BDX33

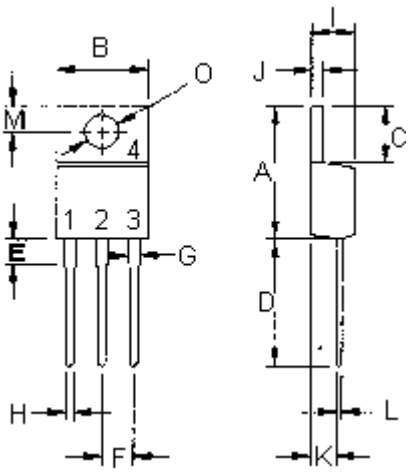
Darlington Transistor

High Voltage Switching

TO-220

Features:

- Collector-Emitter Sustaining Voltage - $V_{CEO(sus)}$ = 100 V (Minimum)
- Monolithic construction with built-in base-emitter shunt resistor



Dimensions	Minimum	Maximum
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

NPN
BDX33C

10 Amperes
Complementary Silicon
Power Transistors
80 - 100 Volts
70 Watts

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

Maximum Ratings

Characteristic	Symbol	BDX33C	Unit
Collector - emitter voltage	V_{CEO}	100	V
Collector - base voltage	V_{CBO}		
Emitter - base voltage	V_{EBO}	5	A
Collector current - continuous - peak	I_C I_{CM}	10 15	
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

Parameters	Symbol	Maximum	Unit
Thermal resistance junction to case	Rθjc	1.78	°C/W

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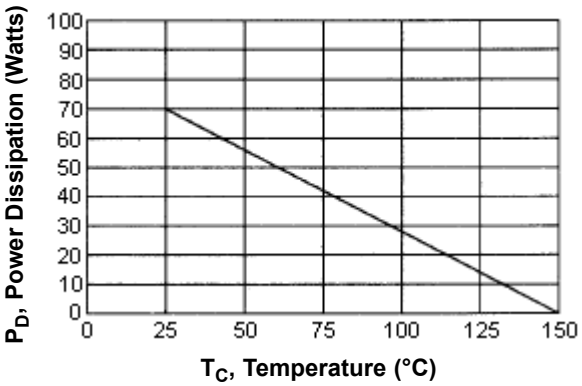
Figure - 1 Power Derating

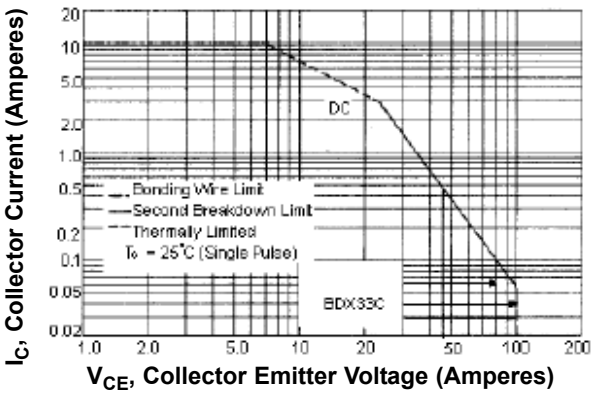


Electrical Characteristics (T_C = 25°C Unless Otherwise Noted)

Parameters	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector - emitter sustaining voltage (1) (I_C = 100 mA, I_B = 0)	$V_{CEO\ (SUS)}$	100	-	V
Collector cut off current (V_{CE} = 50 V, I_B = 0)	I_{CES}	-	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} = 5 V, I_C = 0)	I_{EBO}	-	10	mA
ON Characteristics (1)				
DC current gain (I_C = 3 A, V_{CE} = 3 V)	h_{FE}	750	-	-
Collector - emitter saturation voltage (I_C = 3 A, I_B = 6 mA)	$V_{CE\ (sat)}$	-	2.5	V
Base - emitter on voltage (I_C = 3 A, V_{CE} = 3 V)	$V_{BE\ (on)}$	-	2.5	

(1) Pulse Test : Pulse width ≤ 300 µs, duty cycle ≤ 2%

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_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 be handled to values less than the limitations imposed by second breakdown.

Part Number Table

Description	Type	Part Number
Darlington Transistor	NPN	BDX33C