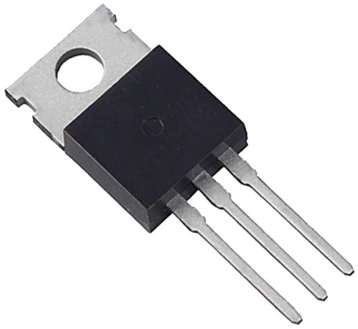
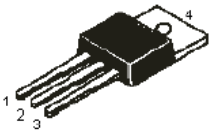
Power Darlington Transistor





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°C	P_{tot}		80	W
Junction Temperature	T_j		150	°C
Collector-Emitter Saturation Voltage I_C = 3A, I_B = 6mA	$V_{CE\ (sat)}$		2	V
DC Current Gain I_C = 3A; V_{CE} = 4V	h_{FE}	Min. Max.	1 20	-

Ratings (at T_a = 25°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 = 300µs, Duty Cycle ≤2%.

Ratings (at T_a = 25°C unless otherwise specified)

Parameters	Symbol	-	TIP102	Unit
Total Power Dissipation upto T_C = 25°C Derate above 25°C	P_{tot}	Max.	80 0.64	W W/°C
Total Power Dissipation upto T_A = 25°C Derate above 25°C			2 0.016	
Junction Temperature	T_j		150	°C
Storage Temperature	T_{stg}	-	-65 to +150	

Thermal Resistance

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

Characteristics (T_a = 25°C unless otherwise specified)

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

* Pulsed : Pulse Duration = 300µs, Duty Cycle ≤2%.

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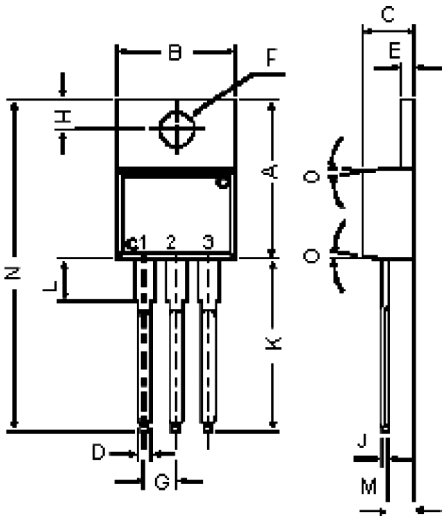

Dimensions	Min.	Max.
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	-	0.9
E	1.15	1.4
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	-	0.56
K	12.7	14.73
L	2.8	4.07
M	2.03	2.92
N	-	31.24
O	7°	

Dimensions : Millimetres

Part Number Table

Description	Part Number
Darlington Transistor, TO-220	TIP102