

TIP102

Power Darlington Transistors



TO-220, General Purpose



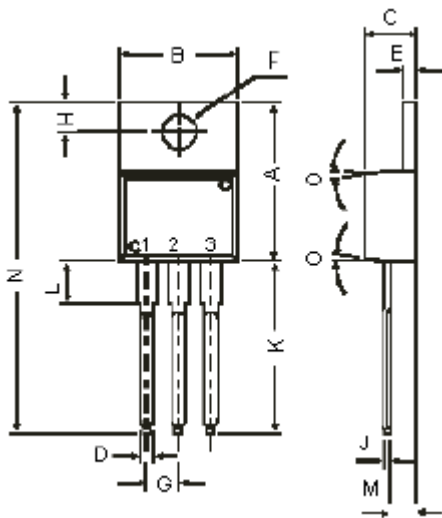
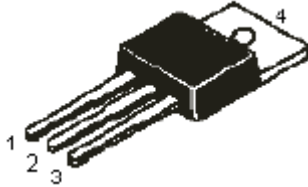
Feature:

- NPN Plastic Power Darlington Transistors for Linear and Switching Applications.

TO-220 Plastic Package

Pin Configuration:

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



Dimensions	Minimum	Maximum
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	-	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	-	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	-	31.24
O	7°	

Dimensions : Millimetres

Absolute Maximum Ratings

Parameters	Symbol	-	TIP102	Unit		
Collector-Base Voltage (Open Emitter)	V_{CBO}	Maximum	100	V		
Collector-Emitter Voltage (Open Base)	V_{CEO}					
Collector Current	I_C				8.0	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 $I_C = 3\text{A}$, $I_B = 6\text{mA}$	$V_{CE(sat)}$				2.0	V
DC Current Gain $I_C = 3\text{A}$; $V_{CE} = 4\text{V}$	h_{FE}	Minimum Maximum	1.0 20	-		

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

Collector-Base Voltage (Open Emitter)	V_{CBO}	Maximum	100	V		
Collector-Emitter Voltage (Open Base)	V_{CEO}					
Emitter-Base Voltage (Open Collector)	V_{EBO}				5.0	
Collector Current	I_C				8.0	A
Collector Peak Current	I_{CM}				15	
Base Current	I_B				1.0	
Total Power Dissipation upto $T_C = 25^\circ\text{C}$ Derate above 25°C	P_{tot}				80	W
Total Power Dissipation upto $T_A = 25^\circ\text{C}$ Derate above 25°C					0.64	
Junction Temperature	T_j				150	$^\circ\text{C}$
Storage Temperature	T_{stg}				-	

Thermal Resistance

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

Characteristics ($T_{amb} = 25^\circ\text{C}$ 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}	Maximum	50 50	μA
Emitter Cut off Current $I_C = 0$; $V_{EB} = 5\text{V}$	I_{EBO}		8	mA
Breakdown Voltages $I_C = 30\text{mA}$; $I_B = 0$ $I_C = 1\text{mA}$; $I_E = 0$ $I_E = 1\text{mA}$; $I_C = 0$	$V_{CEO(sus)}^*$ V_{CBO} V_{EBO}	Minimum	100 100 5.0	V

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

Parameters	Symbol		TIP102	Unit
Saturation Voltages $I_C = 3\text{A}; I_B = 6\text{mA}$ $I_C = 8\text{A}; I_B = 80\text{mA}$	$V_{CE(sat)^*}$	Maximum	2.0 2.5	V
Base-emitter on Voltage $I_C = 8\text{A}; V_{CE} = 4\text{V}$	$V_{BE(ON)^*}$		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}^*	Minimum Maximum Minimum	1.0 20 200	-
Small Signal Current Gain $I_C = 3\text{A}; V_{CE} = 4\text{V}; f = 1.0\text{MHz}$	$ h_{fe} $	Minimum	4.0	-
Output Capacitance $I_E = 0; V_{CB} = 10\text{V}; f = 0.1\text{MHz}$	C_O	Maximum	200	pF
Forward Voltage of Commutation Diode $I_F = -I_C = 10\text{A}; I_B = 0$	V_F^*	Minimum	2.8	V

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

Specifications

V_{CEO} Maximum (V)	V_{CBO} Maximum (V)	$I_C(av)$ Maximum (A)	h_{FE} Minimum at $I_C = 3\text{A}$	Package	Type	Part Number
100	100	8.0	1.0	T0-220	NPN	TIP102



Notes:

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