SGS-THOMSON MICROELECTRONICS

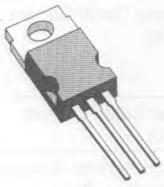
BDX53/53A/53B/53C
BDX54/54A/54B/54C

POWER DARLINGTONS

DESCRIPTION

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.



TO-220

INTERNAL SCHEMATIC DIAGRAMS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value				Unit
			BDX53 BDX54	BDX53A BDX54A	BDX53B BDX54B	BDX53C BDX54C	
V_{CBO}	Collector-base Voltage (I_E = 0)		45	60	80	100	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)		45	60	80	100	V
V_{EBO}	Emitter-base Voltage (I_C = 0)		5				V
I_C	Collector Current		8				A
I_{CM}	Collector Peak Current (repetitive)		12				A
I_B	Base Current		0.2				A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C		60				W
T_{stg}	Storage Temperature		– 65 to 150				°C
T_j	Junction Temperature		150				°C

* For PNP types voltage and current values are negative.

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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	for **BDX53/54** V_{CB} = 45 V			200	μA
		for **BDX53A/54A** V_{CB} = 60 V			200	μA
		for **BDX53B/54B** V_{CB} = 80 V			200	μA
		for **BDX53C/54C** V_{CB} = 100 V			200	μA
I_{CEO}	Collector Cutoff Current (I_B = 0)	for **BDX53/54** V_{CE} = 22 V			500	μA
		for **BDX53A/54A** V_{CE} = 30 V			500	μA
		for **BDX53B/54B** V_{CE} = 40 V			500	μA
		for **BDX53C/54C** V_{CE} = 50 V			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 = 3 A I_B = 12 mA			2	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 3 A I_B = 12 mA			2.5	V
h_{FE}*	DC Current Gain	I_C = 3 A V_{CE} = 3 V	750			
V_F	Parallel-diode Forward Voltage	I_F = 3 A		1.8	2.5	V
		I_F = 8 A		2.5		V

* Pulsed : pulse duration = 300 μs, duty cycle = 1.5 %.
For PNP types voltage and current values are negative.

Safe Operating Area.