BD241A-A

NPN power transistor

Features

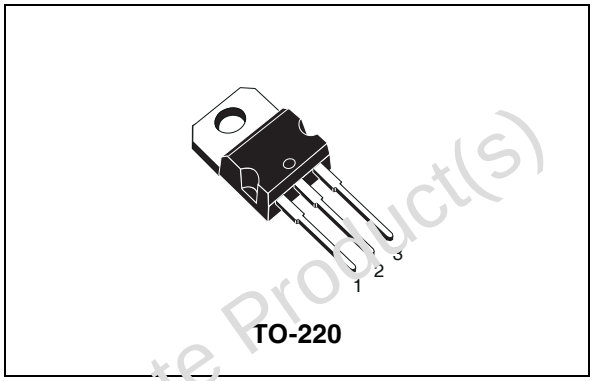
- This device is qualified for automotive application
- NPN transistor

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.



TO-220

Figure 1. Internal schematic diagram

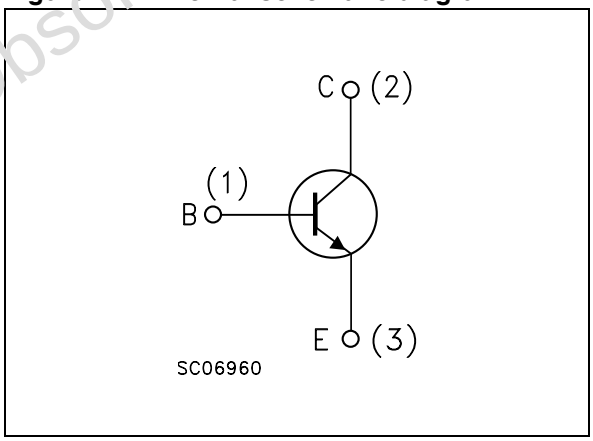


Table 1. Device summary

Order code	Marking	Package	Packaging
BD241A-A	BD241A	TO-220	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CER}	Collector-emitter voltage (R_{BE} = 100Ω)	70	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	60	V
V_{EBO}	Emitter-base voltage (I_C = 0)	5	V
I_C	Collector current	3	A
I_{CM}	Collector peak current (t_p < ms)	5	A
I_B	Base current	1	A
P_{TOT}	Total dissipation at T_{case} = 25°C	40	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_{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	80 100			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

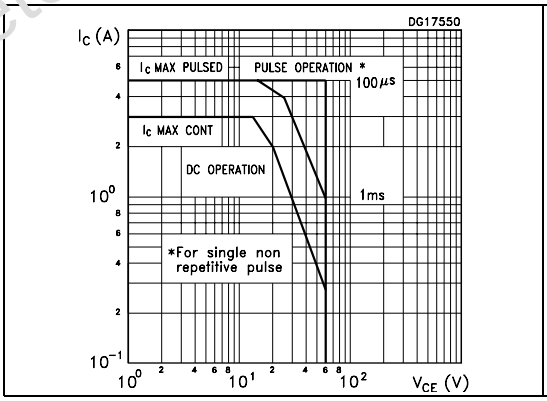


Figure 3. Derating curve

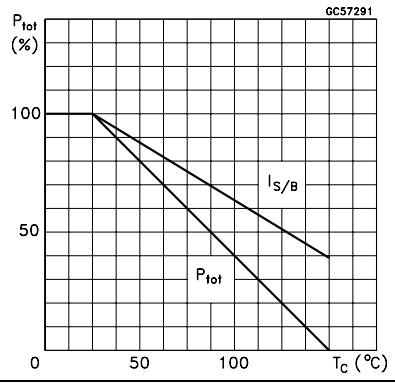


Figure 4. DC current gain

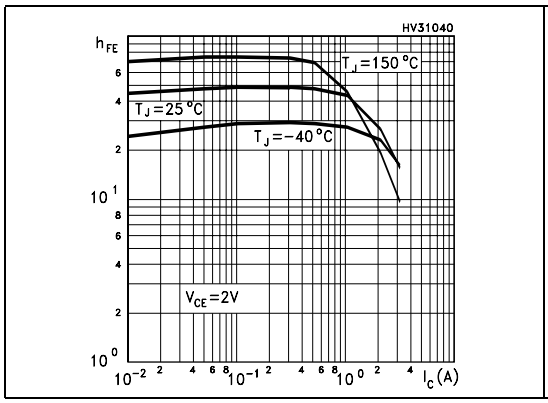


Figure 5. DC current gain

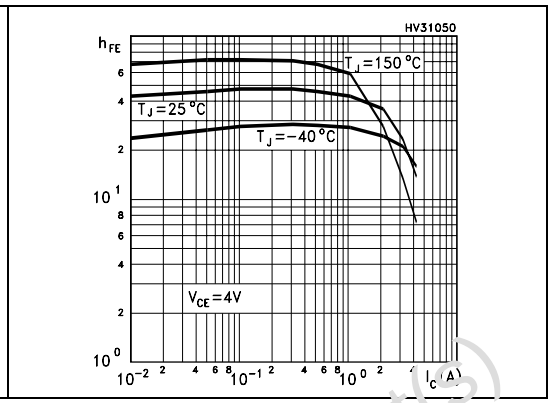


Figure 6. Collector-emitter saturation voltage

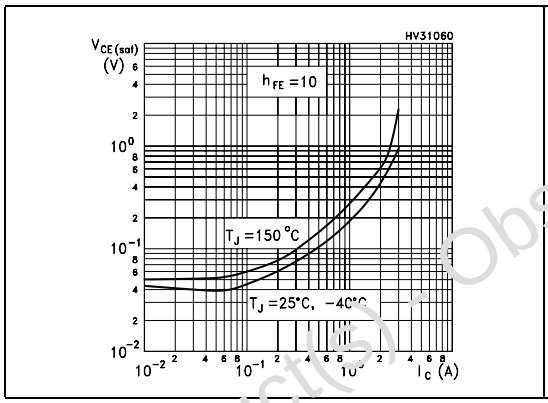


Figure 7. Base-emitter saturation voltage

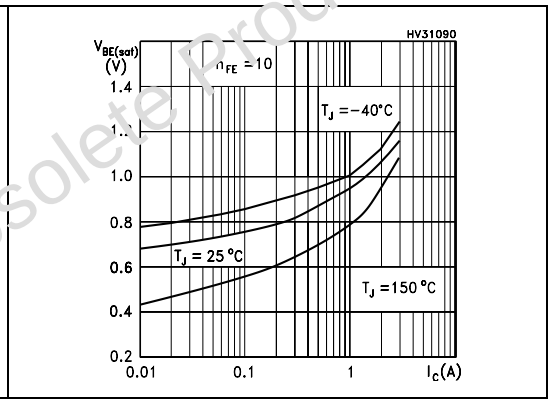


Figure 8. Base-emitter on voltage

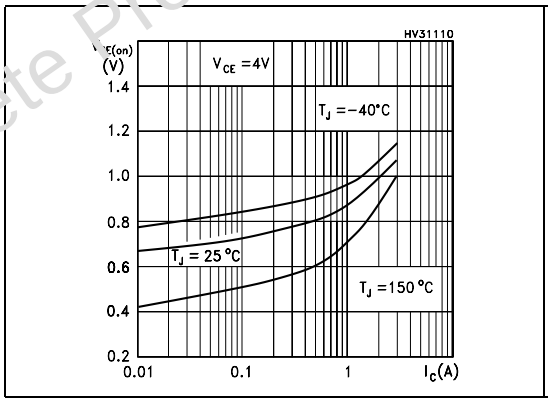


Figure 9. Resistive load switching time

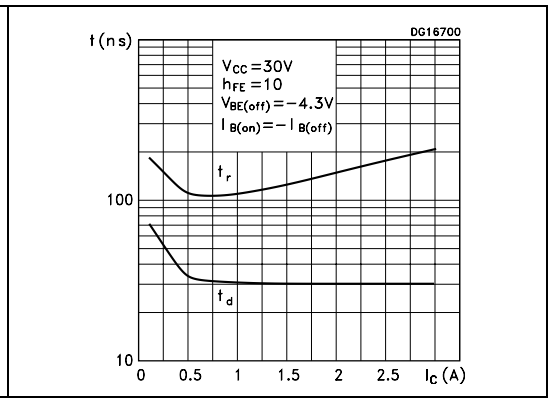
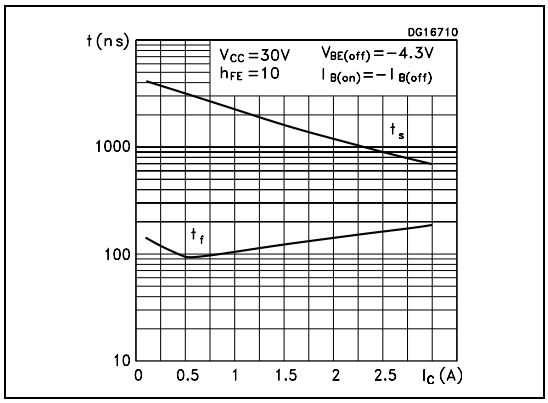
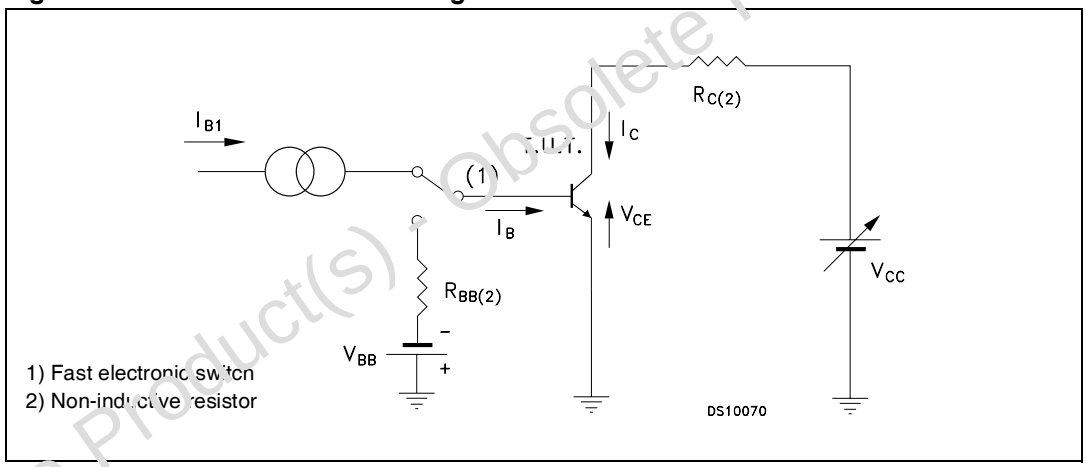


Figure 10. Resistive load switching time



2.2 Test circuits

Figure 11. Resistive load switching test circuit

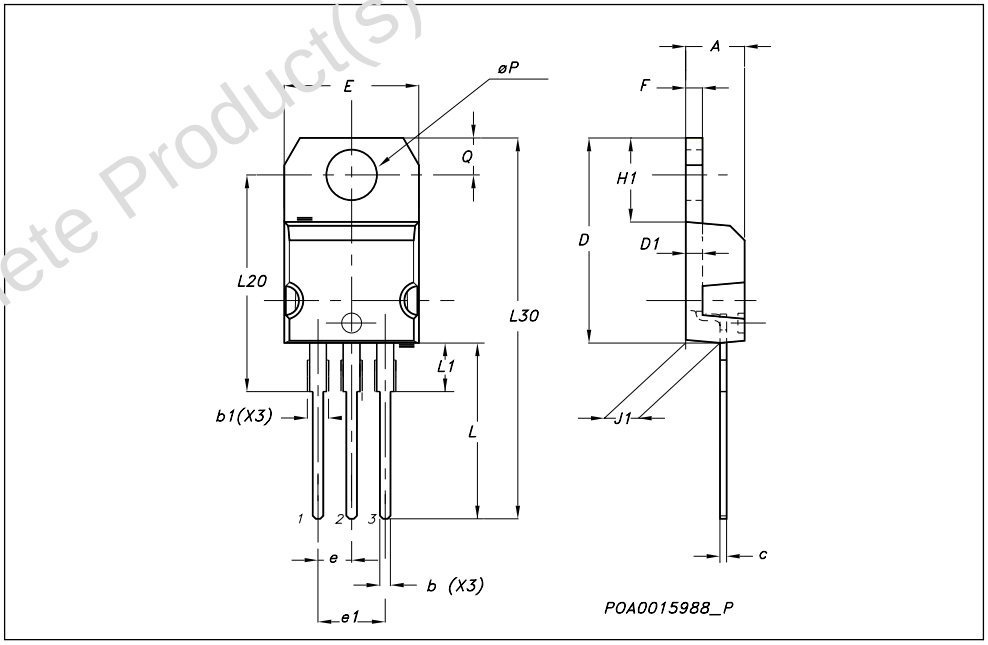


3 Package mechanical data

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.
A	4.40		4.60
b	0.61		0.88
b1	1.14		1.70
c	0.49		0.70
D	15.25		15.75
D1		1.27	
E	10		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		14
L1	3.50		3.93
L20		16.40	
L30		28.90	
øP	3.75		3.85
Q	2.65		2.95



4 Revision history

Table 4. Revision history

Date	Revision	Changes
10-Jul-2007	1	Initial Release

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