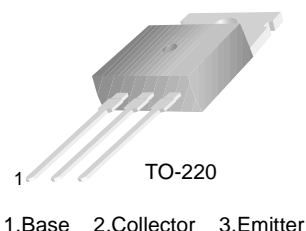


# TIP100/101/102

## Monolithic Construction With Built In Base-Emitter Shunt Resistors

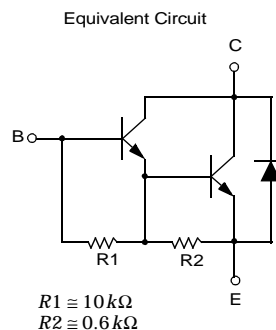
- High DC Current Gain :  $h_{FE}=1000$  @  $V_{CE}=4V$ ,  $I_C=3A$  (Min.)
- Collector-Emitter Sustaining Voltage
- Low Collector-Emitter Saturation Voltage
- Industrial Use
- Complementary to TIP105/106/107



## 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 : TIP100	60	V
	: TIP101	80	V
	: TIP102	100	V
$V_{CEO}$	Collector-Emitter Voltage : TIP100	60	V
	: TIP101	80	V
	: TIP102	100	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	8	A
$I_{CP}$	Collector Current (Pulse)	15	A
$I_B$	Base Current (DC)	1	A
$P_C$	Collector Dissipation ( $T_a=25^\circ C$ )	2	W
	Collector Dissipation ( $T_C=25^\circ C$ )	80	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.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 30mA$ , $I_B = 0$	60 80 100		V
	: TIP100				V
	: TIP101				V
	: TIP102				V
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = 30V$ , $I_B = 0$ $V_{CE} = 40V$ , $I_B = 0$ $V_{CE} = 50V$ , $I_B = 0$		50 50 50	$\mu A$
	: TIP100				$\mu A$
	: TIP101				$\mu A$
	: TIP102				$\mu A$
$I_{CBO}$	Collector Cut-off Current	$V_{CE} = 60V$ , $I_E = 0$ $V_{CE} = 80V$ , $I_E = 0$ $V_{CE} = 100V$ , $I_E = 0$		50 50 50	$\mu A$
	: TIP100				$\mu A$
	: TIP101				$\mu A$
	: TIP102				$\mu A$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5V$ , $I_C = 0$		2	mA
$h_{FE}$	DC Current Gain	$V_{CE} = 4V$ , $I_C = 3A$	1000	20000	
		$V_{CE} = 4V$ , $I_C = 8A$	200		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 3A$ , $I_B = 6mA$		2	V
		$I_C = 8A$ , $I_B = 80mA$		2.5	V
$V_{BE(on)}$	Base-Emitter ON Voltage	$V_{CE} = 4V$ , $I_C = 8A$		2.8	V
$C_{ob}$	Output Capacitance	$V_{CB} = 10V$ , $I_E = 0$ , $f = 0.1MHz$		200	pF

## Typical Characteristics

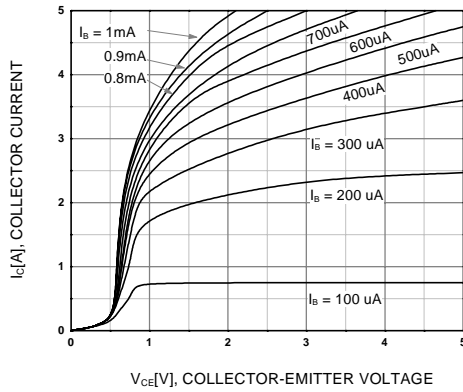


Figure 1. Static Characteristic

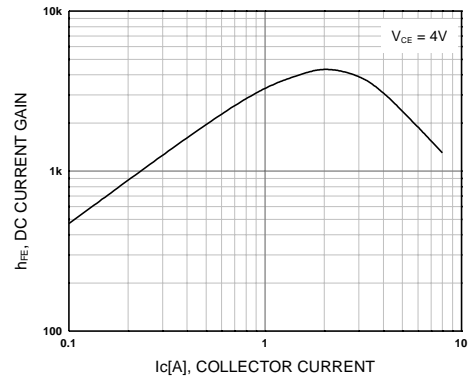


Figure 2. DC current Gain

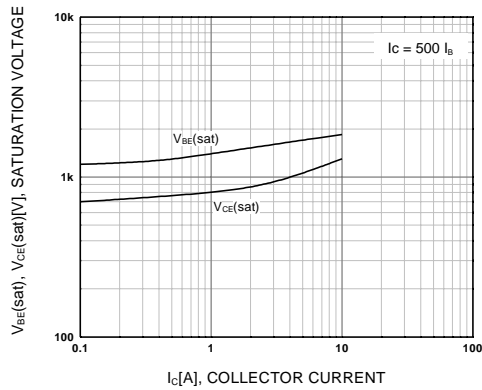


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

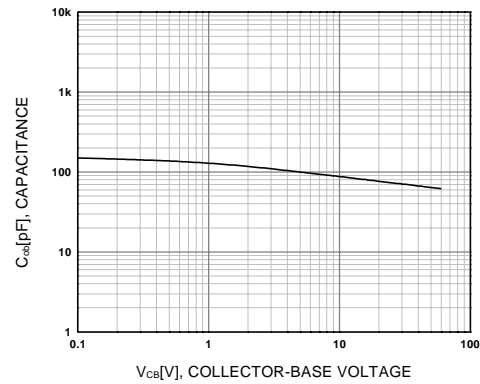


Figure 4. Collector Output Capacitance

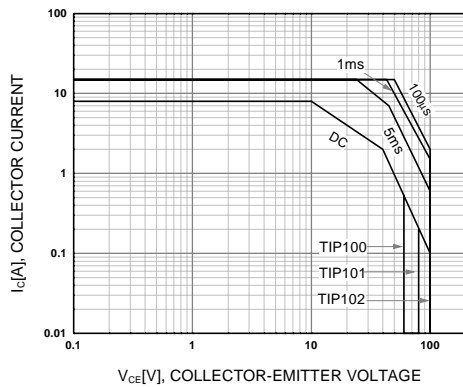


Figure 5. Safe Operating Area

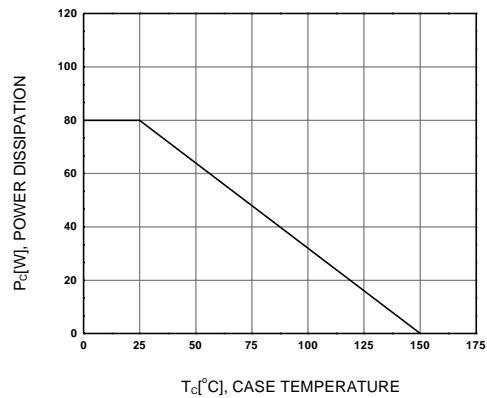
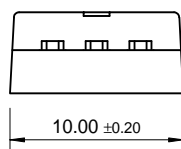
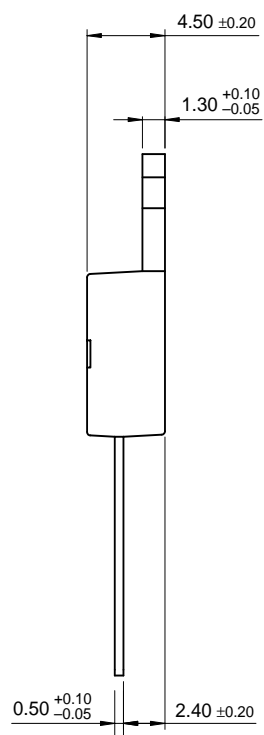


Figure 6. Power Derating

Technical drawing of a 2.54TYP connector. The drawing shows a side view of the component with various dimensions in millimeters (mm) and inches (in). The dimensions are as follows:

- Overall width:  $9.90 \pm 0.20$  mm ( $(1.70)$  in)
- Top width:  $(8.70)$  mm
- Top hole diameter:  $\varnothing 3.60 \pm 0.10$  mm
- Top hole position from top edge:  $1.30 \pm 0.10$  mm
- Top hole position from center:  $2.80 \pm 0.10$  mm
- Top hole position from bottom edge:  $15.90 \pm 0.20$  mm
- Top hole position from bottom edge (MAX):  $18.95 \text{ MAX.}$  mm
- Top hole position from bottom edge (TYP):  $(3.70)$  mm
- Top hole position from bottom edge (TYP):  $(3.00)$  mm
- Top hole position from bottom edge (TYP):  $(1.46)$  mm
- Top hole position from bottom edge (TYP):  $(1.00)$  mm
- Top hole position from bottom edge (TYP):  $1.27 \pm 0.10$  mm
- Top hole position from bottom edge (TYP):  $1.52 \pm 0.10$  mm
- Top hole position from bottom edge (TYP):  $0.80 \pm 0.10$  mm
- Top hole position from bottom edge (TYP):  $10.08 \pm 0.30$  mm
- Top hole position from bottom edge (TYP):  $13.08 \pm 0.20$  mm
- Top hole position from bottom edge (TYP):  $9.20 \pm 0.20$  mm
- Top hole position from bottom edge (TYP):  $(1.70)$  in
- Top hole position from bottom edge (TYP):  $2.54 \text{ TYP}$  mm ( $[2.54 \pm 0.20]$  mm)
- Top hole position from bottom edge (TYP):  $2.54 \text{ TYP}$  mm ( $[2.54 \pm 0.20]$  mm)



Rev. A1, June 2001

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