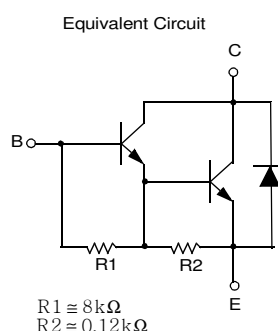
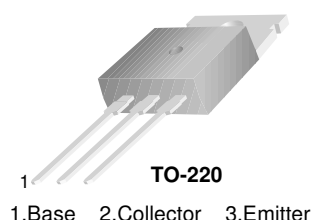


TIP140T / TIP141T / TIP142T

NPN Epitaxial Silicon Darlington Transistor

Features

- 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 TIP145T/146T/147T



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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP140T	60	V
	: TIP141T	80	V
	: TIP142T	100	V
V_{CEO}	Collector-Emitter Voltage : TIP140T	60	V
	: TIP141T	80	V
	: TIP142T	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 ($T_C=25^\circ C$)	80	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	-65 to +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 : TIP140T : TIP141T : TIP142T	$I_C = 30\text{mA}$, $I_B = 0$	60 80 100			V V V
I_{CEO}	Collector Cut-off Current : TIP140T : TIP141T : TIP142T	$V_{CE} = 30\text{V}$, $I_B = 0$ $V_{CE} = 40\text{V}$, $I_B = 0$ $V_{CE} = 50\text{V}$, $I_B = 0$			2 2 2	mA mA mA
I_{CBO}	Collector Cut-off Current : TIP140T : TIP141T : TIP142T	$V_{CB} = 60\text{V}$, $I_E = 0$ $V_{CB} = 80\text{V}$, $I_E = 0$ $V_{CB} = 100\text{V}$, $I_E = 0$			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	$V_{CE} = 4\text{V}$, $I_C = 5\text{A}$ $V_{CE} = 4\text{V}$, $I_C = 10\text{A}$	1000 500			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 5\text{A}$, $I_B = 10\text{mA}$ $I_C = 10\text{A}$, $I_B = 40\text{mA}$			2 3	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\text{A}$, $I_B = 40\text{mA}$			3.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 4\text{V}$, $I_C = 10\text{A}$			3	V
t_D	Delay Time	$V_{CC} = 30\text{V}$, $I_C = 5\text{A}$ $I_{B1} = 20\text{mA}$ $I_{B2} = -20\text{mA}$ $R_L = 6\Omega$		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 Performance Characteristics

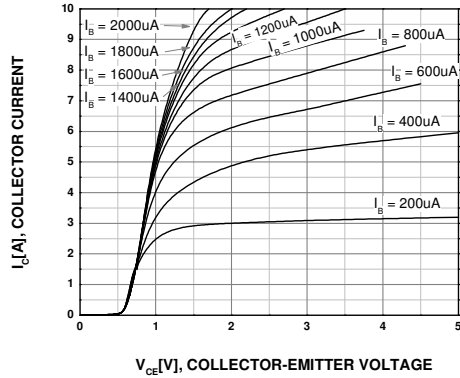


Figure 1. Static Characteristic

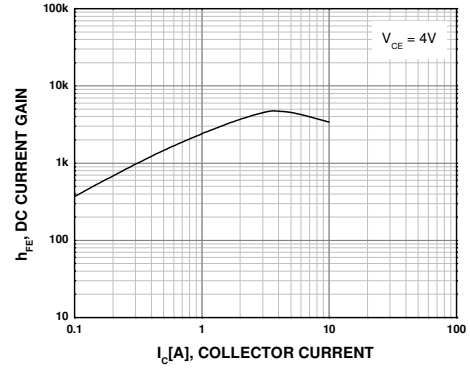


Figure 2. DC current Gain

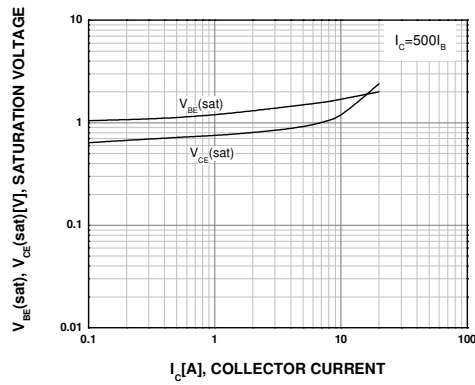


Figure 3. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

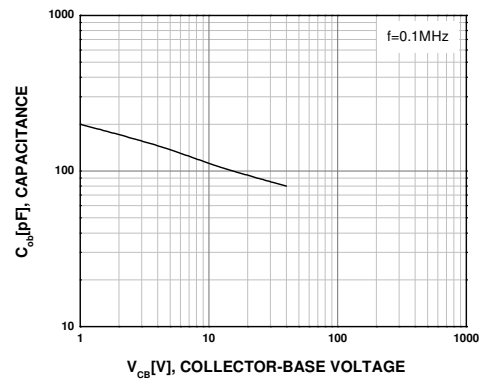


Figure 4. Collector Output Capacitance

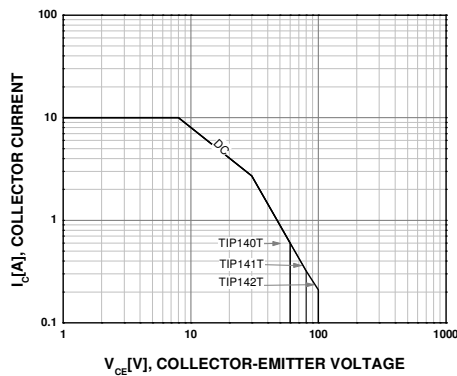


Figure 5. Safe Operating Area

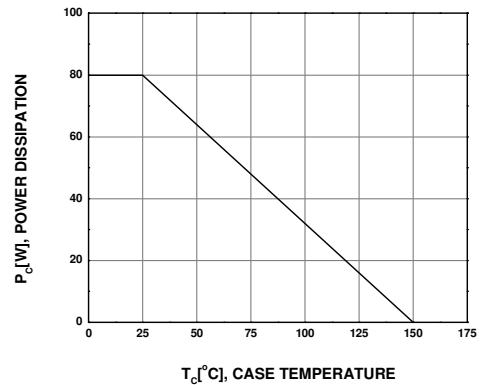
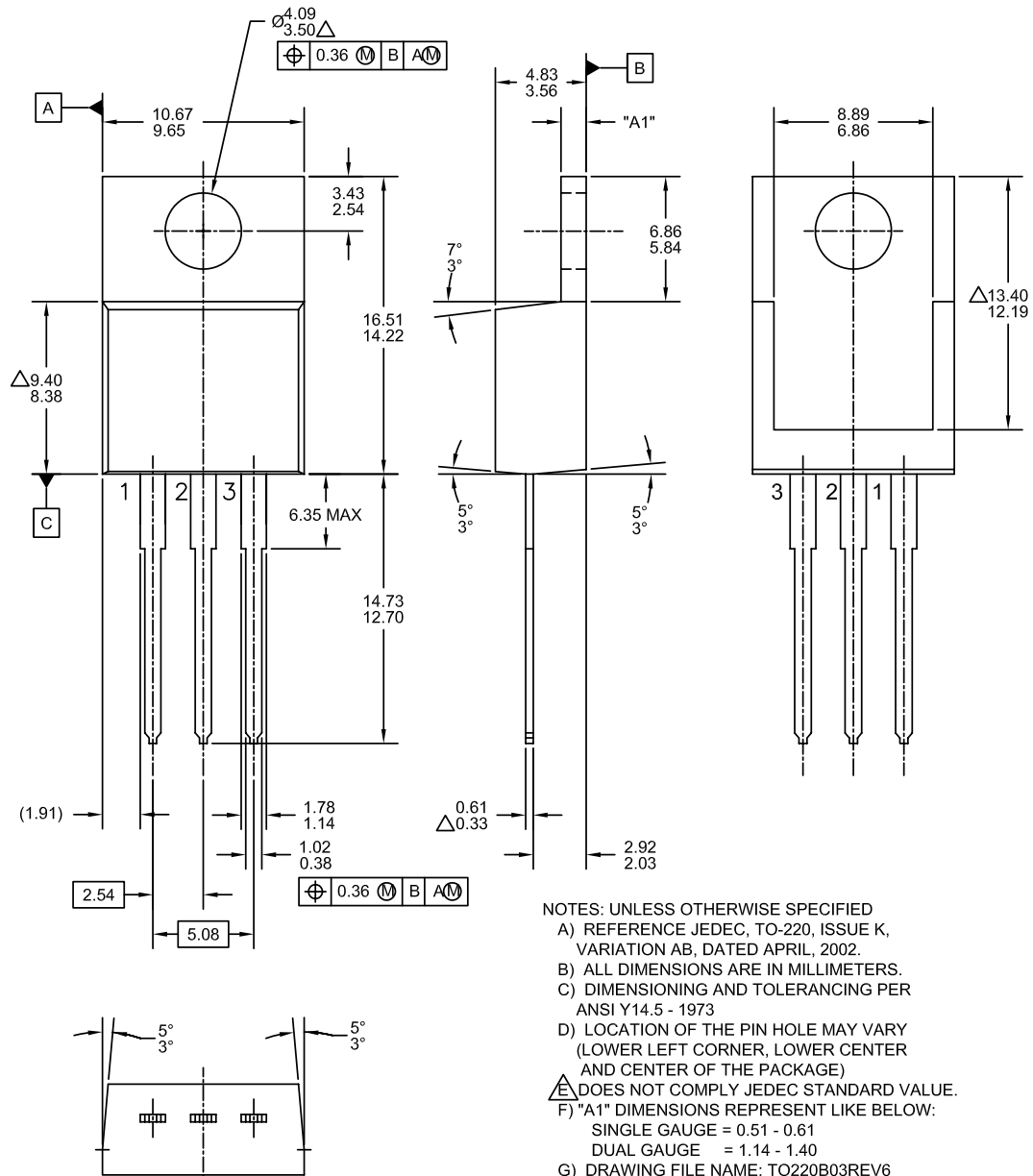


Figure 6. Power Derating

Physical Dimensions

TO-220





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Rev. I41



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