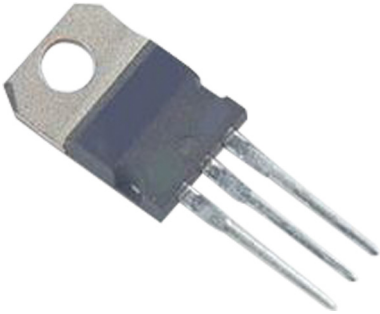


# Darlington Transistor



## Features:

- Collector-Emitter sustaining voltage-  
 $V_{CE(sus)} = 80V$  (Min.) - BDX33B, BDX34B  
 $= 100V$  (Minimum) - BDX33C, BDX34C
- Monolithic construction with Built-in Base-Emitter shunt resistor

## Maximum Ratings

Characteristic	Symbol	BDX33B BDX34B	BDX33C BDX34C	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	100	V
Collector-Base Voltage	$V_{CBO}$			
Emitter-Base Voltage	$V_{EBO}$	5		
Collector Current-Continuous -Peak	$I_C$ $I_{CM}$	10 15		A
Base Current	$I_B$	0.25		
Total Power Dissipation at $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	70 0.56		W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150		$^\circ C$

## Thermal Characteristics

Characteristic	Symbol	Max.	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.78	$^\circ C/W$

# Darlington Transistor



## Electrical Characteristics:

( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
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### OFF Characteristics

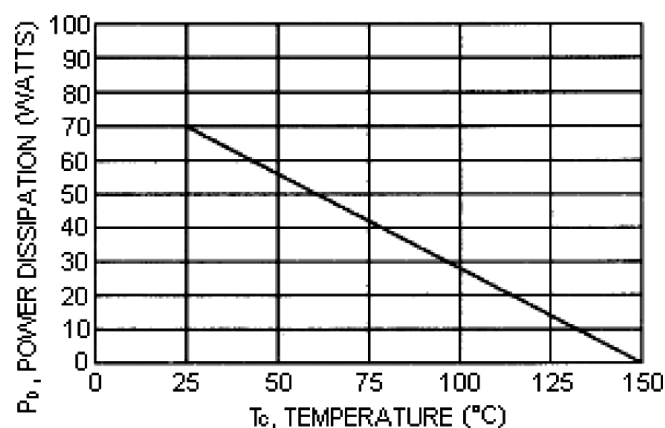
Collector-Emitter Sustaining Voltage (1) $I_C = 100\text{mA}, I_B = 0$ BDX33B, BDX34B BDX33C, BDX34C	$V_{CEO(sus)}$	80 100	-	V
Collector Cut off Current $V_{CE} = 40\text{V}, I_B = 0$ BDX33B, BDX34B $V_{CE} = 50\text{V}, I_B = 0$ BDX33C, BDX34C	$I_{CEO}$	-	0.5 0.5	mA
Collector-Base Cut off Current $V_{CB} = \text{Rated } V_{CB}, I_E = 0$	$I_{CBO}$	-	200	$\mu\text{A}$
Emitter-Base Cut off Current $V_{EB} = 5\text{V}, I_C = 0$	$I_{EBO}$	-	10	mA

### ON Characteristics (1)

DC Current Gain $I_C = 3\text{A}, V_{CE} = 3\text{V}$ BDX33B/33C/34B/34C	$h_{FE}$	750	-	-
Collector-Emitter Saturation Voltage $I_C = 3\text{A}, I_B = 6\text{mA}$ BDX33B/33C/34B/34C	$V_{CE(sat)}$	-	2.5	V
Base-Emitter On Voltage $I_C = 3\text{A}, V_{CE} = 3\text{V}$ BDX33B/33C/34B/34C	$V_{BE(on)}$	-	2.5	

(1) Pulse Test: Pulse Width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

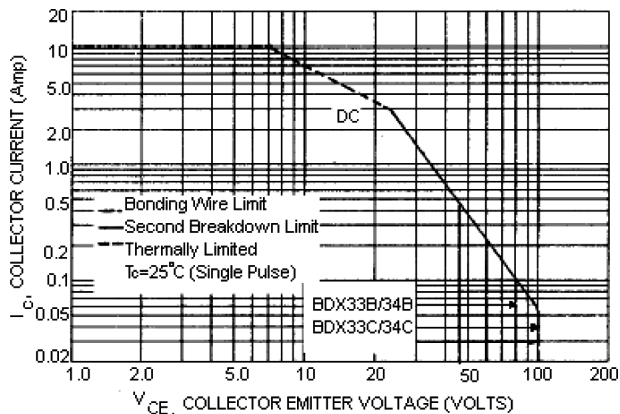
Figure - 1 Power Derating



# Darlington Transistor

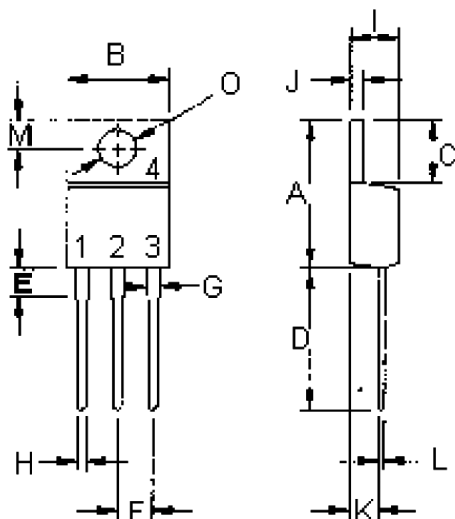


Figure - 2 Safe Operating Area



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I<sub>C</sub>-V<sub>CE</sub> limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure - 2 is based on T<sub>J(PK)</sub> = 150°C; TC is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided T<sub>J(PK)</sub> < 150°C. At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.



Dimensions	Min.	Max.
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

**Pin Configuration:**

1. Base
2. Collector
3. Emitter
4. Collector(Case)

**Part Number Table**

Description	Part Number
Darlington Transistor, TO-220	BDX33B
	BDX33C
	BDX34B
	BDX34C

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