



March 2011

# BDX53/A/B/C

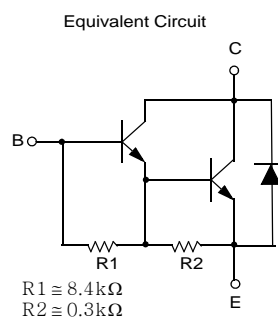
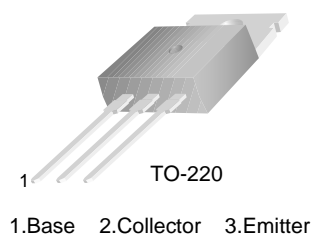
## NPN Epitaxial Silicon Transistor

### Applications

- Hammer Drivers, Audio Amplifiers Applications
- Power Liner and Switching Applications

### Features

- Power Darlington TR
- Complement to BDX54, BDX54A, BDX54B and BDX54C respectively



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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage : BDX53	45	V
	: BDX53A	60	V
	: BDX53B	80	V
	: BDX53C	100	V
$V_{CEO}$	Collector-Emitter Voltage : BDX53	45	V
	: BDX53A	60	V
	: BDX53B	80	V
	: BDX53C	100	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	8	A
$I_{CP}$	*Collector Current (Pulse)	12	A
$I_B$	Base Current	0.2	A
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	60	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 65 to 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 : BDX53 : BDX53A : BDX53B : BDX53C	$I_C = 100\text{mA}, I_B = 0$	45 60 80 100			V V V V
$I_{CBO}$	Collector Cut-off Current : BDX53 : BDX53A : BDX53B : BDX53C	$V_{CB} = 45\text{V}, I_E = 0$ $V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$ $V_{CB} = 100\text{V}, I_E = 0$			200 200 200 200	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$I_{CEO}$	Collector Cut-off Current : BDX53 : BDX53A : BDX53B : BDX53C	$V_{CE} = 22\text{V}, I_B = 0$ $V_{CE} = 30\text{V}, I_B = 0$ $V_{CE} = 40\text{V}, I_B = 0$ $V_{CE} = 50\text{V}, I_B = 0$			500 500 500 500	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			2	mA
$h_{FE}$	* DC Current Gain	$V_{CE} = 3\text{V}, I_C = 3\text{A}$	750			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 3\text{A}, I_B = 12\text{mA}$			2	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 3\text{A}, I_B = 12\text{mA}$			2.5	V
$V_F$	* Parallel Diode Forward Voltage	$I_F = 3\text{A}$ $I_F = 8\text{A}$		1.8 2.5	2.5	V V

\* Pulse Test:  $PW=300\mu\text{s}$ , duty Cycle =1.5% Pulsed

## Typical Performance Characteristics

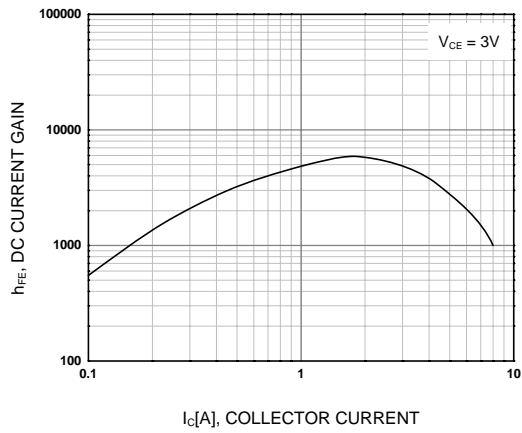


Figure 1. DC current Gain

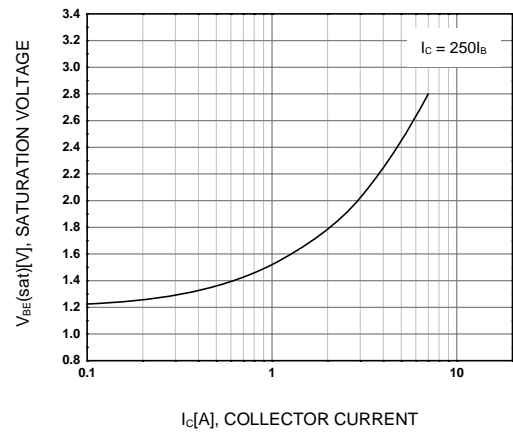


Figure 2. Base-Emitter Saturation Voltage

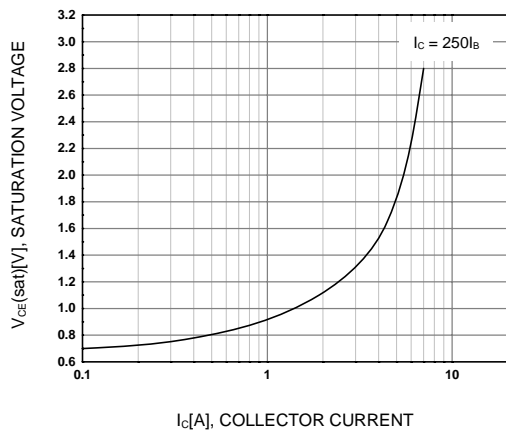


Figure 3. Collector-Emitter Saturation Voltage

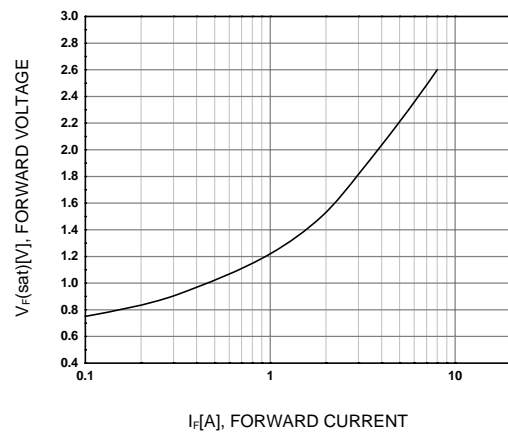


Figure 4. Damper Diode Forward Voltage

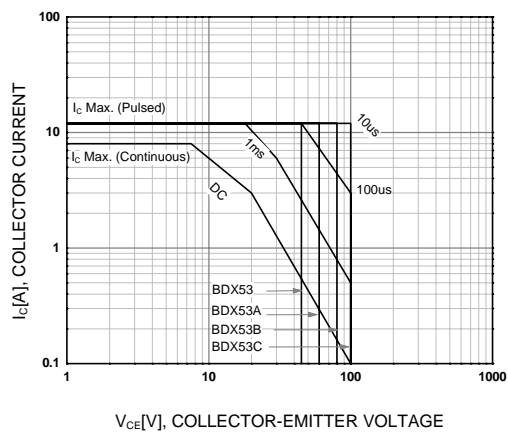


Figure 5. Safe Operating Area

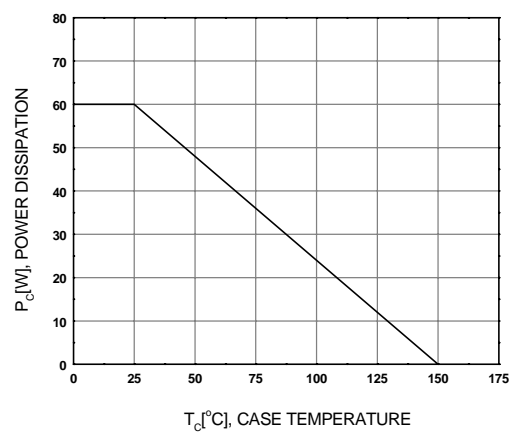
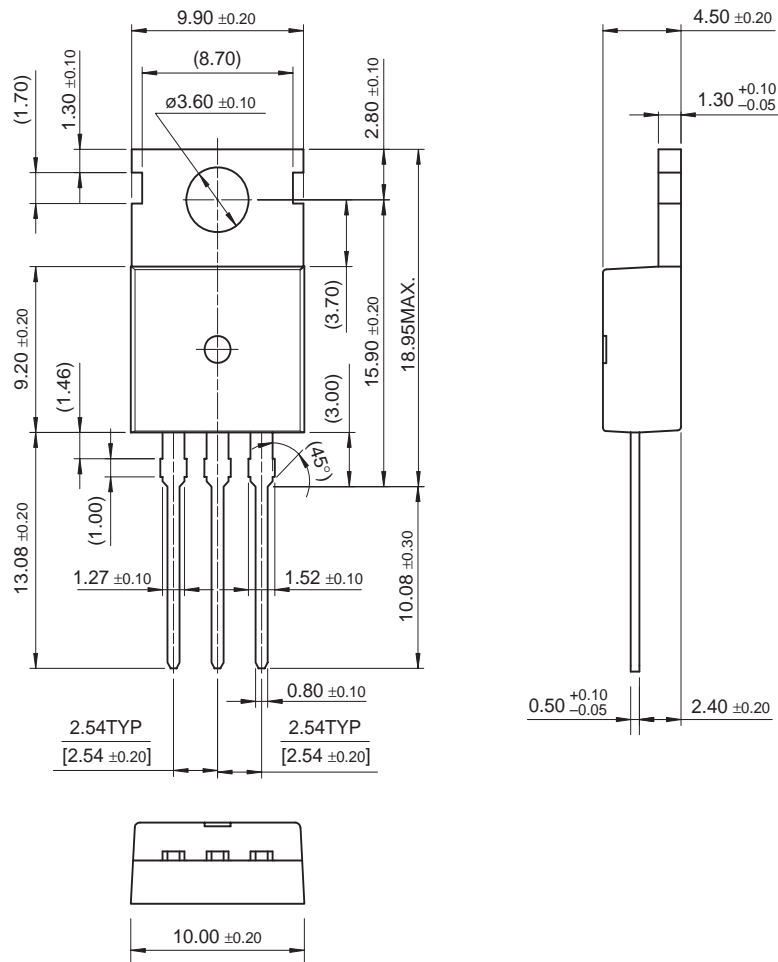


Figure 6. Power Derating

# Physical Dimensions

## TO-220








Dimensions in Millimeters



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