BDX53B - BDX53C
BDX54B - BDX54C

Complementary power Darlington transistors

Features

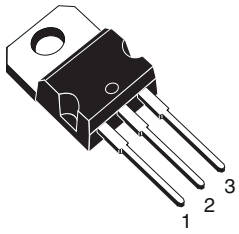
- Good h_{FE} linearity
- High f_T frequency
- Monolithic Darlington configuration with integrated antiparallel collector-emitter diode

Application

- Audio amplifiers
- Linear and switching industrial equipment

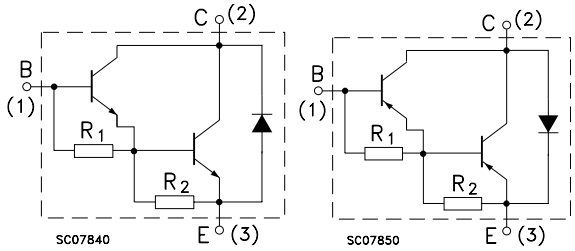
Description

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



TO-220

Figure 1. Internal schematic diagram



R1 typ.= 10 kΩ R2 typ.= 150 Ω

Table 1. Device summary

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

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter		Value		Unit
		NPN	BDX53B	BDX53C	
		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		A
I_{CM}	Collector peak current (repetitive)		12		A
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.	Typ.	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
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 80 V for BDX53B - BDX54B			0.2	mA
		V_{CB} = 100 V for BDX53C - BDX54C			0.2	mA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 40 V for BDX53B - BDX54B			0.5	mA
		V_{CE} = 50 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 A; I_B = 12 mA			2	V
$V_{BE(sat)}$(1)	Base-emitter saturation voltage	I_C = 3 A; I_B = 12 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 µs, duty cycle 1.5%

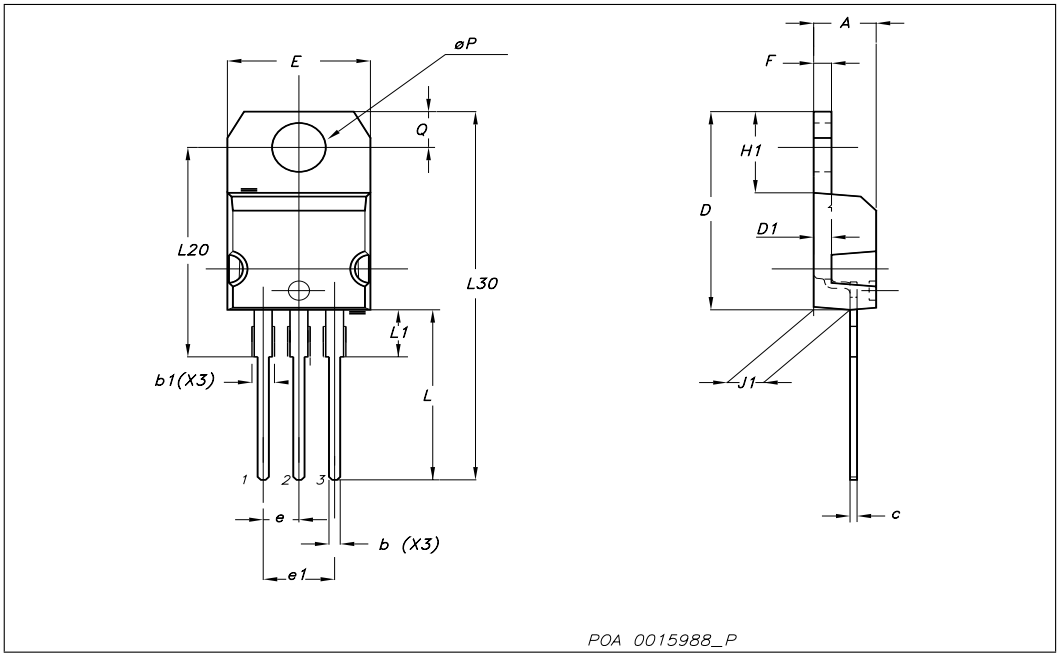
Note: For PNP types voltage and current values are negative.

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	Typ	Max	Min	Typ	Max
A	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
c	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
e	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	
∅P	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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