NPN BDX33 – BDX33A – BDX33B – BDX33C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

The BDX33B, BDX33B and BDX33C are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intented for use in power linear and switching applications.
The complementary PNP types are the BDX34A, BDX34B and BDX34C respectively.
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings			Value	Unit
V_{CEO}	Collector-Emitter Voltage	I_B=0	BDX33	45	V
			BDX33A	60	
			BDX33B	80	
			BDX33C	100	
V_{CBO}	Collector-Base Voltage	I_E=0	BDX33	45	V
			BDX33A	60	
			BDX33B	80	
			BDX33C	100	
I_C	Collector Current	$I_{C(RMS)}$		10	A
		I_{CM}		15	
I_B	Base Current			0.25	A
P_T	Power Dissipation	@ T_C = 25°		70	W
T_J	Junction Temperature			-65 to +150	°C
T_S	Storage Temperature				

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ\text{-}C}$	Thermal Resistance, Junction to Case	1.78	°C/W

NPN BDX33 – BDX33A – BDX33B – BDX33C

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit
$V_{CEO(SUS)}$	Collector-Emitter Breakdown Voltage (*)	I_C=100 mA	BDX33	45	-	-	V
			BDX33A	60	-	-	
			BDX33B	80	-	-	
			BDX33C	100	-	-	
$V_{CER(SUS)}$	Collector-Emitter Sustaining Voltage (*)	I_B=100 mA, R_{BE}=100Ω	BDX33	45	-	-	V
			BDX33A	60	-	-	
			BDX33B	80	-	-	
			BDX33C	100	-	-	
$V_{CEV(SUS)}$	Collector-Emitter Sustaining Voltage (*)	I_C=100 mA V_{BE}=-1.5 V	BDX33	45	-	-	V
			BDX33A	60	-	-	
			BDX33B	80	-	-	
			BDX33C	100	-	-	
I_{CEO}	Collector Cutoff Current	V_{CB}=22V	BDX33	-	-	0.5	mA
		V_{CB}=30V	BDX33A	-	-		
		V_{CB}=40V	BDX33B	-	-		
		V_{CB}=50V	BDX33C	-	-		
		V_{CB}=22V, T_C=100°C	BDX33	-	-	10	
		V_{CB}=30V, T_C=100°C	BDX33A	-	-		
		V_{CB}=40V, T_C=100°C	BDX33B	-	-		
		V_{CB}=50V, T_C=100°C	BDX33C	-	-		
I_{EBO}	Emitter Cutoff Current	V_{BE}=-5 V	BDX33	-	-	5.0	mA
			BDX33A				
			BDX33B				
			BDX33C				
			BDX33				
			BDX33A				
			BDX33B				
			BDX33C				
I_{CBO}	Collector-Base Cutoff Current	V_{CBO}=45 V	BDX33	-	-	0.2	mA
		V_{CBO}=60 V	BDX33A	-	-		
		V_{CBO}=80 V	BDX33B	-	-		
		V_{CBO}=100 V	BDX33C	-	-		

NPN BDX33 – BDX33A – BDX33B – BDX33C

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

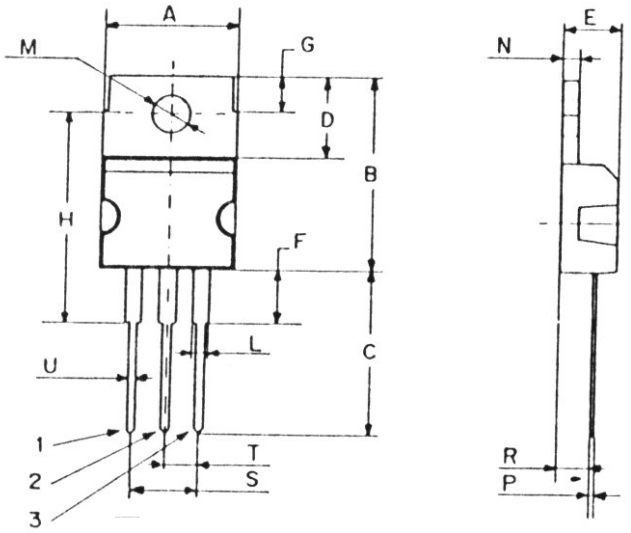
Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit
I_{CBO}	Collector-Base Cutoff Current	V_{CBO}=45 V T_C=100°C	BDX33	-	-	5	mA
		V_{CBO}=60 V T_C=100°C	BDX33A	-	-		
		V_{CBO}=80 V T_C=100°C	BDX33B	-	-		
		V_{CBO}=100 V T_C=100°C	BDX33C	-	-		
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	I_C=4.0 A, I_B=8.0 mA	BDX33	-	-	2.5	V
			BDX33A				
			BDX33B				
			BDX33C				
		I_C=3.0 A, I_B=6.0 mA	BDX33	-	-	2.5	
			BDX33A				
			BDX33B				
			BDX33C				
V_F	Forward Voltage (pulse method)	I_F=8 A	BDX33	-	-	4.0	V
			BDX33A				
			BDX33B				
			BDX33C				
V_{BE}	Base-Emitter Voltage (*)	I_C=4.0 A, V_{CE}=3.0V	BDX33	-	-	2.5	V
			BDX33A				
		I_C=3.0 A, V_{CE}=3.0V	BDX33B	-	-	2.5	
			BDX33C				
h_{FE}	DC Current Gain (*)	V_{CE}=3.0 V, I_C=4.0 A	BDX33	750	-	-	-
			BDX33A				
		V_{CE}=3.0 V, I_C=3.0 A	BDX33B	750	-	-	
			BDX33C				

(*) Pulse Width ≈ 300 μs, Duty Cycle ∠ 2.0%

NPN BDX33 – BDX33A – BDX33B – BDX33C

MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17.15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2.49	2.54
U	0,70	0,90



Pin 1 :	Base
Pin 2 :	Collector
Pin 3 :	Emitter
Case :	Collector

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