

TIP140/141/142

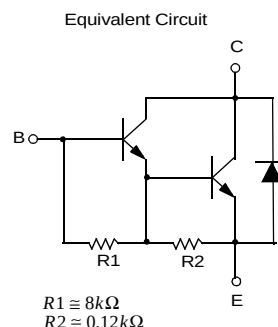
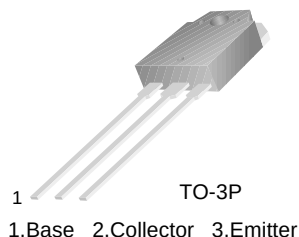
Monolithic Construction With Built In Base-Emitter Shunt Resistors

- High DC Current Gain : $h_{FE} = 1000$ @ $V_{CE} = 4V$, $I_C = 5A$ (Min.)
- Industrial Use
- Complement to TIP145/146/147

NPN Epitaxial Silicon Darlington Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : TIP140	60	V
	: TIP141	80	V
	: TIP142	100	V
V_{CEO}	Collector-Emitter Voltage : TIP140	60	V
	: TIP141	80	V
	: TIP142	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 ($T_C = 25^\circ C$)	125	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ C$



Electrical Characteristics $T_C = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = 30mA$, $I_B = 0$	60 80 100			V
	: TIP140					V
	: TIP141					V
	: TIP142					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
	: TIP140					mA
	: TIP141					mA
	: TIP142					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
	: TIP140					mA
	: TIP141					mA
	: TIP142					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	$I_C = 5A$, $I_B = 10mA$			2	V
		$I_C = 10A$, $I_B = 40mA$			3	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10A$, $I_B = 40mA$			3.5	V
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = 4V$, $I_C = 10A$			3	V
t_D	Delay Time	$V_{CC} = 30V$, $I_C = 5A$ $I_{B1} = 20mA$, $I_{B2} = -20mA$ $R_L = 6\Omega$		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

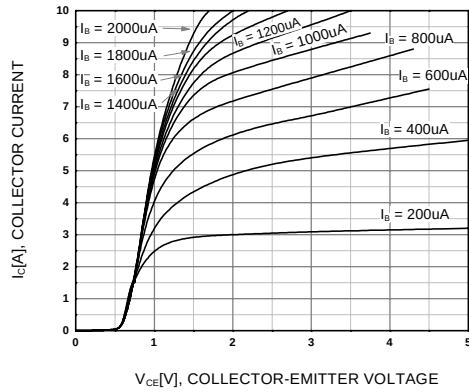


Figure 1. Static Characteristic

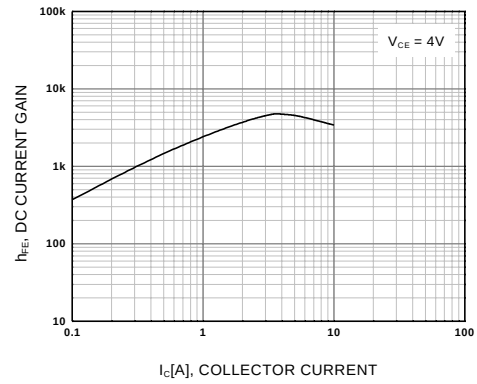


Figure 2. DC current Gain

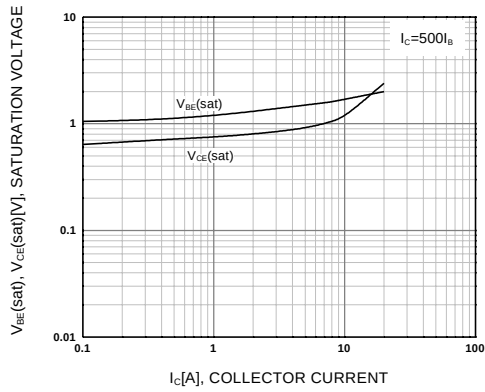


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

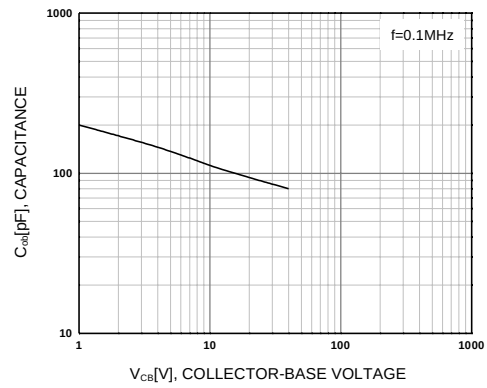


Figure 4. Collector Output Capacitance

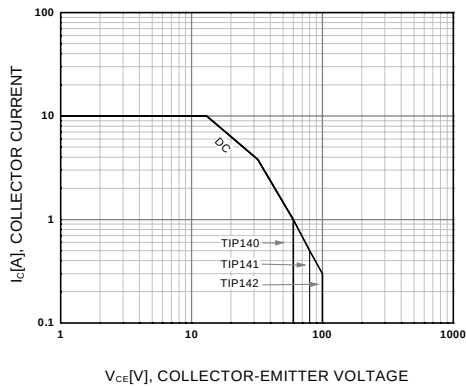


Figure 5. Safe Operating Area

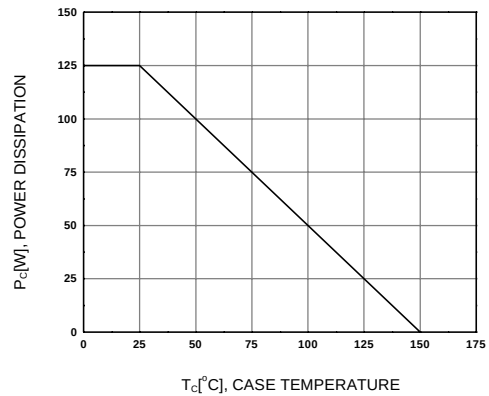
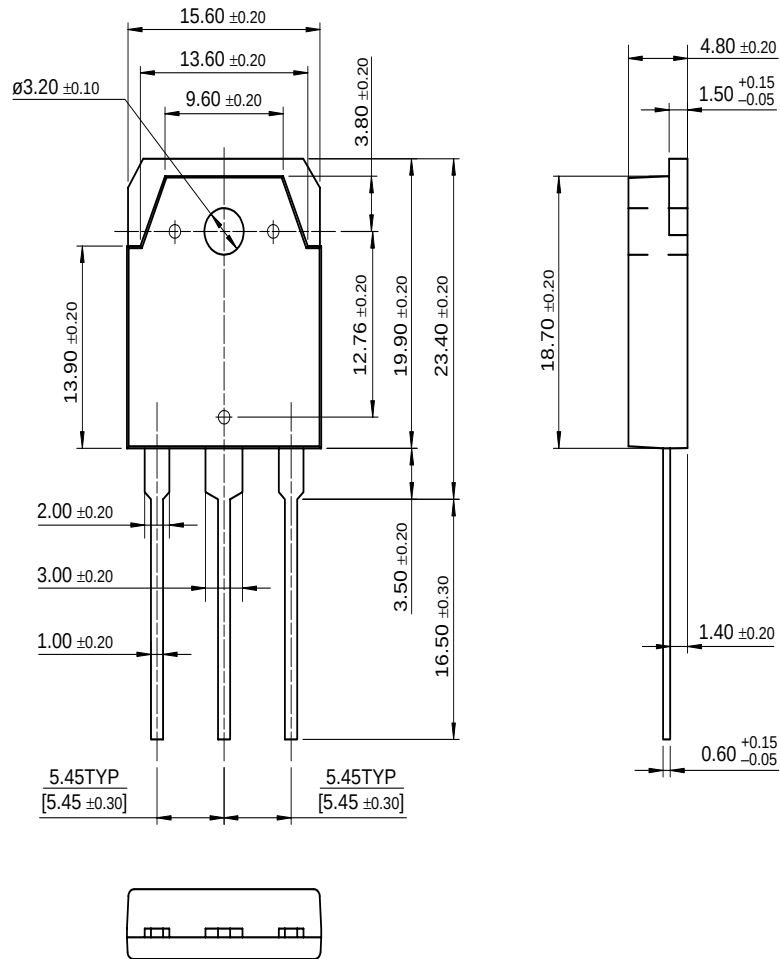


Figure 6. Power Derating

Package Dimensions

TO-3P



Dimensions in Millimeters

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