NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

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.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings			Value	Unit
V_{CEO}	Collector-Emitter Voltage		**BDX33 BDX34**	45	V
			BDX33A BDX34A	60	
			BDX33B BDX34B	80	
			BDX33C BDX34C	100	
V_{CEV}	Collector-EmitterVoltage	I_B=0	**BDX33 BDX34**	45	V
			BDX33A BDX34A	60	
			BDX33B BDX34B	80	
			BDX33C BDX34C	100	

NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

Symbol	Ratings			Value	Unit
I_C	Collector Current	$I_{C(RMS)}$	BDX33	10	A
			BDX33A		
			BDX33B		
			BDX33C		
			BDX34		
			BDX34A		
			BDX34B		
			BDX34C		
		I_{CM}	BDX33	15	
			BDX33A		
			BDX33B		
			BDX33C		
			BDX34		
			BDX34A		
			BDX34B		
			BDX34C		
I_B	Base Current		BDX33	0.25	A
			BDX33A		
			BDX33B		
			BDX33C		
			BDX34		
			BDX34A		
			BDX34B		
			BDX34C		
P_T	Power Dissipation	@ T_C = 25°	BDX33	70	Watts W/°C
			BDX33A		
			BDX33B		
			BDX33C		
			BDX34		
			BDX34A		
			BDX34B		
			BDX34C		
T_J	Junction Temperature		BDX33	-65 to +150	°C
			BDX33A		
			BDX33B		
			BDX33C		
T_S	Storage Temperature		BDX34		
			BDX34A		
			BDX34B		
			BDX34C		

NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

THERMAL CHARACTERISTICS

Symbol	Ratings		Value	Unit
R_{thJ-C}	Thermal Resistance, Junction to Case	**BDX33** **BDX33A** **BDX33B** **BDX33C** **BDX34** **BDX34A** **BDX34B** **BDX34C**	1.78	°C/W

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Mx	Unit
$V_{CEO(SUS)}$	Collector-Emitter Breakdown Voltage (*)	I_C=100 mA	**BDX33 BDX34**	45	-	-	V
			BDX33A BDX34A	60	-	-	
			BDX33B BDX34B	80	-	-	
			BDX33C BDX34C	100	-	-	
$V_{CER(SUS)}$	Collector-Emitter Sustaining Voltage (*)	I_B=100 mA, R_{BE}=100Ω	**BDX33 BDX34**	45	-	-	V
			BDX33A BDX34A	60	-	-	
			BDX33B BDX34B	80	-	-	
			BDX33C BDX34C	100	-	-	

NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

Symbol	Ratings		Test Condition(s)		Min	Typ	Mx	Unit
$V_{CEV(SUS)}$	Collector-Emitter Sustaining Voltage (*)		I_C=100 mA, V_{BE}=-1.5 V	**BDX33 BDX34**	45	-	-	V
				BDX33A BDX34A	60	-	-	
				BDX33B BDX34B	80	-	-	
				BDX33C BDX34C	100	-	-	
I_{CEO}	Collector Cutoff Current	T_{CASE}=25°C	V_{CB}=22V	**BDX33 BDX34**	-	-	0.5	mA
			V_{CB}=30V	**BDX33A BDX34A**	-	-		
			V_{CB}=40V	**BDX33B BDX34B**	-	-		
			V_{CB}=50V	**BDX33C BDX34C**	-	-		
		T_{CASE}=100°C	V_{CB}=22V	**BDX33 BDX34**	-	-	10	
			V_{CB}=30V	**BDX33A BDX34A**	-	-		
			V_{CB}=40V	**BDX33B BDX34B**	-	-		
			V_{CB}=50V	**BDX33C BDX34C**	-	-		
I_{EBO}	Emitter Cutoff Current		V_{BE}=-5 V	**BDX33**	-	-	5.0	mA
				BDX33A				
				BDX33B				
				BDX33C				
				BDX34				
				BDX34A				
				BDX34B				
				BDX34C				
I_{CBO}	Collector-Base Cutoff Current	T_{CASE}=25°C	V_{CBO}=-45 V	**BDX33 BDX34**	-	-	0.2	mA
			V_{CBO}=-60 V	**BDX33A BDX34A**	-	-		
			V_{CBO}=-80 V	**BDX33B BDX34B**	-	-		
			V_{CBO}=100 V	**BDX33C BDX34C**	-	-		

NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

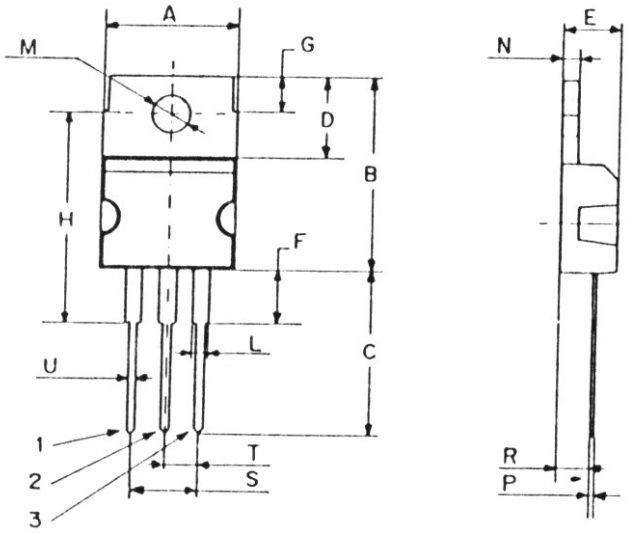
Symbol	Ratings		Test Condition(s)		Min	Typ	Mx	Unit
I_{CBO}	Collector-Base Cutoff Current	T_{CASE}=100°C	V_{CBO}=45 V	**BDX33** **BDX34**	-	-	5	mA
			V_{CBO}=60 V	**BDX33A** **BDX34A**	-	-		
			V_{CBO}=80 V	**BDX33B** **BDX34B**	-	-		
			V_{CBO}=100 V	**BDX33C** **BDX34C**	-	-		
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)		I_C=4.0 A, I_B=8.0 mA	**BDX33** **BDX33A** **BDX34** **BDX34A**	-	-	2.5	V
			I_C=3.0 A, I_B=6.0 mA	**BDX33B** **BDX33C** **BDX34B** **BDX34C**	-	-	2.5	
V_F	Forward Voltage (pulse method)		I_F=8 A	**BDX33** **BDX33A** **BDX33B** **BDX33C** **BDX34** **BDX34A** **BDX34B** **BDX34C**	-	-	4.0	V
V_{BE}	Base-Emitter Voltage (*)		I_C=4.0 A, V_{CE}=3.0V	**BDX33** **BDX33A** **BDX34** **BDX34A**	-	-	2.5	V
			I_C=3.0 A, V_{CE}=3.0V	**BDX33B** **BDX33C** **BDX34B** **BDX34C**	-	-	2.5	
h_{FE}	DC Current Gain (*)		V_{CE}=3.0 V, I_C=4.0 A	**BDX33** **BDX33A** **BDX34** **BDX34A**	750	-	-	-
			V_{CE}=3.0 V, I_C=3.0 A	**BDX33B** **BDX33C** **BDX34B** **BDX34C**	750	-	-	

(*) Pulse Width ≈ 300 μs, Duty Cycle ∠ 2.0%
(1) collector-Emitter voltage limited et V_{CEi} = V rated by an auxiliary circuit

NPN BDX33 – BDX33A – BDX33B – BDX33C
PNP BDX34 – BDX34A – BDX34B – BDX34C

MECHANICAL DATA CASE TO-220

DIMENSIONS		
	mm	inches
A	9,86	0,39
B	15,73	0,62
C	13,37	0,52
D	6,67	0,26
E	4,44	0,17
F	4,21	0,16
G	2,99	0,11
H	17,21	0,68
L	1,29	0,05
M	3,6	0,14
N	1,36	0,05
P	0,46	0,02
R	2,1	0,08
S	5	0,19
T	2,52	0,098
U	0,79	0,03



Pin 1 :	base
Pin 2 :	Collector
Pin 3 :	emitter