TIP140T/141T/142T

SemiHow
Know-How for Semiconductor

SemiHow
Know-How for Semiconductor

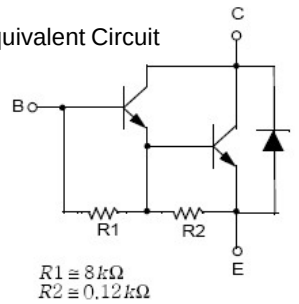
TIP140T/141T/142T

Monolithic Construction With Built In Base-Emitter Shunt Resistors

- High DC Current Gain : hFE=1000 @ VCE= 2V, IC= 5A (Min.)
- Collector-Emitter Sustaining Voltage
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP145/146/147

PNP Epitaxial Silicon Darlington Transistor

Equivalent Circuit



$R1 \cong 8k\Omega$
$R2 \cong 0.12k\Omega$

TO-220
1. Base
2. Collector
3. Emitter

Absolute Maximum Ratings T_a=25℃ unless otherwise noted

CHARACTERISTICS	SYMBOL	RATING	UNIT
Collector-Base Voltage : TIP140T	V_{CBO}	60	V
: TIP141T		80	V
: TIP142T		100	V
Collector-Emitter Voltage : TIP140T	V_{CEO}	60	V
: TIP141T		80	V
: TIP142T		100	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(Ta=25℃)	P_C	2	W
Collector Dissipation(Tc=25℃)	P_C	80	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-65~150	℃

Electrical Characteristics T_a=25℃ unless otherwise noted

CHARACTERISTICS	SYMBOL	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage	V_{CEO}(SUS)				
: TIP140T		I_C=30mA, I_B=0	60		V
: TIP141T			80		V
: TIP142T			100		V
Collector Cut-off Current	I_{CEO}				
: TIP140T		V_{CE}=30V,I_B=0		2	mA
: TIP141T		V_{CE}=40V,I_B=0		2	mA
: TIP142T		V_{CE}=50V,I_B=0		2	mA
Collector Cut-off Current	I_{CBO}				
: TIP140T		V_{CE}=60V,I_E=0		1	mA
: TIP141T		V_{CE}=80V,I_E=0		1	mA
: TIP142T		V_{CE}=100V,I_E=0		1	mA
Emitter Cut-off Current	I_{EBO}	V_{EB}=5V,I_C=0		2	mA
DC Current Gain	h_{FE}	V_{CE}=4V,I_C=5A	1000		
		V_{CE}=4V,I_C=10A	500		
Collector-Emitter Saturation Voltage	V_{CE}(sat)	I_C=5A,I_B=10mA		2	V
		I_C=10A,I_B=40mA		3	V
Base-Emitter ON Voltage	V_{BE}(on)	V_{CE}=4V,I_C=10A		3	V
Output Capacitance	C_{ob}	V_{CB}=10V,I_E=0, f=0.1MHz		200	pF

* Pulse Test: PW≤300us, Duty Cycle≤2%

Typical Characteristics

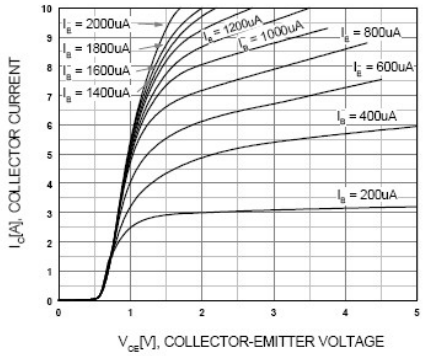


Figure 1. Static Characteristic

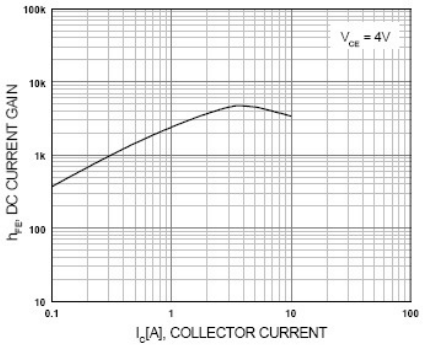


Figure 2. DC current Gain

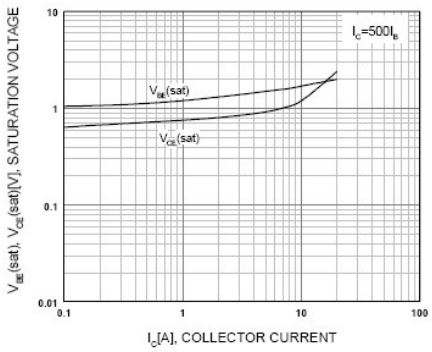


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

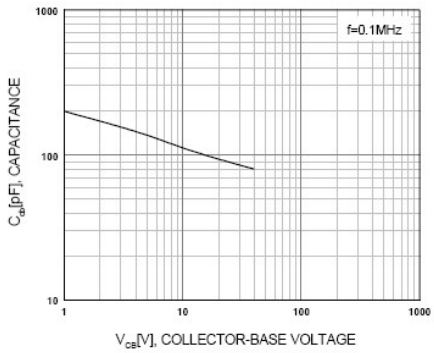


Figure 4. Collector Output Capacitance

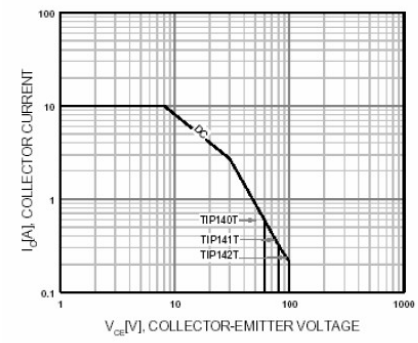


Figure 5. Safe Operating Area

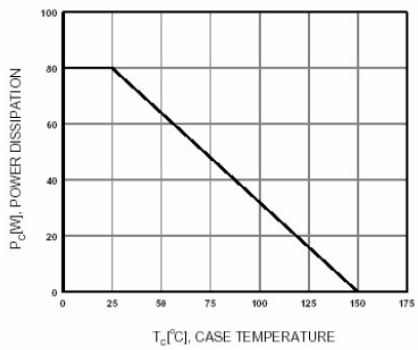
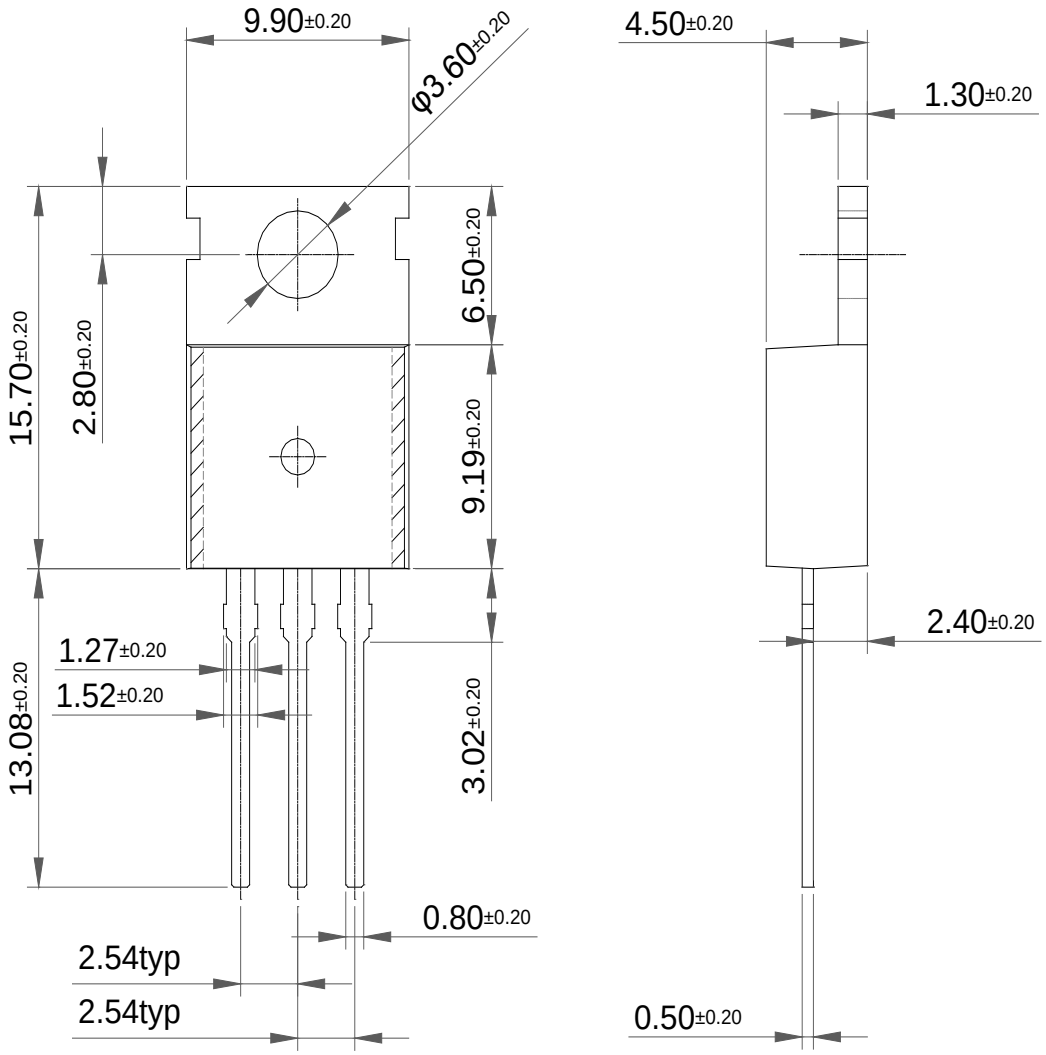


Figure 6. Power Derating

Package Dimension

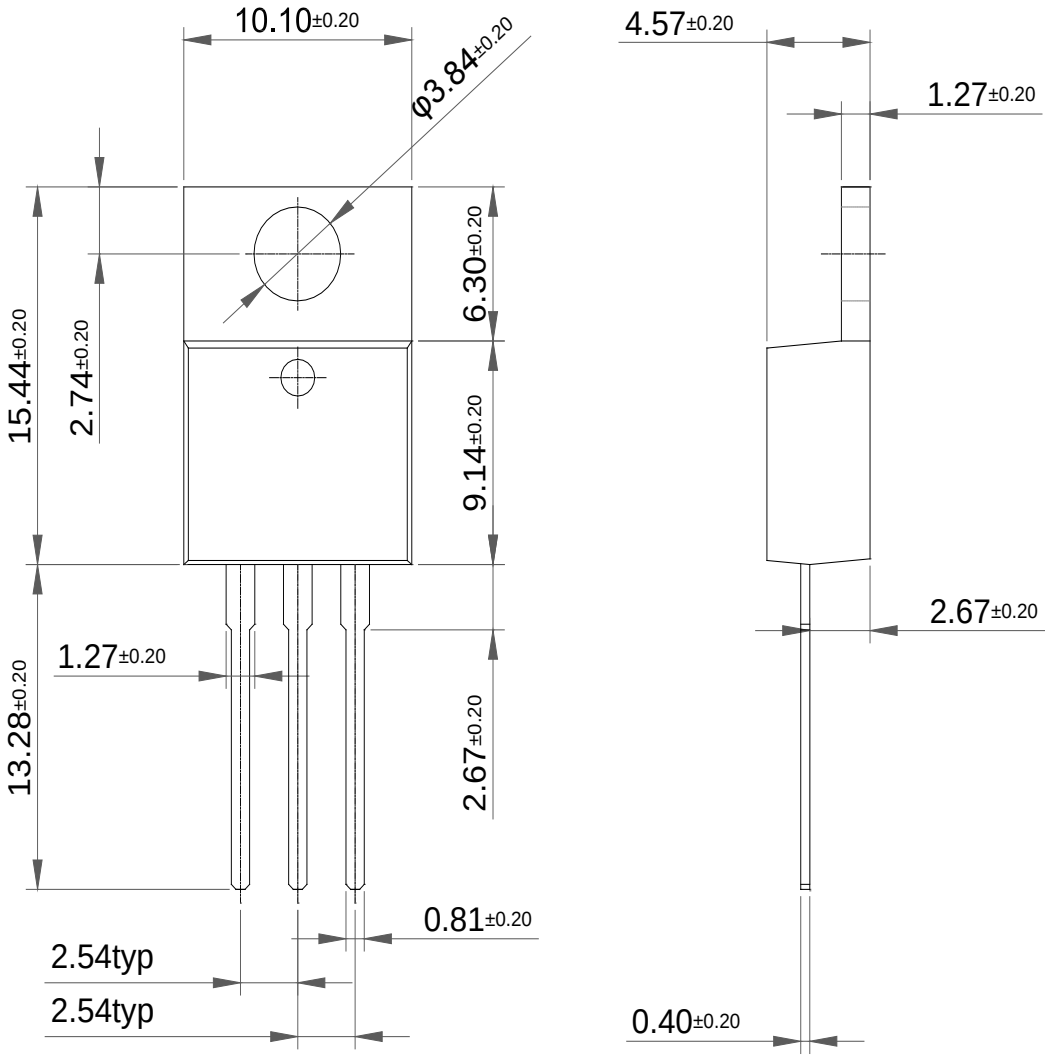
TO-220 (A)



Dimensions in Millimeters

Package Dimension

TO-220 (B)



Dimensions in Millimeters