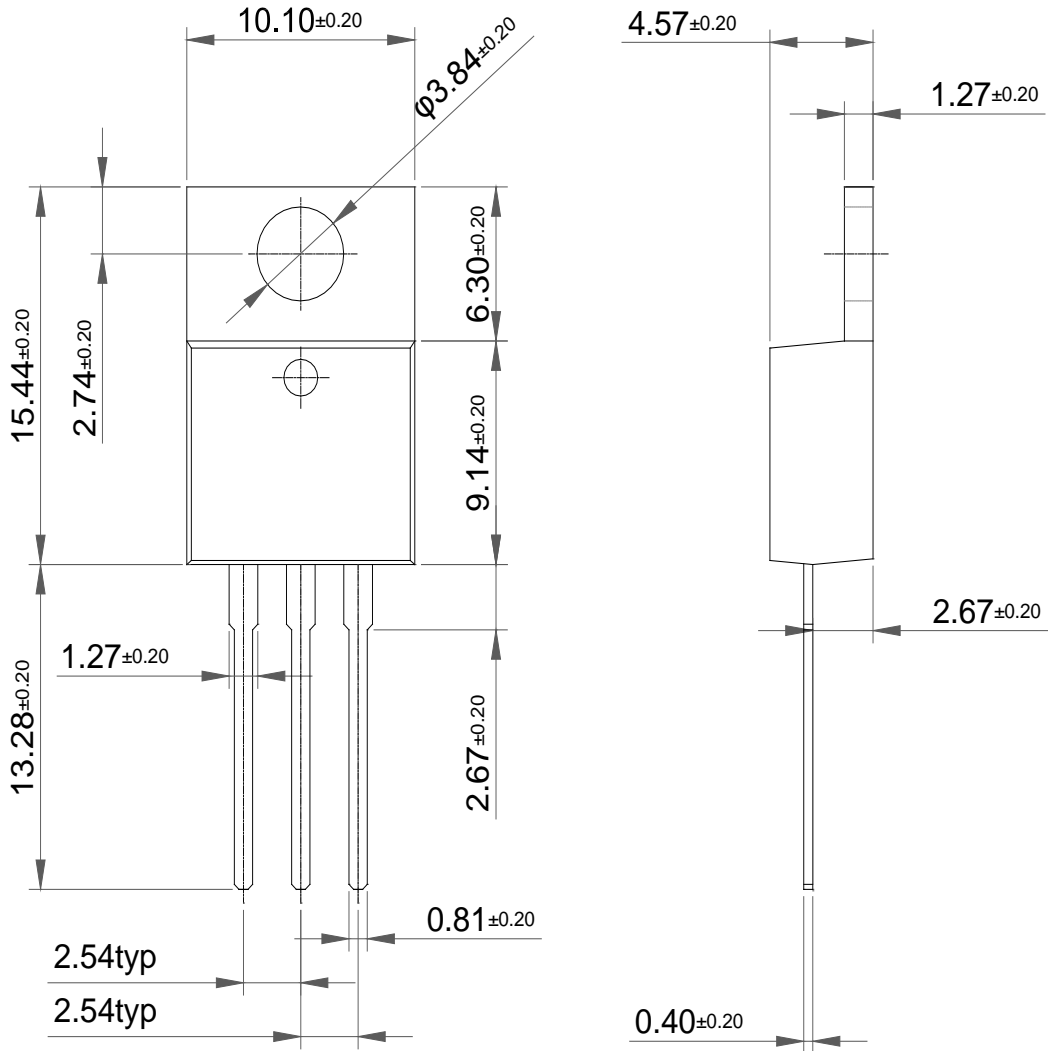
TO-220 (A)



Dimensions in Millimeters

Package Dimension

TO-220 (B)



Dimensions in Millimeters