

BDX33/A/B/C

Power Linear and Switching Applications

- High Gain General Purpose
- Power Darlington TR
- Complement to BDX34/34A/34B/34C respectively



TO-220
1.Base 2.Collector 3.Emitter

NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage		
	: BDX33	45	V
	: BDX33A	60	V
	: BDX33B	80	V
	: BDX33C	100	V
V_{CEO}	Collector-Emitter Voltage		
	: BDX33	45	V
	: BDX33A	60	V
	: BDX33B	80	V
	: BDX33C	100	V
I_C	Collector Current (DC)	10	A
I_{CP}	*Collector Current (Pulse)	15	A
I_B	Base Current	0.25	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	70	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	* Collector-Emitter Sustaining Voltage	$I_C = 100\text{mA}, I_B = 0$	45 60 80 100			V V V V
	: BDX33					
	: BDX33A					
	: BDX33B : BDX33C					
$V_{CER(sus)}$	* Collector-Emitter Sustaining Voltage	$I_C = 100\text{mA}, I_B = 0$ $R_{BE} = 100\Omega$	45 60 80 100			V V V V
	: BDX33					
	: BDX33A					
	: BDX33B : BDX33C					
$V_{CEV(sus)}$	* Collector-Emitter Sustaining Voltage	$I_C = 100\text{mA}, I_B = 0$ $V_{BE} = 1.5\text{V}$	45 60 80 100			V V V V
	: BDX33					
	: BDX33A					
	: BDX33B : BDX33C					
I_{CBO}	Collector Cut-off Current	$V_{CB} = 45\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$ $V_{CB} = 100\text{V}, I_E = 0$			0.2 0.2 0.2 0.2	mA mA mA mA
	: BDX33					
	: BDX33A					
	: BDX33B : BDX33C					
I_{CEO}	Collector Cut-off Current	$V_{CE} = 22\text{V}, I_B = 0$ $V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 40\text{V}, I_B = 0$ $V_{CE} = 50\text{V}, I_B = 0$			0.5 0.5 0.5 0.5	mA mA mA mA
	: BDX33					
	: BDX33A					
	: BDX33B : BDX33C					
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			5	mA
h_{FE}	* DC Current Gain	$V_{CE} = 3\text{V}, I_C = 4\text{A}$ $V_{CE} = 3\text{V}, I_C = 3\text{A}$	750			
	: BDX33/34 : BDX33B/33C		750			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 4\text{A}, I_B = 8\text{mA}$ $I_C = 3\text{A}, I_B = 6\text{mA}$			2.5	V
	: BDX33/33A : BDX33B/33C				2.5	V
$V_{BE(on)}$	* Base-Emitter ON Voltage	$V_{CE} = 3\text{V}, I_C = 4\text{A}$ $V_{CE} = 3\text{V}, I_C = 3\text{A}$			2.5	V
	: BDX33/33A : BDX33B/33C				2.5	V
V_F	* Parallel Diode Forward Voltage	$I_F = 8\text{A}$			4	V

* Pulse Test: PW=300 μs , duty Cycle =1.5% Pulse

Typical Characteristics

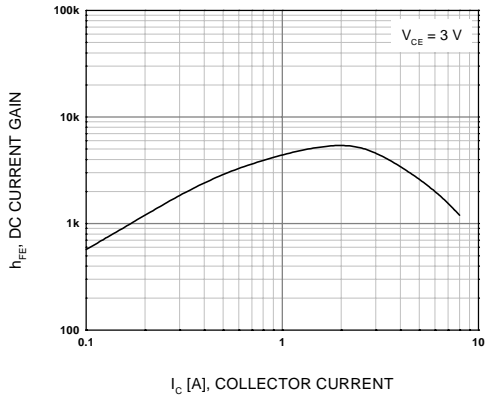


Figure 1. DC Current Gain

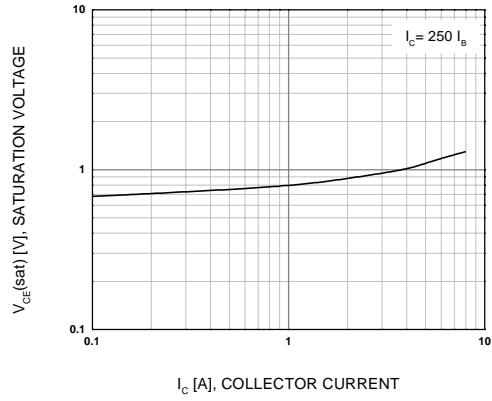


Figure 2. Collector-Emitter Saturation Voltage

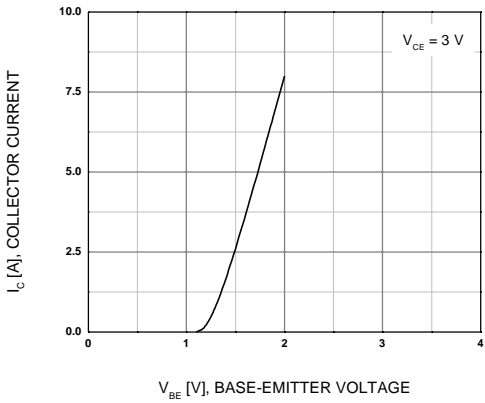


Figure 3. Base-Emitter On Voltage

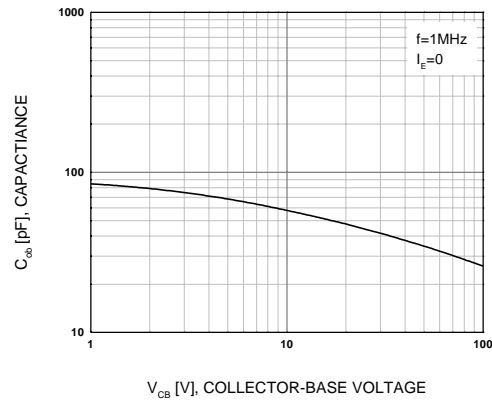


Figure 4. Output Capacitance

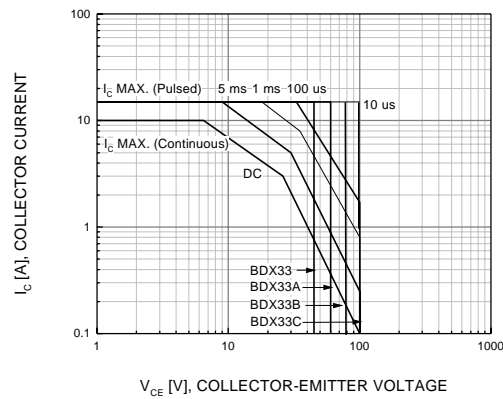


Figure 5. Safe Operating Area

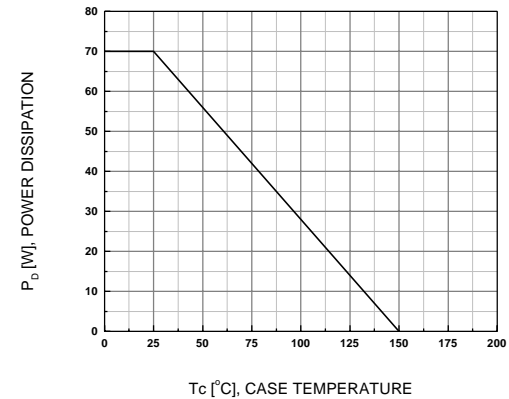


Figure 6. Power Derating

Package Dimensions

BDX33/A/B/C

TO-220



Dimensions in Millimeters

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BDX33C

NPN Epitaxial Silicon Transistor

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
BDX33C	Full Production	\$0.468	TO-220	3	BULK
BDX33CTU	Full Production	\$0.468	TO-220	3	RAIL

* 1,000 piece Budgetary Pricing

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