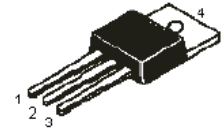
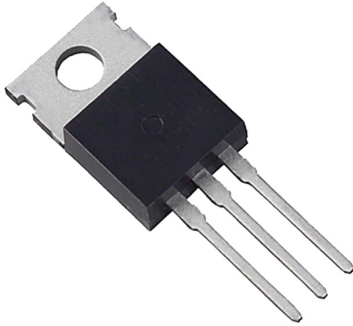


Power Darlington Transistor



Pin Configuration:

1. Base
2. Collector
3. Emitter
4. Collector

Feature:

- NPN Plastic Power Darlington Transistors for Linear and Switching Applications

Absolute Maximum Ratings

Parameters	Symbol	-	TIP102	Unit		
Collector-Base Voltage (Open Emitter)	V_{CBO}	Max.	100	V		
Collector-Emitter Voltage (Open Base)	V_{CEO}					
Collector Current	I_C				8	A
Total Power Dissipation upto $T_C = 25^\circ\text{C}$	P_{tot}				80	W
Junction Temperature	T_j				150	$^\circ\text{C}$
Collector-Emitter Saturation Voltage $I_C = 3\text{A}, I_B = 6\text{mA}$	$V_{CE(sat)}$				2	V
DC Current Gain $I_C = 3\text{A}; V_{CE} = 4\text{V}$	h_{FE}	Min. Max.	1 20	-		

Ratings (at $T_a = 25^\circ\text{C}$ unless otherwise specified)

Collector-Base Voltage (Open Emitter)	V_{CBO}	Max.	100	V		
Collector-Emitter Voltage (Open Base)	V_{CEO}					
Emitter-Base Voltage (Open Collector)	V_{EBO}				5	
Collector Current	I_C				8	A
Collector Peak Current	I_{CM}				15	
Base Current	I_B				1	

* Pulsed : Pulse Duration = 300 μs , Duty Cycle $\leq 2\%$.

Power Darlington Transistor

Ratings (at $T_a = 25^\circ\text{C}$ unless otherwise specified)

Parameters	Symbol	-	TIP102	Unit
Total Power Dissipation upto $T_C = 25^\circ\text{C}$ Derate above 25°C	P_{tot}	Max.	80	W W/ $^\circ\text{C}$
Total Power Dissipation upto $T_A = 25^\circ\text{C}$ Derate above 25°C			2	
Junction Temperature	T_j		150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-	-65 to +150	

Thermal Resistance

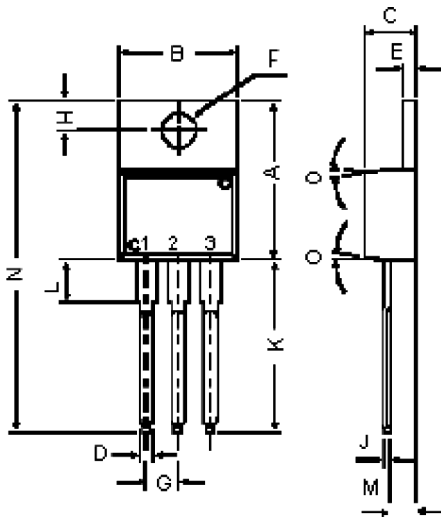
From Junction to Ambient	$R_{\text{th (j-c)}}$	-	62.5	$^\circ\text{C/W}$
From Junction to Case	$R_{\text{th (j-a)}}$	-	1.56	

Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Collector Cut off Current $I_B = 0; V_{CE} = 50\text{V}$ $I_E = 0; V_{CB} = 100\text{V}$	I_{CEO} I_{CBO}	Max.	50 50	μA
Emitter Cut off Current $I_C = 0; V_{EB} = 5\text{V}$	I_{EBO}		8	mA
Breakdown Voltages $I_C = 30\text{mA}; I_B = 0$ $I_C = 1\text{mA}; I_E = 0$ $I_E = 1\text{mA}; I_C = 0$	$V_{\text{CEO (sus)}}$ * V_{CBO} V_{EBO}	Min.	100 100 5	V
Saturation Voltages $I_C = 3\text{A}; I_B = 6\text{mA}$ $I_C = 8\text{A}; I_B = 80\text{mA}$	$V_{\text{CE (sat)}}$ *	Max.	2 2.5	
Base-emitter on Voltage $I_C = 8\text{A}; V_{CE} = 4\text{V}$	$V_{\text{BE (on)}}$ *		2.8	
DC Current Gain $I_C = 3\text{A}; V_{CE} = 4\text{V}$ $I_C = 8\text{A}; V_{CE} = 4\text{V}$	h_{FE} *	Min. Max. Min.	1 20 200	-
Small Signal Current Gain $I_C = 3\text{A}; V_{CE} = 4\text{V}; f = 1\text{MHz}$	$ h_{\text{fe}} $	Min.	4	-
Output Capacitance $I_E = 0; V_{CB} = 10\text{V}; f = 0.1\text{MHz}$	C_O	Max.	200	pF
Forward Voltage of Commutation Diode $I_F = -I_C = 10\text{A}; I_B = 0$	V_F *	Min.	2.8	V

* Pulsed : Pulse Duration = 300 μs , Duty Cycle $\leq 2\%$.

Power Darlington Transistor



Dimensions	Min.	Max.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	-	0.9
E	1.15	1.4
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	-	0.56
K	12.7	14.73
L	2.8	4.07
M	2.03	2.92
N	-	31.24
O	7°	

Dimensions : Millimetres

Part Number Table

Description	Part Number
Darlington Transistor, TO-220	TIP102

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