

NPN power transistors

Features

■ NPN transistors

Applications

 Audio, general purpose switching and amplifier transistors

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 types are BD242A and BD242C.

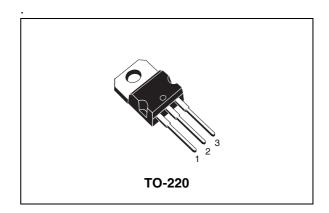


Figure 1. Internal schematic diagram

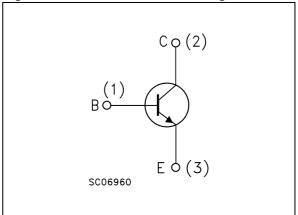


Table 1. Device summary

Order codes	Marking	Package	Packaging
BD241A	BD241A	TO-220	Tube
BD241C	BD241C	TO-220	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Dovernator	Va	Value		
	Parameter	BD241A	BD241C	Unit	
V _{CER}	Collector-emitter voltage ($R_{BE} = 100\Omega$)	70	115	V	
V _{CEO}	Collector-emitter voltage (I _B = 0)	60	60 100		
V _{EBO}	Emitter-base voltage (I _C = 0)		5		
Ic	Collector current 3		Α		
I _{CM}	Collector peak current (t _p < ms) 5		Α		
I _B	Base current	1		Α	
P _{TOT}	Total dissipation at T _{case} = 25°C 40		W		
T _{stg}	Storage temperature -65 to 150		°C		
TJ	Max. operating junction temperature 150		°C		

2 Electrical characteristics

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

Table 3. Electrical characteristics

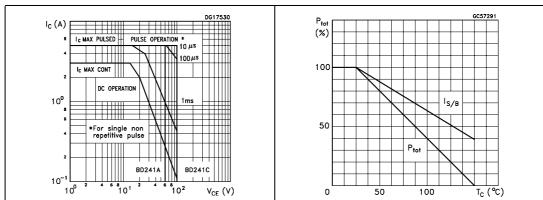
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector cut-off current (V _{BE} = 0)	V _{CE} = rated V _{CEO}			0.2	mA
I _{CEO}	Collector cut-off current (I _B = 0)	for BD241A V_{CE} =30V for BD241C V_{CE} =60V			0.3 0.3	mA mA
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} =5V			1	mA
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B = 0)	I _C =30mA for BD241A for BD241C	60 100			V V
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	I _C =3A I _B =0.6A			1.2	V
V _{BE} ⁽¹⁾	Base-emitter voltage	I _C =3A V _{CE} =4V			1.8	V
h _{FE} ⁽¹⁾	DC current gain	I _C =1A V _{CE} =4V I _C =3A V _{CE} =4V	25 10			

^{1.} Pulsed duration = 300 ms, duty cycle ≥1.5%.

2.1 Electrical characteristic (curves)

Figure 2. Safe operating area

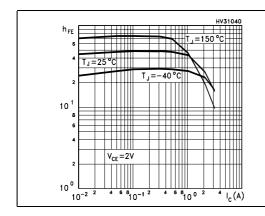
Figure 3. Derating curve



Electrical characteristics BD241A BD241C

Figure 4. DC current gain

Figure 5. DC current gain



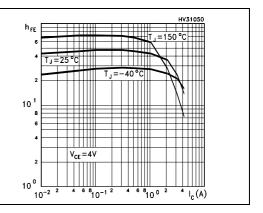
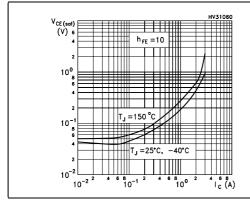


Figure 6. Collector-emitter saturation voltage

Figure 7. Base-emitter saturation voltage



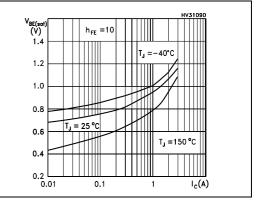
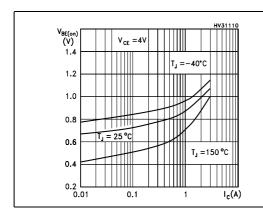
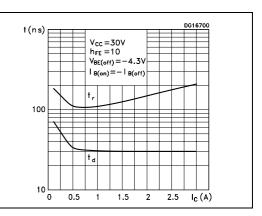


Figure 8. Base-emitter on voltage

Figure 9. Resistive load switching time





4/9

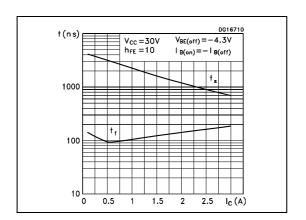
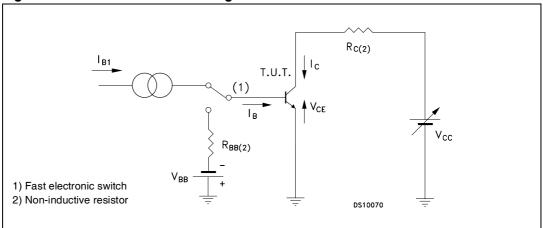


Figure 10. Resistive load switching time

2.2 Test circuits

Figure 11. Resistive load switching test circuit

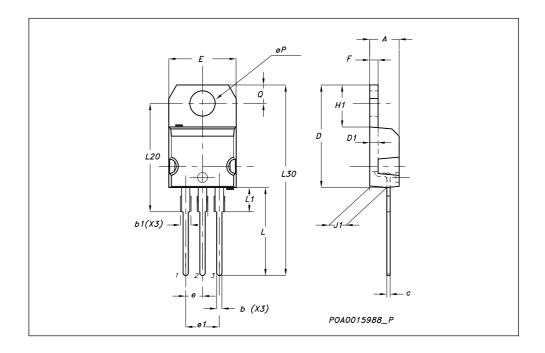


3 Package mechanical data

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.			
	MIN.	TYP	MAX.	
Α	4.40		4.60	
b	0.61		0.88	
b1	1.14		1.70	
С	0.49		0.70	
D	15.25		15.75	
D1		1.27		
E	10		10.40	
е	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		14	
L1	3.50		3.93	
L20		16.40		
L30		28.90		
øΡ	3.75		3.85	
Q	2.65		2.95	



Revision history BD241A BD241C

4 Revision history

Table 4. Revision history

Date	Revision	Changes
01-Dec-2000	1	Initial Release
10-Jul-2007	2	Figure 2 and figure 3, have been added.

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