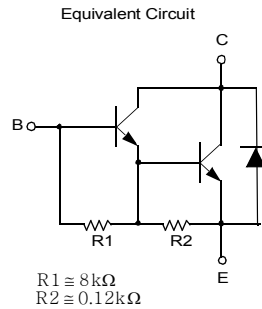
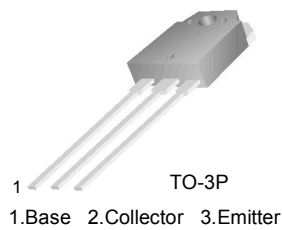


TIP140/TIP141/TIP142 NPN Epitaxial Silicon Darlington Transistor

- Monolithic Construction With Built In Base-Emitter Shunt Resistors
- High DC Current Gain : $h_{FE} = 1000$ @ $V_{CE} = 4V$, $I_C = 5A$ (Min.)
- Industrial Use
- Complement to TIP145/146/147



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

Symbol	Parameter	Ratings	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	$^\circ C$

* 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	$I_C = 30\text{mA}, I_B = 0$	60 80 100			V V V
	: TIP140					
	: TIP141					
I_{CEO}	Collector Cut-off Current	$V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 40\text{V}, I_B = 0$ $V_{CE} = 50\text{V}, I_B = 0$			2 2 2	mA mA mA
	: TIP140					
	: TIP141					
I_{CBO}	Collector Cut-off Current	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$ $V_{CB} = 100\text{V}, I_E = 0$			1 1 1	mA mA mA
	: TIP140					
	: TIP141					
I_{EBO}	Emitter Cut-off Current	$V_{BE} = 5\text{V}, I_C = 0$			2	mA
h_{FE}	DC Current Gain	$V_{CE} = 4\text{V}, I_C = 5\text{A}$	1000			
		$V_{CE} = 4\text{V}, I_C = 10\text{A}$	500			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 5\text{A}, I_B = 10\text{mA}$			2	V
		$I_C = 10\text{A}, I_B = 40\text{mA}$			3	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

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

Typical Characteristics

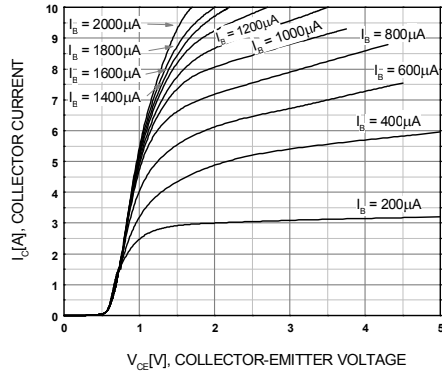


Figure 1. Static Characteristic

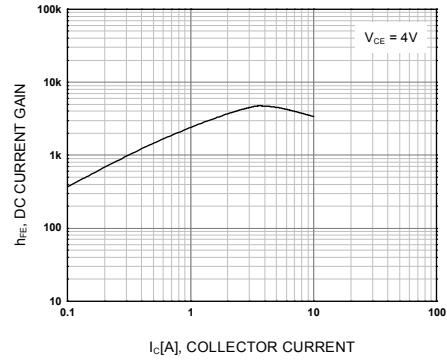


Figure 2. DC current Gain

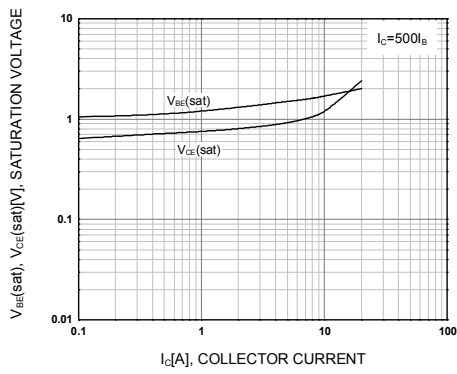


Figure 3. Base-Emitter Saturation Voltage
Collector-Emmitter Saturation Voltage

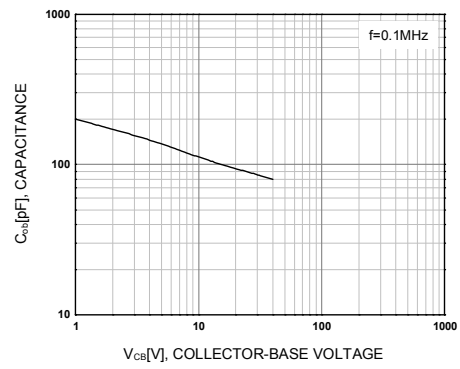


Figure 4. Collector Output Capacitance

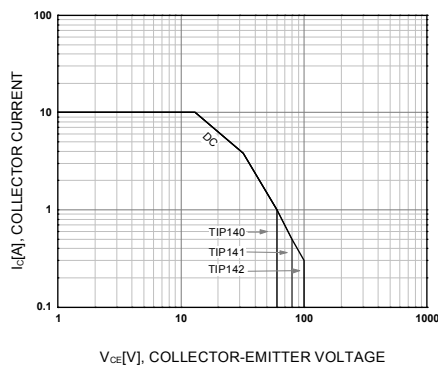


Figure 5. Safe Operating Area

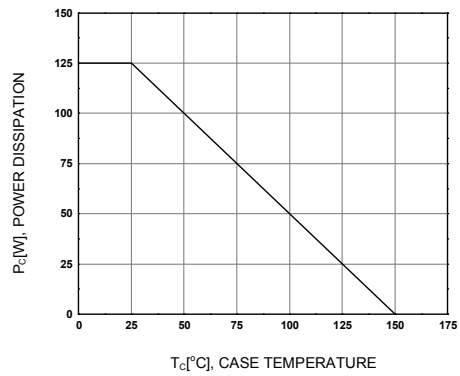
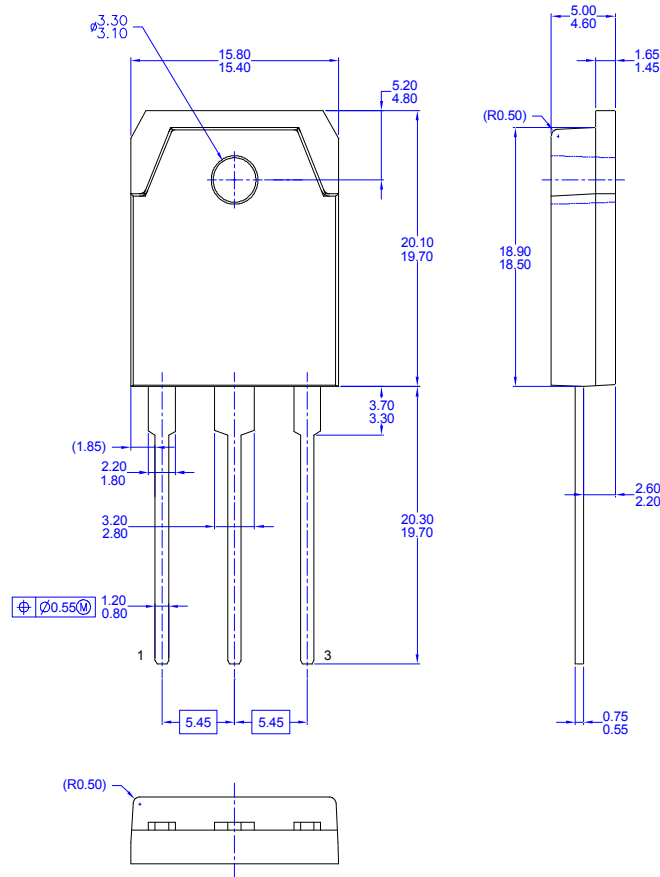


Figure 6. Power Derating

Package Dimension (TO-3P)



NOTES:

- A) THIS PACKAGE CONFORMS TO EIAJ SC-65 PACKAGING STANDARD.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONING AND TOLERANCING PER ASME14.5 1973.
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