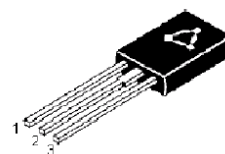


# NPN Power Darlington Transistor



## Pin Configuration:

1. Emitter
2. Collector
3. Base

## Feature:

- NPN Plastic Power Darlington Transistor

## Absolute Maximum Ratings

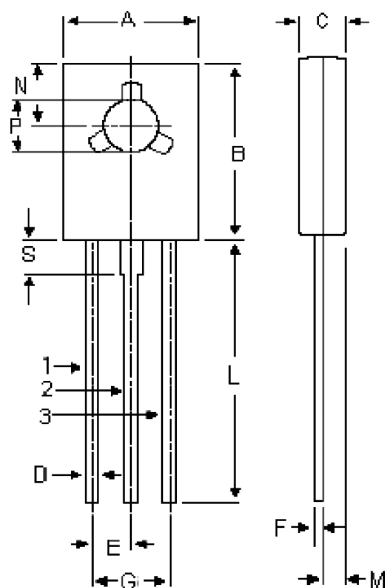
Parameter	Symbol	BD681	Unit
Collector Base Voltage	$V_{CBO}$	100	V
Collector Emitter Voltage	$V_{CEO}$		
Emitter Base Voltage	$V_{EBO}$	5	
Collector Current	$I_C$	4	A
Base Current	$I_B$	0.1	
Total Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.25 10	W mW/ $^\circ\text{C}$
Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$		40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$
<b>Thermal Resistance</b>			
Junction to Case	$R_{th(j-c)}$	3.13	$^\circ\text{C/W}$
Junction to Ambient in Free Air	$R_{th(j-a)}$	100	

# NPN Power Darlington Transistor

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

Parameter	Symbol	Test Condition	Min.	Max.	Unit
Collector Emitter Voltage	$V_{CEO}^*$	$I_C = 50\text{mA}, I_B = 0$	100	-	V
Collector Cut off Current	$I_{CEO}$	$V_{CE} = \text{Half Rated } V_{CEO}, I_B = 0$	-	500	$\mu\text{A}$
	$I_{CBO}$	$V_{CB} = \text{Rated } V_{CBO}, I_E = 0$		0.2	mA
Emitter Cut off Current	$I_{EBO}$	$V_{CB} = \text{Rated } V_{CBO}, I_E = 0$ $T_C = 100^\circ\text{C}$	-	2	mA
Collector Emitter Saturation Voltage	$V_{CE(sat)}^*$	$I_C = 1.5\text{A}, I_B = 6\text{mA}$	-	2.5	V
Base Emitter On Voltage	$V_{EB(on)}^*$	$I_C = 1.5\text{A}, V_{CE} = 3\text{V}$	-		
DC Current Gain	$h_{FE}^*$	$I_C = 1.5\text{A}, V_{CE} = 3\text{V}$	750	-	-
Small Signal Current Gain	$ h_{fe} $	$I_C = 1.5\text{A}, V_{CE} = 3\text{V}$ $f = 1\text{MHz}$	1	-	-

\*Pulse Test : Pulse Width =  $\leq 300\mu\text{s}$ , Duty Cycle =  $\leq 2\%$ .



### Pin Configuration:

1. Emitter
2. Collector
3. Base

Dimensions	Minimum	Maximum
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 (Typical)	
F	0.49	0.75
G	4.5 (Typical)	
L	15.7 (Typical)	
M	1.27 (Typical)	
N	3.75 (Typical)	
P	3	3.2
S	2.5 (Typical)	

## Part Number Table

Description	Part Number
Darlington Transistor, TO-126	BD681

Dimensions : Millimetres

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