



## SILICON DARLINGTON POWER TRANSISTOR

NPN TIP122

5A 65W

### Technical Data

...designed for use in general-purpose low-speed switching and amplifier applications.

- ☞ High DC Current Gain -  $h_{FE} = 2500(\text{Typ}) @ I_C = 4.0\text{Adc}$
- ☞ Collector-Emitter Saturation Voltage -  $V_{CE(\text{sat})} = 2\text{Vdc} (\text{Max}) @ I_C = 3\text{Adc}$
- ☞ TO-220 Package
- ☞ Collector-Emitter Sustaining Voltage -  $V_{CE O(\text{sus})} = 100\text{Vdc} (\text{Min}) @ 100\text{mAdc}$

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector- Emitter Voltage	$V_{CEO}$	100	Vdc
Collector – Base Voltage	$V_{CB}$	100	Vdc
Emitter Base Voltage	$V_{EB}$	5	Vdc
Collector Current – Continuous	$I_C$	5	Adc
Peak		8	
Base Current	$I_B$	120	mAdc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	PD	65	Watts
Derate above $25^\circ\text{C}$		0.52	W/ $^\circ\text{C}$
Operating and Storage junction Temperature Range	$T_j, T_{stg}$	-65 to +150	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max.	Unit
Thermal resistance junction to case	$R_{thjc}$	1.92	$^\circ\text{C}/\text{W}$



**ELECTRICAL CHARACTERISTICS : [  $T_c = 25\text{ }^\circ\text{C}$  unless otherwise noted ]**

Characteristic	Symbol	Min	Typ	Max	Unit
<b>* OFF CHARACTERISTICS :</b>					
Collector-Emitter Sustaining Voltage(1) [ $I_c = 100\text{mA}$ , $I_B = 0$ ]	$V_{CEO(sus)}$	100			Vdc
Collector Cutoff Current [ $V_{CE} = 50\text{ Vdc}$ , $I_B = 0$ ]	$I_{CE0}$			0.5	mAdc
Collector Cutoff Current [ $V_{CE} = 100\text{ Vdc}$ , $V_{BE} = 0$ ]	$I_{CBO}$			200	⊛Adc
Emitter Cutoff Current [ $V_{EB} = 5.0\text{ Vdc}$ , $I_c = 0$ ]	$I_{EBO}$			2	mAdc
<b>* ON CHARACTERISTICS (1):</b>					
DC Current Gain [ $I_c = 0.5\text{ Adc}$ , $V_{CE} = 3.0\text{ Vdc}$ ] [ $I_c = 3\text{Adc}$ , $V_{CE} = 3.0\text{ Vdc}$ ]	$h_{FE}$	1000 1000		---	
Collector-Emitter Saturation Voltage [ $I_c = 3\text{Adc}$ , $I_B = 12\text{mA}$ ] [ $I_c = 5\text{Adc}$ , $I_B = 20\text{mA}$ ]	$V_{CE(sat)}$			2 4	Vdc
Base-Emitter on Voltage [ $I_c = 3.0\text{ Adc}$ , $V_{CE} = 3.0\text{ V}_{DC}$ ]	$V_{BE(on)}$			2.5	Vdc
<b>DYNAMIC CHARACTERISTICS :</b>					
Output Capacitance [ $V_{CB} = 10\text{Vdc}$ , $I_E = 0$ , $f = 0.1\text{MHz}$ ]	$C_{OB}$			200	pF
Small-Signal Current Gain [ $I_c = 0.5\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ , $f = 1\text{kHz}$ ]	$h_{fe}$	4			

- (1) Pulse Test : Pulse Width  $< 300\mu\text{s}$  , Duty Cycle  $< 2.0\%$