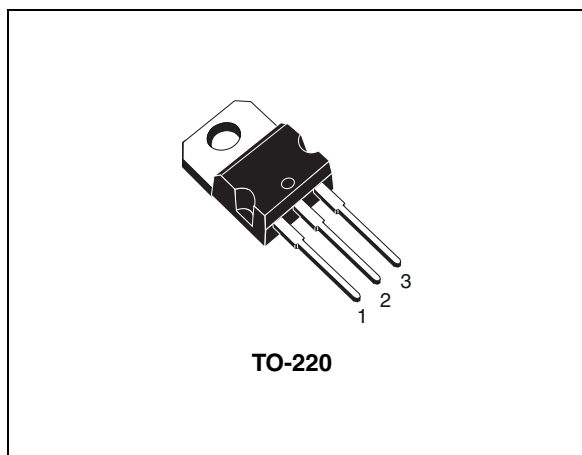


Complementary power Darlington transistors

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

- Audio amplifiers
- Linear and switching industrial equipment

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



The image shows two circuit diagrams for comparators, SC07B40 and SC07B50, enclosed in dashed boxes. Both diagrams have a common input 'B' (1) on the left. The SC07B40 diagram shows a network of resistors R_1 and R_2 connected to the input of a differential pair of transistors. The output of the SC07B40 is 'C' (2) at the top and 'E' (3) at the bottom, with a diode symbol pointing upwards. The SC07B50 diagram is similar but the diode symbol points downwards. Below each diagram is its part number: SC07B40 and SC07B50.

SC07B40

SC07B50

R1 typ.= 10 k Ω

R2 typ.= 150 Ω

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 $T_C = 25^\circ\text{C}$		60		W
T_{stg}	Storage temperature		-65 to 150		$^\circ\text{C}$
T_J	Max. operating junction temperature		150		$^\circ\text{C}$

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

2 Electrical characteristics

($T_{CASE}=25^{\circ}\text{C}$ unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{CE(sus)}^{(1)}$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 100\text{ mA}$ for BDX53B - BDX54B for BDX53C - BDX54C	80 100			V V
I_{CBO}	Collector cut-off current ($I_E = 0$)	$V_{CB} = 80\text{ V}$ for BDX53B - BDX54B			0.2	mA
		$V_{CB} = 100\text{ V}$ for BDX53C - BDX54C			0.2	mA
I_{CEO}	Collector cut-off current ($I_B = 0$)	$V_{CE} = 40\text{ V}$ for BDX53B - BDX54B			0.5	mA
		$V_{CE} = 50\text{ V}$ for BDX53C - BDX54C			0.5	mA
I_{EBO}	Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			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	$I_C = 3\text{ A}; V_{CE} = 3\text{ V}$	750			
$V_F^{(1)}$	Diode forward voltage	$I_F = 3\text{ A};$		1.8	2.5	V
		$I_F = 8\text{ A};$		2.5		V

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

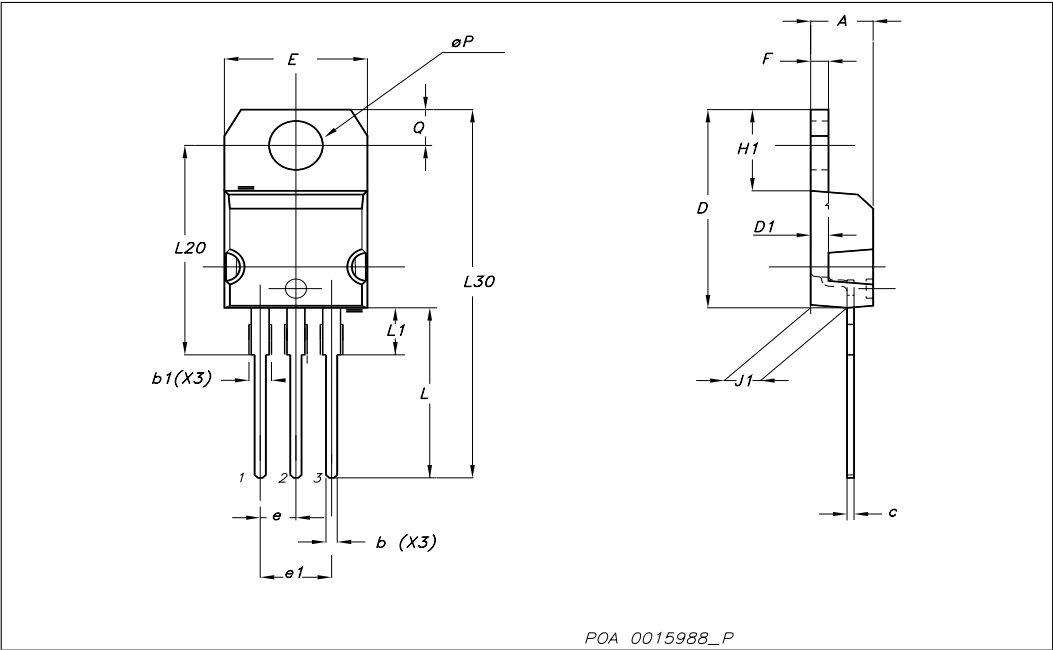
Note: For PNP types voltage and current values are negative.

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	
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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