EPITAXIAL-BASE NPN/PNP

BDX53 BDX54
BDX53A BDX54A
BDX53B BDX54B
BDX53C BDX54C

POWER DARLINGTONS

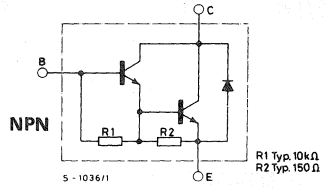
The BDX 53, BDX 53A, BDX 53B and BDX 53C are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package, intended for use in hammer drivers, audio amplifiers and other medium power linear and switching applications.
The complementary PNP types are the BDX 54, BDX 54A, BDX 54B and BDX 54C respectively.

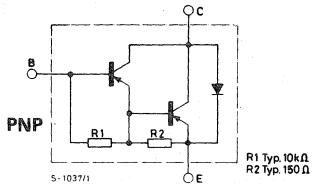
ABSOLUTE MAXIMUM RATINGS

		NPN / PNP*	BDX53 / BDX54	BDX53A / BDX54A	BDX53B / BDX54B	BDX53C / BDX54C
V_{CBO}	Collector-base voltage ($I_E = 0$)		45V	60V	80V	100V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)		45V	60V	80V	100V
V_{EBO}	Emitter-base voltage ($I_C = 0$)		5V			
I_C	Collector current		8A			
I_{CM}	Collector peak current (repetitive)		12A			
I_B	Base current		0.2A			
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$		60W			
T_{stg}	Storage temperature		-65 to 150°C			
T_j	Junction temperature		150°C			

*** For PNP types voltage and current values are negative**

INTERNAL SCHEMATIC DIAGRAMS

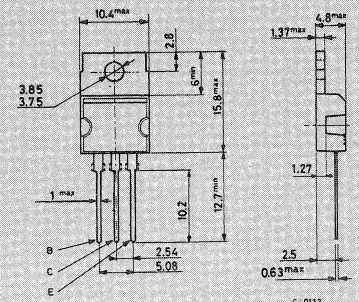




MECHANICAL DATA

Dimensions in mm

Collector connected to tab.



TO-220

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	2.08	°C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	70	°C/W

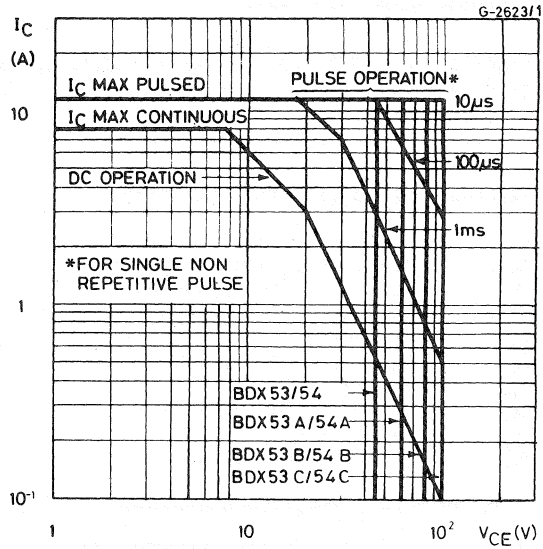
ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	for **BDX53/54** V_{CB} = 45V			200	μA
		for **BDX53A/54A** V_{CB} = 60V			200	μA
		for **BDX53B/54B** V_{CB} = 80V			200	μA
		for **BDX53C/54C** V_{CB} = 100V			200	μA
I_{CEO}	Collector cutoff current (I_B = 0)	for **BDX53/54** V_{CE} = 22V			500	μA
		for **BDX53A/54A** V_{CE} = 30V			500	μA
		for **BDX53B/54B** V_{CE} = 40V			500	μA
		for **BDX53C/54C** V_{CE} = 50V			500	μA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EB} = 5 V			2	mA
$V_{CEO(sus)}$*	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100 mA				
		for **BDX53/54**	45			V
		for **BDX53A/54A**	60			V
		for **BDX53B/54B**	80			V
		for **BDX53C/54C**	100			V
$V_{CE\ (sat)}$*	Collector-emitter saturation voltage	I_C = 3A I_B = 12mA			2	V
$V_{BE\ (sat)}$*	Base-emitter saturation voltage	I_C = 3A I_B = 12mA			2.5	V
h_{FE}*	DC current gain	I_C = 3A V_{CE} = 3V	750			—
V_F	Parallel-diode forward voltage	I_F = 3A		1.8	2.5	V
		I_F = 8A		2.5		V

* Pulsed: pulse duration = 300 μs, duty cycle = 1.5%

For PNP types voltage and current values are negative

Safe operating area



For the other characteristics curves see TIP120/TIP125 series.