BDX53B - BDX53C BDX54B - BDX54C

Complementary power Darlington transistors

Features

- Good h_{FE} linearity
- High f_T frequency
- Monolithic Darlington configuration with integrated antiparallel collector-emitter diode

Application

- Audio amplifiers
- Linear and switching industrial equipment

Description

The devices are manufactured in planar base island technology with monolithic Darlington configuration.

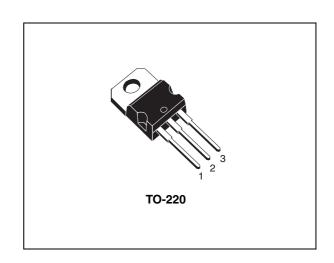


Figure 1. Internal schematic diagram

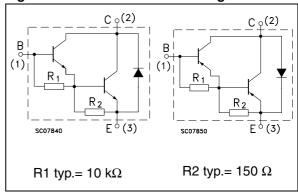


Table 1. Device summary

Order code	Marking	Package	Packaging
BDX53B	BDX53B		
BDX53C	BDX53C	TO-220	Tube
BDX54B	BDX54B	10-220	Tube
BDX54C	BDX54C		

1 Electrical ratings

Table 2. Absolute maximum ratings

			Va		
Symbol	Parameter	NPN	BDX53B	BDX53C	Unit
		PNP	BDX54B	BDX54C	
V _{CBO}	Collector-base voltage (I _E = 0)		80	100	V
V _{CEO}	Collector-emitter voltage (I _B = 0)		80	100	V
V _{EBO}	Emitter-base voltage (I _C = 0)		5		V
I _C	Collector current		8		Α
I _{CM}	Collector peak current (repetitive)		12		Α
I _B	Base current		0.2		mA
P _{TOT}	Total dissipation at T _c = 25°C		60		W
T _{stg}	Storage temperature		-65 to 150		°C
T _J	Max. operating junction temperature	150		°C	

Note: For PNP types voltage and current values are negative.

2 Electrical characteristics

(T_{CASE}=25°C unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B = 0)	I _C = 100 mA for BDX53B - BDX54B for BDX53C - BDX54C	80 100			V V
lone	Collector cut-off current	V _{CB} = 80 V for BDX53B - BDX54B			0.2	mA
I _{CBO} (I	(I _E = 0)	$V_{CB} = 100 \text{ V}$ for BDX53C - BDX54C			0.2	mA
loco	Collector cut-off current	$V_{CE} = 40 \text{ V}$ for BDX53B - BDX54B			0.5	mA
	(I _B = 0)	$V_{CE} = 50 \text{ V}$ for BDX53C - BDX54C			0.5	mA
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = 5 V			2	mA
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$I_C = 3 \text{ A};$ $I_B = 12 \text{ mA}$			2	V
V _{BE(sat)} ⁽¹⁾	Base-emitter saturation voltage	$I_C = 3 \text{ A};$ $I_B = 12 \text{ mA}$			2.5	V
h _{FE} ⁽¹⁾	DC current gain	$I_C = 3 A;$ $V_{CE} = 3 V$	750			
V _F ⁽¹⁾	Diode forward voltage	I _F = 3 A; I _F = 8 A;		1.8 2.5	2.5	V V

^{1.} Pulsed: pulse duration = 300 μ s, duty cycle 1.5%

Note: For PNP types voltage and current values are negative.

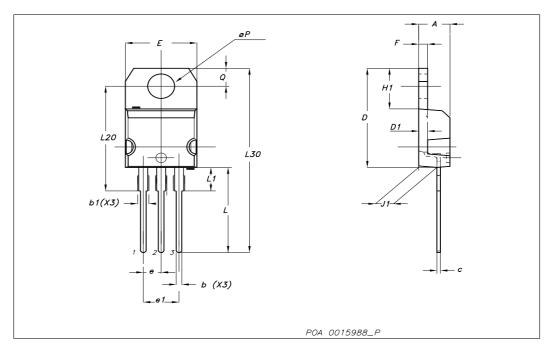
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3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-220 mechanical data

Dim		mm			inch		
	Min	Тур	Max	Min	Тур	Max	
Α	4.40		4.60	0.173		0.181	
b	0.61		0.88	0.024		0.034	
b1	1.14		1.70	0.044		0.066	
С	0.49		0.70	0.019		0.027	
D	15.25		15.75	0.6		0.62	
D1		1.27			0.050		
E	10		10.40	0.393		0.409	
е	2.40		2.70	0.094		0.106	
e1	4.95		5.15	0.194		0.202	
F	1.23		1.32	0.048		0.051	
H1	6.20		6.60	0.244		0.256	
J1	2.40		2.72	0.094		0.107	
L	13		14	0.511		0.551	
L1	3.50		3.93	0.137		0.154	
L20		16.40			0.645		
L30		28.90			1.137		
ØP	3.75		3.85	0.147		0.151	
Q	2.65		2.95	0.104		0.116	



4 Revision history

Table 4. Document revision history

Date	Revision	Changes
09-Sep-2004	3	
23-Oct-2007	4	Technology change from epibase to planar (PCN APM-PWR/07/2417 and APM-PWR/07/2615)

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