BD238

Low voltage PNP power transistor

Features

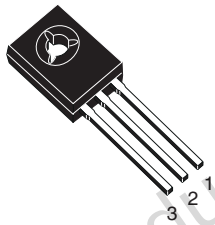
- Low saturation voltage
- PNP transistor

Applications

- Audio, power linear and switching applications

Description

The device is manufactured in planar technology with “Base Island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage.
The NPN type is BD237.



SOT-32
(TO-126)

Figure 1. Internal schematic diagram

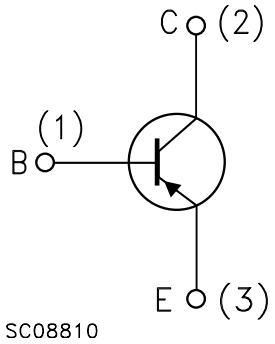


Table 1. Device summary

Order code	Marking	Package	Packaging
BD238	BD238	SOT-32	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	-100	V
V_{CER}	Collector-emitter voltage (R_{BE} = 1 kΩ)	-100	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	-80	V
V_{EBO}	Emitter-base voltage (I_C = 0)	-5	V
I_C	Collector current	-2	A
I_{CM}	Collector peak current (t_p < ms)	-6	A
P_{TOT}	Total dissipation at T_{case} = 25 °C	25	W
T_{stg}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

2 Electrical characteristics

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

Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = -100 V V_{CB} = -100 V T_c= 150 °C		-	-0.1 -2	mA mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = -5 V		-	-1	mA
$V_{CEO(sus)}$(1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = -100 mA	-80	-		V
$V_{CE(sat)}$(1)	Collector-emitter saturation voltage	I_C = -1 A I_B = -0.1 A		-	-0.6	V
$V_{BE(on)}$(1)	Base-emitter on voltage	I_C = -1 A V_{CE} = -2 V		-	-1.3	V
h_{FE}(1)	DC current gain	I_C = -150 mA V_{CE} = -2 V I_C = -1 A V_{CE} = -2 V	40 25	-		

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

2.1 Electrical characteristic (curves)

Figure 2. Safe operating area

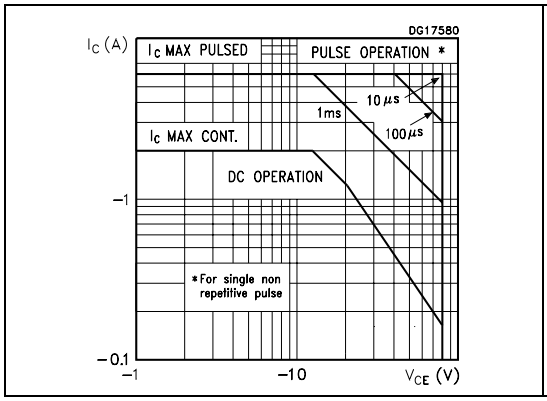


Figure 3. Derating curves

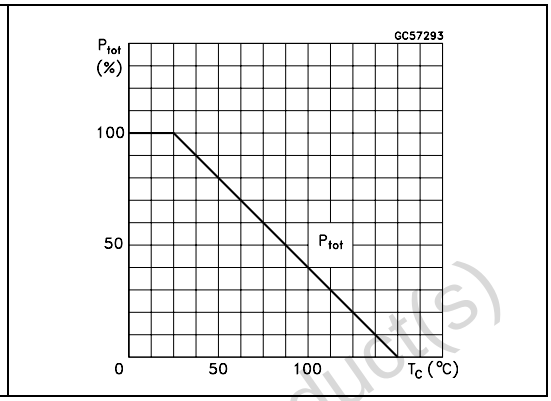


Figure 4. DC current gain (V_{CE} = -2 V)

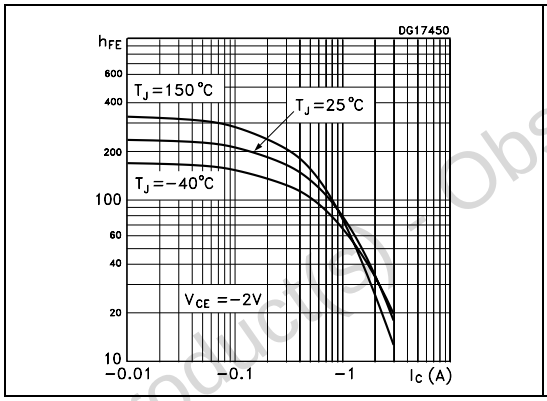


Figure 5. DC current gain (V_{CE} = -4 V)

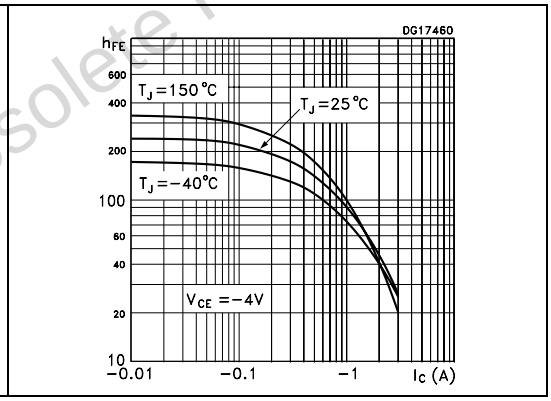


Figure 6. Collector-emitter saturation voltage

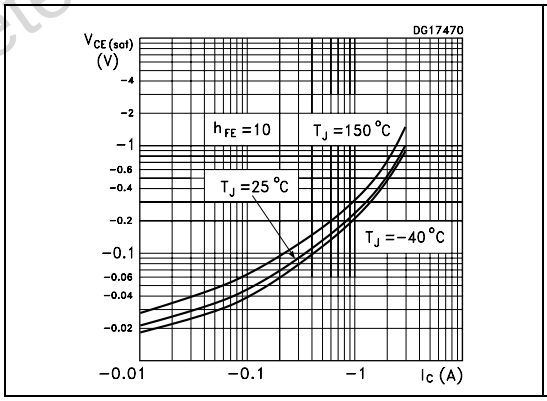


Figure 7. Base-emitter saturation voltage

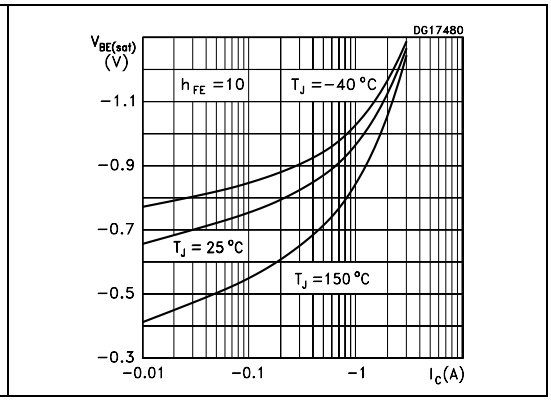


Figure 8. Base-emitter on voltage

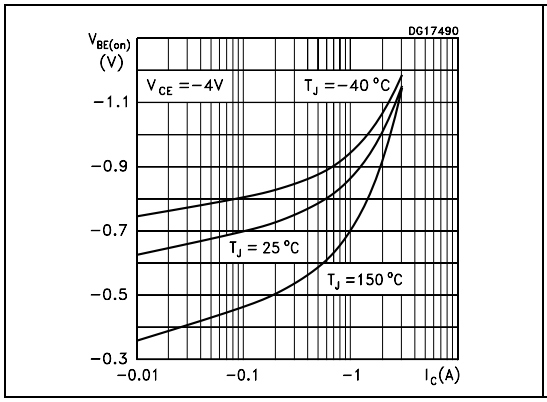


Figure 9. Resistive load switching time (on)

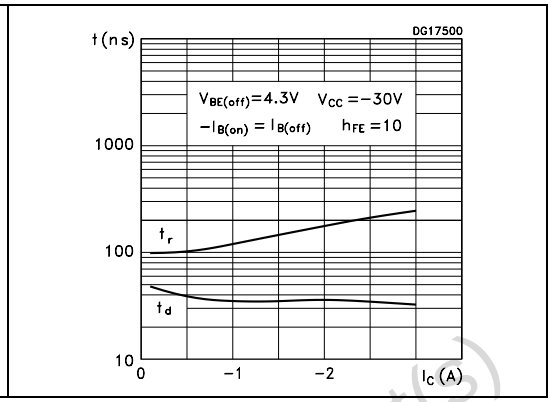
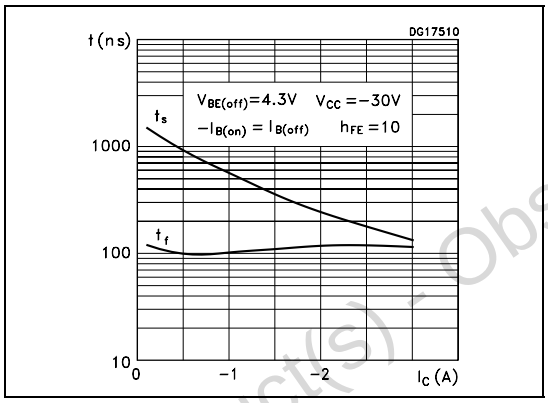
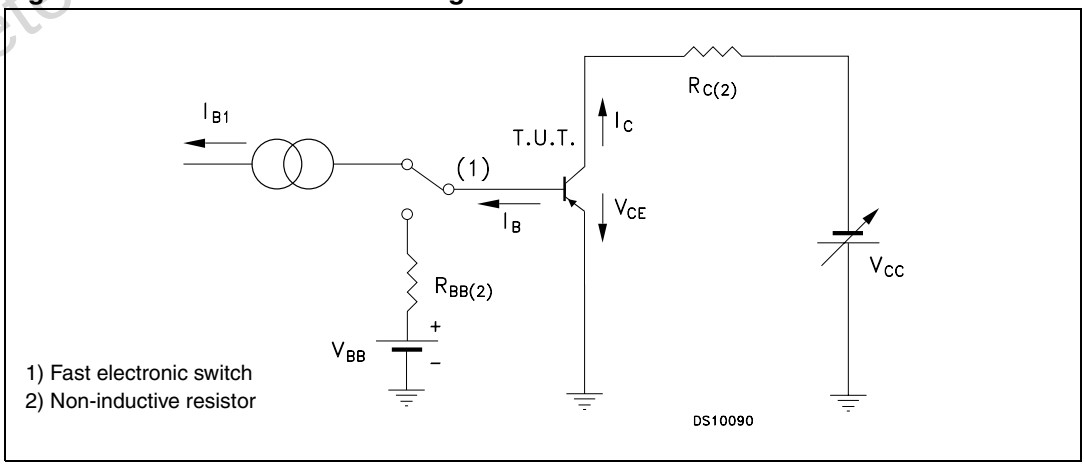


Figure 10. Resistive load switching time (off)



2.2 Test circuit

Figure 11. Resistive load switching test circuit

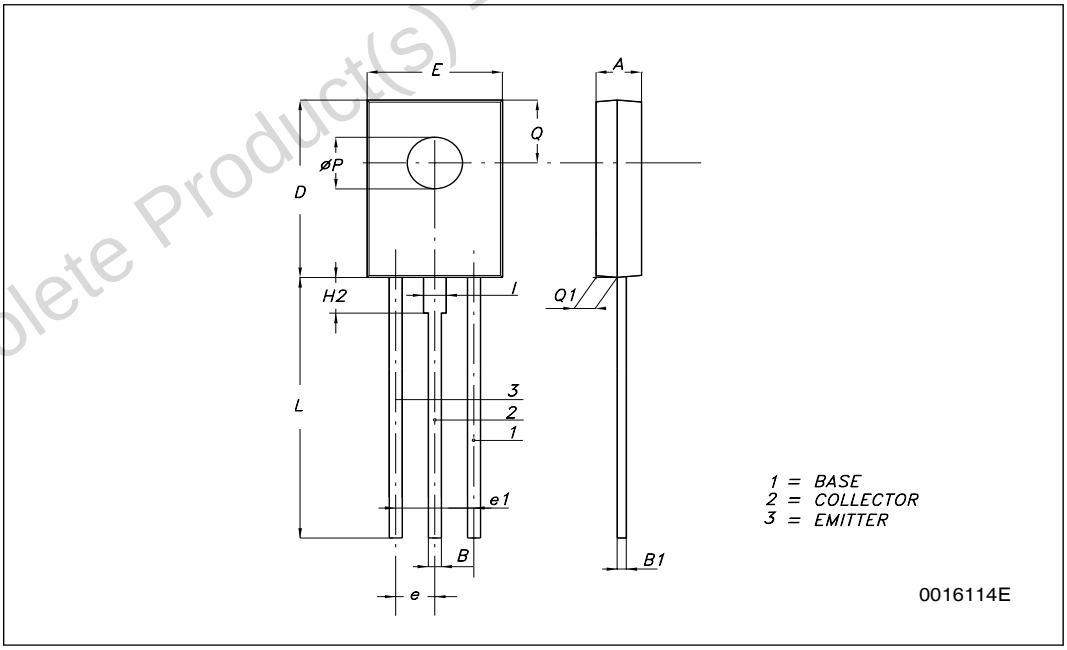


3 Package mechanical data

In order 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.

SOT-32 (TO-126) mechanical data

DIM.	mm.		
	MIN.	TYP	MAX.
A	2.4		2.9
B	0.64		0.88
B1	0.39		0.63
D	10.5		11.05
E	7.4		7.8
e	2.04	2.29	2.54
e1	4.07	4.58	5.08
L	15.3		16
P	2.9		3.2
Q		3.8	
Q1	1		1.52
H2		2.15	
I		1.27	



4 Revision History

Table 4. Document revision history

Date	Revision	Changes
03-Jun-2009	1	Initial release

Mouser Electronics

Authorized Distributor

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STMicroelectronics:

BD238