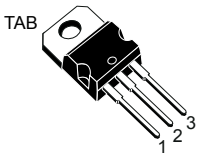
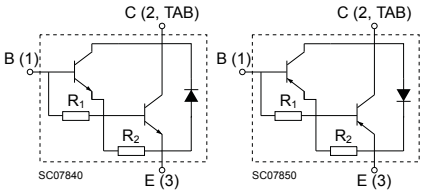
BDX53B, BDX53C, BDX54C

Datasheet

Complementary power Darlington transistors



TO-220



R_1 typ. = 10 kΩ

R_2 typ. = 150 Ω

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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

These devices are manufactured in planar technology with “base island” layout and monolithic Darlington configuration.

Product status links
BDX53B
BDX53C
BDX54C

1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter		Value		Unit
		NPN	BDX53B	BDX53C	
		PNP		BDX54C	
V_{CBO}	Collector-base voltage (I_E = 0 A)		80	100	V
V_{CEO}	Collector-emitter voltage (I_B = 0 A)		80	100	V
V_{EBO}	Collector-base voltage (I_C = 0 A)		5		V
I_C	Collector current		8		A
I_{CM}	Collector peak current		12		A
I_B	Base current		0.2		A
P_{TOT}	Total power dissipation at T_C = 25 °C		60		W
T_{stg}	Storage temperature range		-65 to 150		°C
T_J	Maximum operating junction temperature		150		°C

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

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance, junction-to-case	2.08	°C/W

2 Electrical characteristics

T_C = 25 °C unless otherwise specified.

Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current	V_{CB} = 80 V, I_E = 0 A for BDX53B	-	-	0.2	mA
		V_{CB} = 100 V, I_E = 0 A for BDX53C, BDX54C	-	-	0.2	mA
I_{CEO}	Collector cut-off current	V_{CE} = 40 V, I_B = 0 A for BDX53B	-	-	0.5	mA
		V_{CE} = 50 V, I_B = 0 A for BDX53C, BDX54C	-	-	0.5	mA
I_{EBO}	Emitter cut-off current	V_{EB} = 5 V, I_C = 0 A	-	-	2	mA
$V_{CEO(sus)}$(1)	Collector-emitter sustaining voltage	I_C = 100 mA, I_B = 0 A for BDX53B	80	-	-	V
		I_C = 100 mA, I_B = 0 A for BDX53C, BDX54C	100	-	-	V
$V_{CE(sat)}$(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	-	1.8	2.5	V
		I_F = 8 A	-	2.5	-	V

1. *Pulse test: pulse duration = 300 µs, duty cycle 1.5 %.*

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

3 Package information

To meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions, and product status are available at: www.st.com. ECOPACK is an ST trademark.

3.1 TO-220 type A package information

Figure 1. TO-220 type A package outline

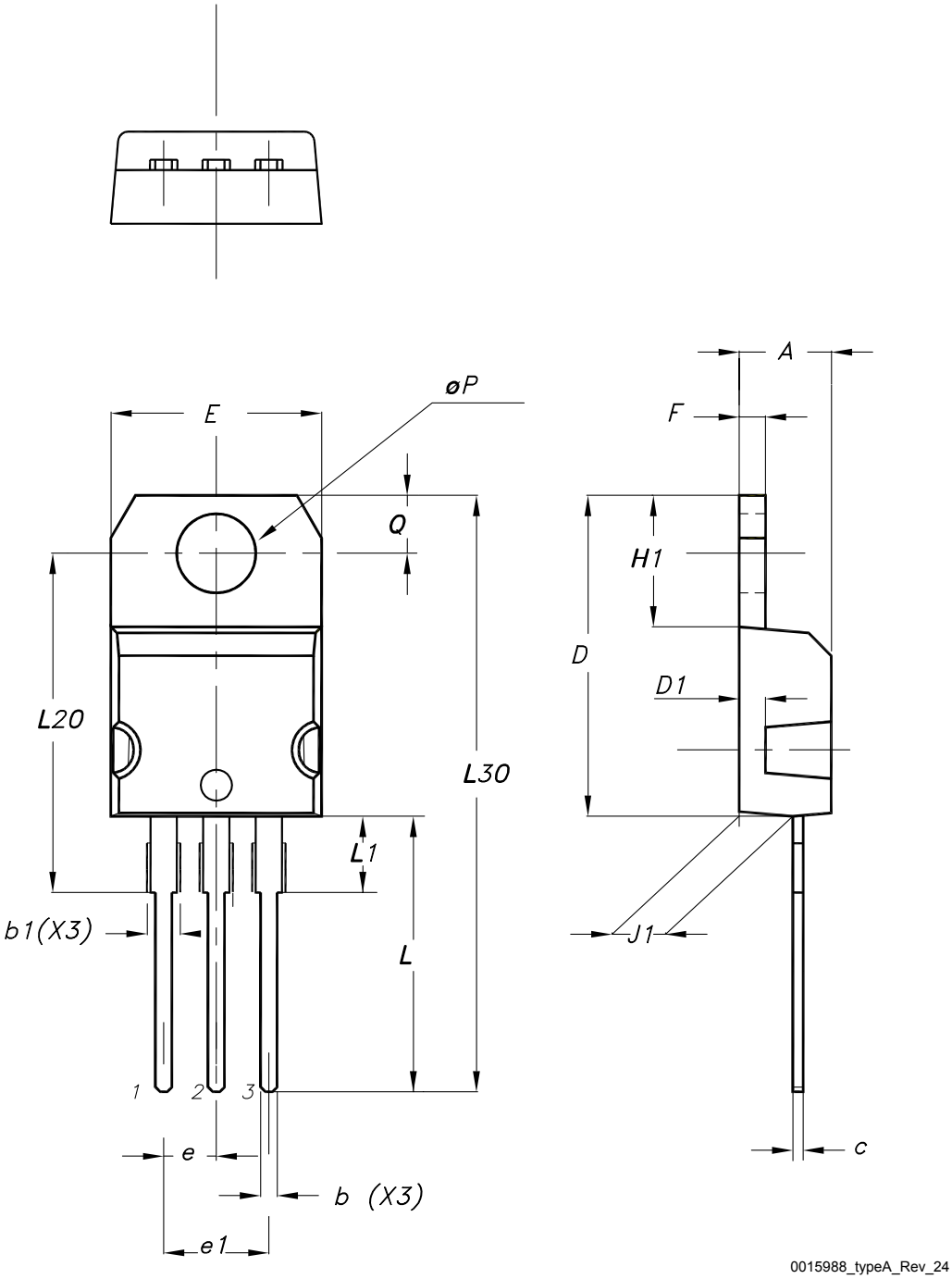

Table 4. **TO-220 type A package mechanical data**

Dim.	mm		
	Min.	Typ.	Max.
A	4.40		4.60
b	0.61		0.88
b1	1.14		1.55
c	0.48		0.70
D	15.25		15.75
D1		1.27	
E	10.00		10.40
e	2.40		2.70
e1	4.95		5.15
F	1.23		1.32
H1	6.20		6.60
J1	2.40		2.72
L	13.00		14.00
L1	3.50		3.93
L20		16.40	
L30		28.90	
øP	3.75		3.85
Q	2.65		2.95
Slug flatness		0.03	0.10

4 Ordering information

Table 5. **Order codes**

Order codes	Marking	Polarity	Package	Packing
BDX53B	BDX53B	NPN	TO-220	Tube
BDX53C	BDX53C	NPN		
BDX54C	BDX54C	PNP		

Revision history

Table 6. **Document revision history**

Date	Revision	Changes
23-Oct-2007	4	Technology change from epibase to planar (PCN APMPWR/07/2417 and APM-PWR/07/2615)
17-Jul-2025	5	Removed order code BDX54B. Updated Table 1. Absolute maximum ratings and Section 3: Package information. Minor text changes.

Contents

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