BD235
BD237

Low voltage NPN power transistors

Features

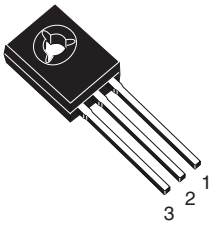
- Low saturation voltage
- NPN transistors

Applications

- Audio, power linear and switching applications

Description

The devices are manufactured in Planar technology with “Base Island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage. The PNP type is BD238.



SOT-32
(TO-126)

Figure 1. Internal schematic diagram

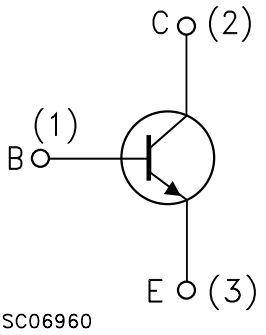


Table 1. Device summary

Order codes	Marking	Package	Packaging
BD235	BD235	SOT-32	Tube
BD237	BD237	SOT-32	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value		Unit
		BD235	BD237	
V_{CBO}	Collector-base voltage (I_E = 0)	60	100	V
V_{CER}	Collector-emitter voltage (R_{BE} = 1 kΩ)	60	100	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	60	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} = rated V_{CBO} V_{CB} = rated V_{CBO} T_C= 150°C		-	0.1 2	mA mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 5V		-	1	mA
$V_{CEO(sus)}$(1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 100mA for BD235 for BD237	 60 80	-		 V V
$V_{CE(sat)}$(1)	Collector-emitter saturation voltage	I_C = 1A I_B = 0.1A		-	0.6	V
$V_{BE(on)}$(1)	Base-emitter on voltage	I_C = 1A V_{CE} = 2V		-	1.3	V
h_{FE}(1)	DC current gain	I_C = 150mA V_{CE} = 2V I_C = 1A V_{CE} = 2V	40 25	-		

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

2.1 Electrical characteristic (curves)

Figure 2. Safe operating area

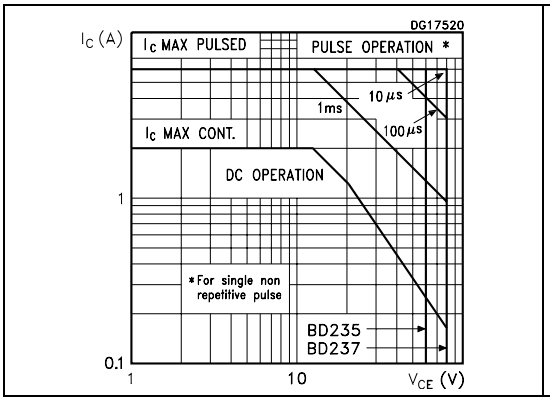


Figure 3. Derating curves

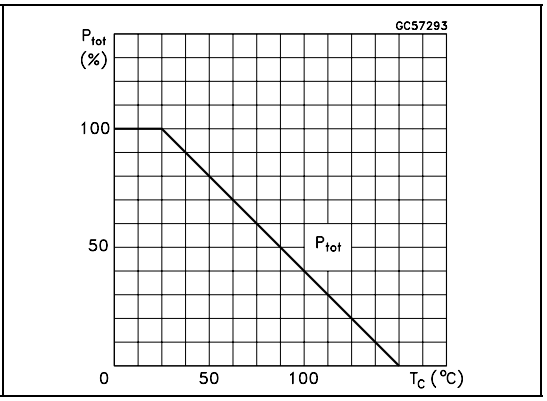


Figure 4. DC current gain (V_{CE} = 2 V)

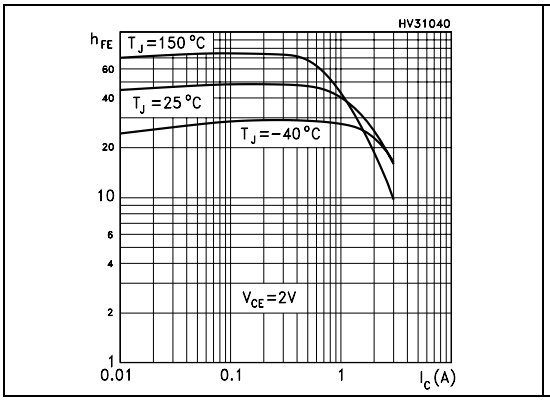


Figure 5. DC current gain (V_{CE} = 4 V)

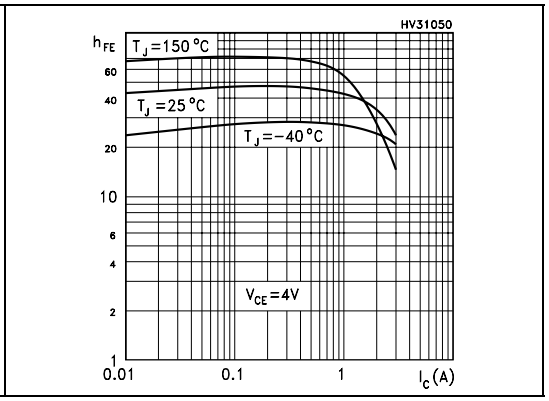


Figure 6. Collector-emitter saturation voltage

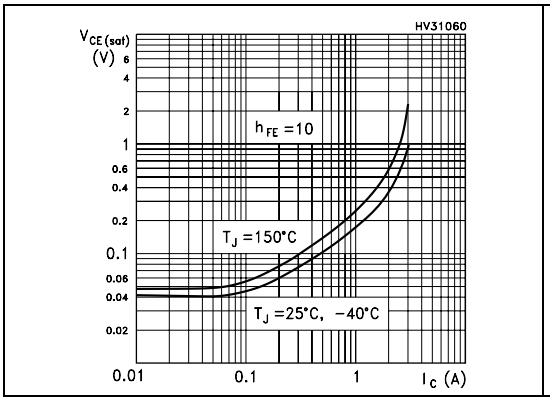


Figure 7. Base-emitter saturation voltage

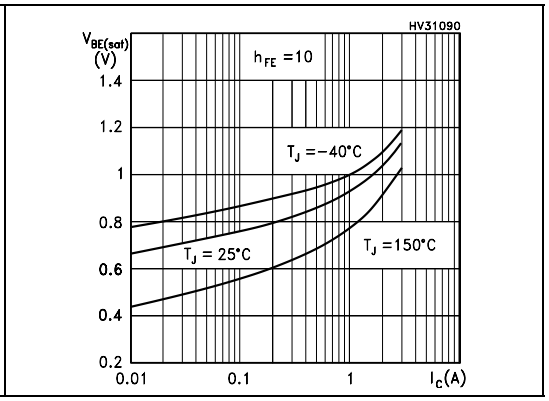


Figure 8. Base-emitter on voltage

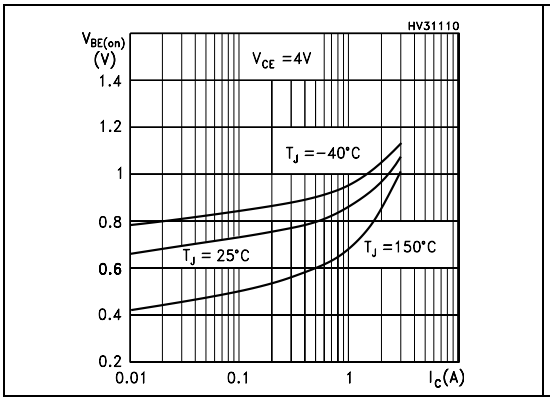


Figure 9. Resistive load switching time (on)

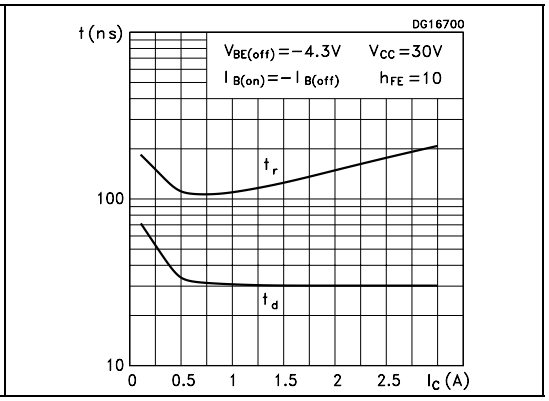
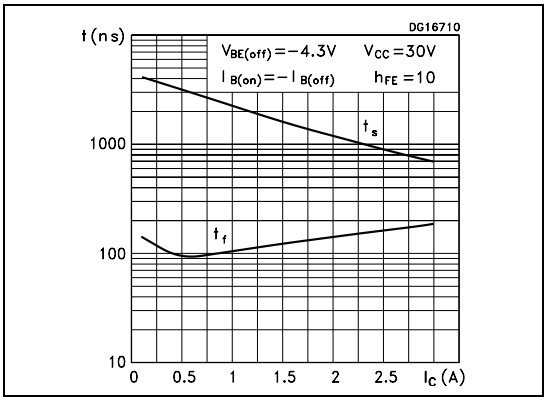
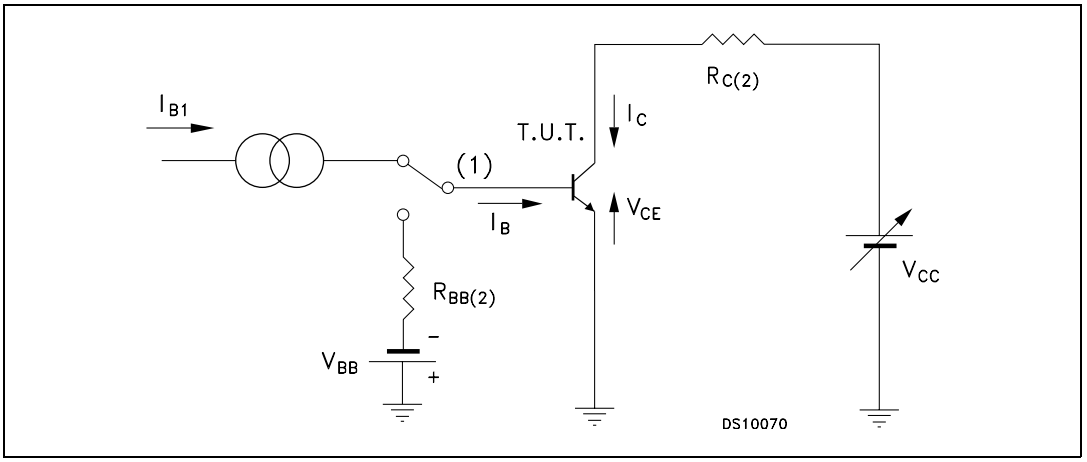


Figure 10. Resistive load switching time (off)



2.2 Test circuit

Figure 11. Resistive load switching test circuit



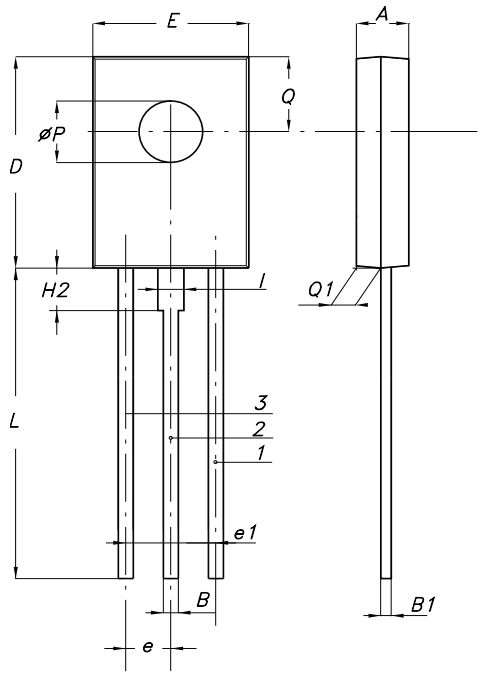
1. Fast electronic switch
2. Non-inductive resistor

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	



1 = BASE
2 = COLLECTOR
3 = EMITTER

0016114E

4 Revision history

Table 4. Document revision history

Date	Revision	Changes
11-Feb-2003	1	Initial release.
09-Jul-2007	2	Added: figures 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12.
03-Jun-2009	3	Minor text changes.