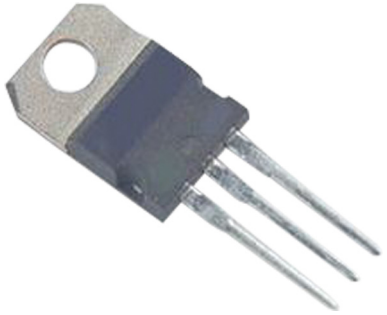
Darlington Transistor



Features:

- Collector-Emitter sustaining voltage-
  $V_{CEO(sus)}$ = 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°C Derate above 25°C	P_D	70 0.56		W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150		°C

Thermal Characteristics

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

Electrical Characteristics:

(T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Max.	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) I_C = 100mA, I_B = 0 BDX33B, BDX34B BDX33C, BDX34C	$V_{CEO(sus)}$	80 100	-	V
Collector Cut off Current V_{CE} = 40V, I_B = 0 BDX33B, BDX34B V_{CE} = 50V, I_B = 0 BDX33C, BDX34C	I_{CEO}	-	0.5 0.5	mA
Collector-Base Cut off Current V_{CB} = Rated V_{CB}, I_E = 0	I_{CBO}	-	200	µA
Emitter-Base Cut off Current V_{EB} = 5V, I_C = 0	I_{EBO}	-	10	mA
ON Characteristics (1)				
DC Current Gain I_C = 3A, V_{CE} = 3V BDX33B/33C/34B/34C	h_{FE}	750	-	-
Collector-Emitter Saturation Voltage I_C = 3A, I_B = 6mA BDX33B/33C/34B/34C	$V_{CE(sat)}$	-	2.5	V
Base-Emitter On Voltage I_C = 3A, V_{CE} = 3V BDX33B/33C/34B/34C	$V_{BE(on)}$	-	2.5	

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤2%

Figure - 1 Power Derating

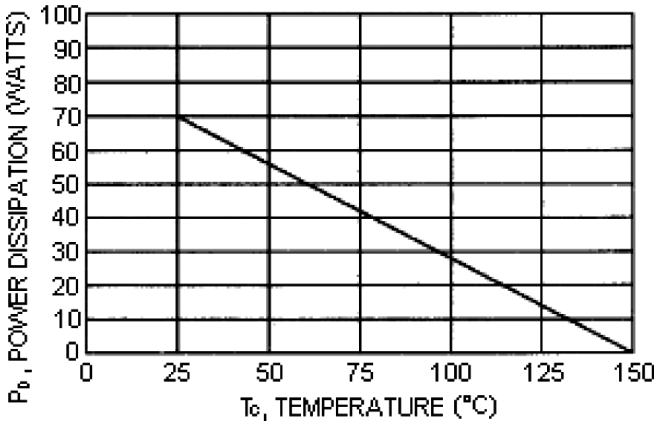
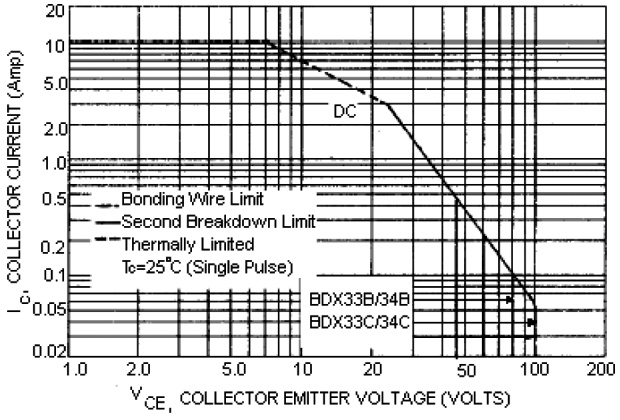
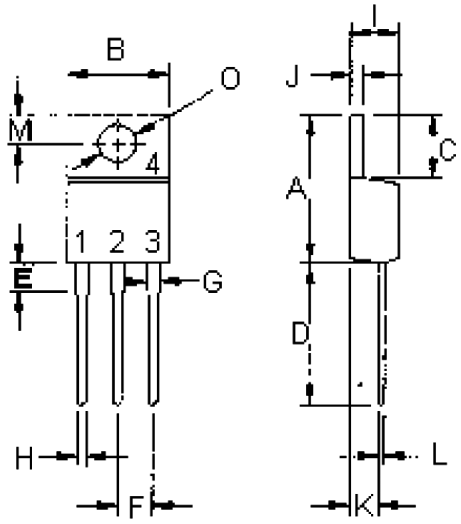


Figure - 2 Safe Operating Area





Pin Configuration:

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

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate I_C-V_{CE} 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 $T_{J(PK)}$ = 150°C; TC is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(PK)}$ <150°C. At high case temperatures, thermal limitation will reduce the power that can 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

Part Number Table

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