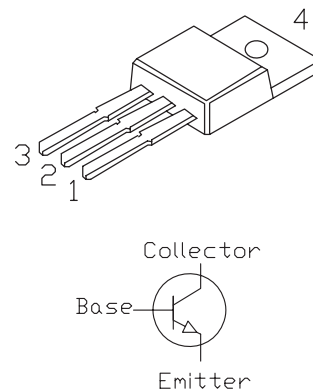
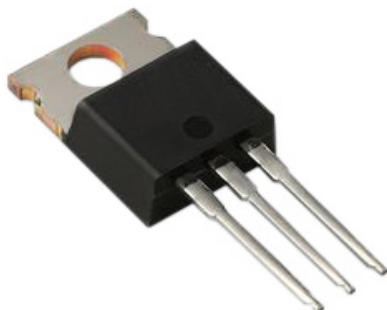


# Darlington Transistor



RoHS  
Compliant



## Features:

- High DC Current Gain
- Collector-Emitter Sustaining Voltage :  $V_{CEO(SUS)} = 100V$  Min @ 100mA
- Monolithic Construction with Built-in Base-Emitter Shunt Resistors

## Pin

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

## Absolute Maximum Ratings:

Characteristics	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	100	V
Collector-Base Voltage	$V_{CB}$	100	V
Emitter-Base Voltage	$V_{EB}$	5	V
Collector Current Continuous	$I_C$	8	A
		16	A
Base Current	$I_B$	120	mA
Total Power Dissipation ( $T_C = +25^\circ C$ )	$P_D$	75	W
Derate above $+25^\circ C$		0.6	W/ $^\circ C$
Total Power Dissipation ( $T_A = +25^\circ C$ )	$P_D$	2.2	W
Derate above $+25^\circ C$		0.175	W/ $^\circ C$
Operating Junction Temperature Range	$T_J$	-65 to +150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ C$
Thermal Resistance, Junction-to-Case	$R_{thJC}$	1.67	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{thJA}$	57°	C/W

## Note

(1)  $I_C = 1A$ ,  $L = 100mH$ , P.R.F. = 10Hz,  $V_{CC} = 20V$ ,  $R_{BE} = 100\Omega$

# Darlington Transistor



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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
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### OFF Characteristics

Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	$I_C = 100\text{mA}$ , $I_B = 0$ , (Note 2)	100	-	-	V
Collector Cut-off Current	$I_{CEO}$	$V_{CE} = 45\text{V}$ , $I_B = 0$	-	-	20	$\mu\text{A}$
	$I_{CBO}$	$V_{CB} = 100\text{V}$ , $I_E = 0$	-	-	0.02	mA
Emitter Cut-Off Current	$I_{EBO}$	$V_{BE} = 5\text{V}$ , $I_C = 0$	-	-	2	

### ON Characteristics (Note 2)

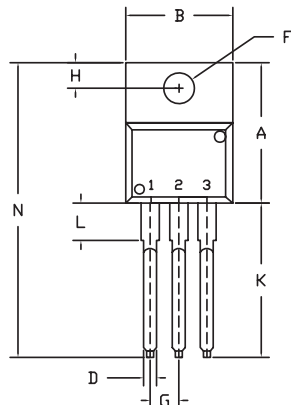
DC Current Gain	$h_{FE}$	$V_{CE} = 4\text{V}$ , $I_C = 3\text{A}$	1,000	-	20,000	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 3\text{A}$ , $I_B = 12\text{mA}$	-	-	2	V
		$I_C = 8\text{A}$ , $I_B = 80\text{mA}$	-	-	4	V
Base-Emitter ON Voltage	$V_{BE(ON)}$	$V_{CE} = 4\text{V}$ , $I_C = 4\text{A}$	-	-	2.8	V

### Dynamic characteristics

Small-Signal Current Gain	$ h_{fe} $	$V_{CE} = 4\text{V}$ , $I_C = 3\text{A}$ , $f = 1\text{MHz}$	4	-	-	
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $I_E = 0$	-	-	200	pF

### Note

(2) Pulse test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .



Dim.	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	DEF 7	

Dimensions : Millimetres

### Part Number Table

Description	Part Number
Transistor, NPN, 8A, 100V, TO220	2N6045

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