

# TIP102

## Power Darlington Transistors



### TO-220, General Purpose



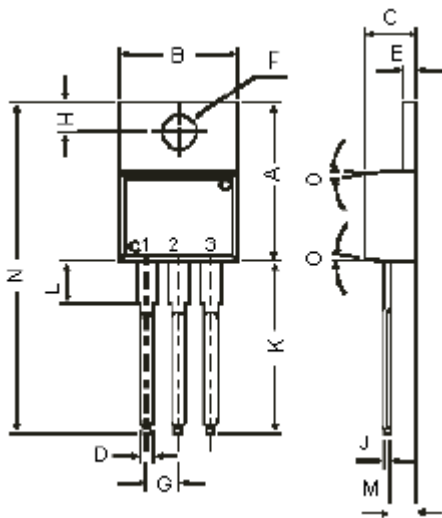
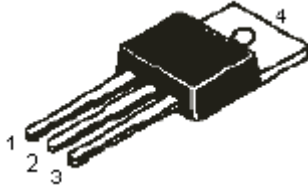
#### Feature:

- 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 $25^\circ\text{C}$	$P_{tot}$				80	W W/ $^\circ\text{C}$
Total Power Dissipation upto $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$					0.64	
Junction Temperature	$T_j$				150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$				-	-65 to +150

### Thermal Resistance

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

# TIP102

## Power Darlington Transistors



### 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 $\mu\text{s}$ , 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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