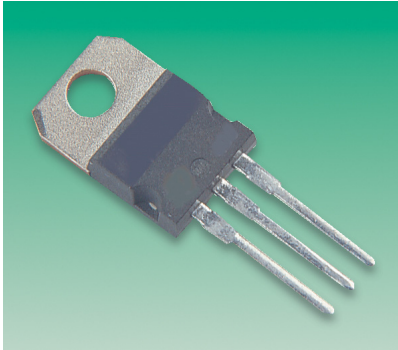


TIP102, 107

Power Darlington Transistors



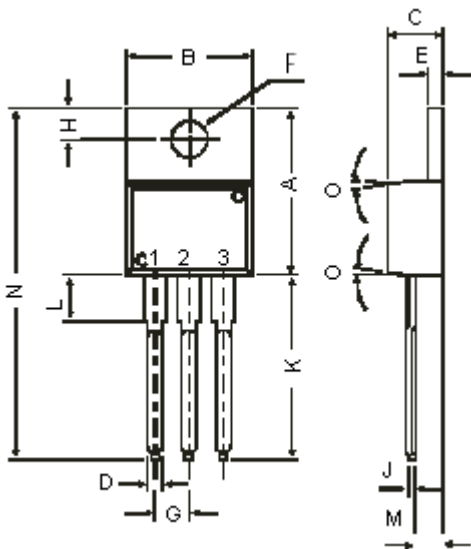
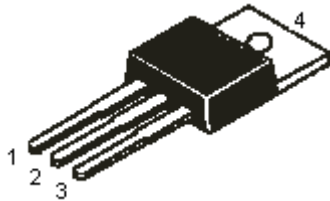
Features:

- NPN and PNP Plastic Power Darlington Transistors for Linear and Switching Applications.
- TIP102 type NPN.
- TIP107 type PNP.

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	TIP107	Unit
Collector-base voltage (open emitter)	V_{CBO}	Maximum	100		V
Collector-emitter voltage (open base)	V_{CEO}				
Collector current	I_C				
Total power dissipation up to $T_C = 25^\circ\text{C}$	P_{tot}				
Junction temperature	T_j				
Collector-emitter saturation voltage $I_C = 3\text{A}; I_B = 6\text{mA}$	$V_{CE(sat)}$				
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}						
Collector current	I_C						
Collector peak current	I_{CM}						
Base current	I_B						
Total power dissipation upto $T_C = 25^\circ\text{C}$ Derate above 25°C	P_{tot}		80		W W/°C		
Total power dissipation upto $T_A = 25^\circ\text{C}$ Derate above 25°C			0.64				
Junction temperature	T_j		150				°C
Storage temperature	T_{stg}		-65 to +150				

Thermal Resistance

From junction to ambient	$R_{th(j-a)}$	-	62.5	°C/W
From junction to case	$R_{th(j-c)}$	-	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	
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

TIP102, 107

Power Darlington Transistors



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

Parameters	Symbol		TIP102	TIP107	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 $I_C = 8\text{A}; V_{CE} = 4\text{V}$	$V_{BE(on)^*}$	Maximum	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	300	pF
Forward voltage of commutation diode $I_F = -I_C = 10\text{A}; I_B = 0$	V_F^*	Maximum	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
					PNP	TIP107

Notes:

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