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STMicroelectronics
BULT106D

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BULT106D

High voltage fast-switching NPN power transistor

Features

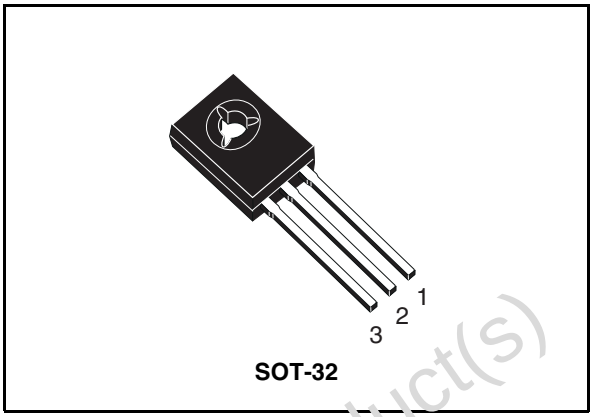
- NPN transistor
- Low spread of dynamic parameters
- Minimum lot-to-lot spread for reliable operation
- Very high switching speed

Applications

- Compact fluorescent lamps at 110V A.C. mains
- Flyback and forward single transistor low power converters at 110V A.C. mains

Description

The device is manufactured using multi-epitaxial Planar technology for high switching speeds and medium voltage capability. It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining the wide RBSOA. The device is designed for use in lighting applications and low cost switch-mode power supplies.



SOT-32

Figure 1. Internal schematic diagram

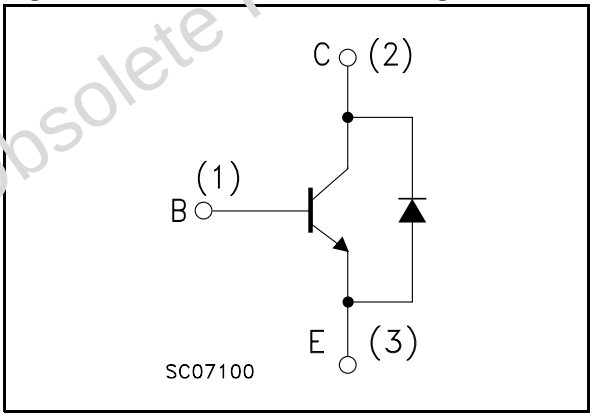


Table 1. Device summary

Order code	Marking	Package	Packaging
BULT106D	BULT106D	SOT-32	Tube

Contents

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter voltage (V_{BE} = 0)	400	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	230	V
V_{EBO}	Emitter-base voltage (I_C = 0)	9	V
I_C	Collector current	2	A
I_{CM}	Collector peak current (t_P < 5ms)	4	A
I_B	Base current	0.4	A
I_{BM}	Base peak current (t_P < 5ms)	0.8	A
P_{tot}	Total dissipation at T_c = 25 °C	32	W
T_{stg}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	3.9	°C/W

2 Electrical characteristics

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

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current (V_{BE} = 0)	V_{CE} = 400 V			100	µA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 230 V			250	µA
V_{EBO}	Emitter-Base Voltage (I_C = 0)	I_E = 10 mA	9			V
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 10 mA	230			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 0.5 A I_B = 0.1 A I_C = 1 A I_B = 0.2 A I_C = 2 A I_B = 0.4 A			0.4 0.8 1.2	V V V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 2 A I_B = 0.4 A			1.5	V
h_{FE}	DC current gain	I_C = 10 mA V_{CE} = 5 V I_C = 1 A V_{CE} = 5 V I_C = 3 A V_{CE} = 10 V	10 10 4	20	30	
V_F	Diode forward voltage	I_C = 2 A			2	V

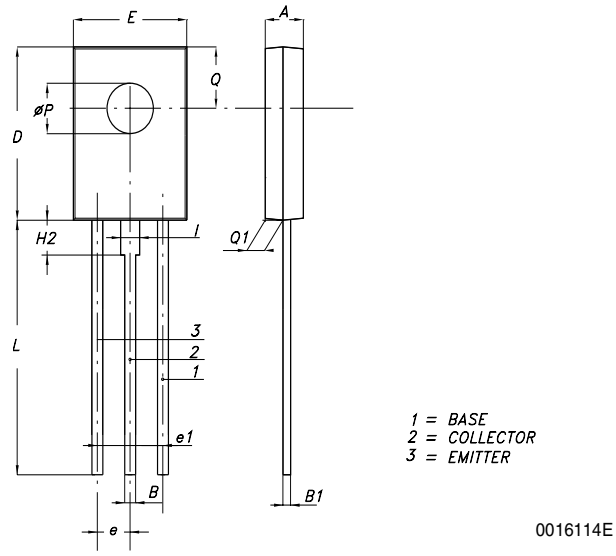
1. Pulsed duration = 300 µs, duty cycle ≥ 1.5%.

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

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 5. Document revision history

Date	Revision	Changes
27-Feb-2008	1	Initial release.

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