

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.

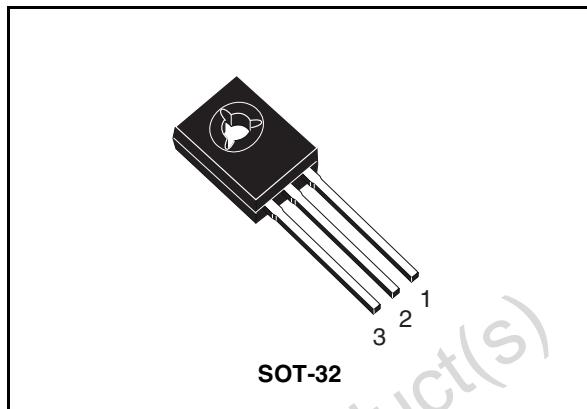


Figure 1. Internal schematic diagram

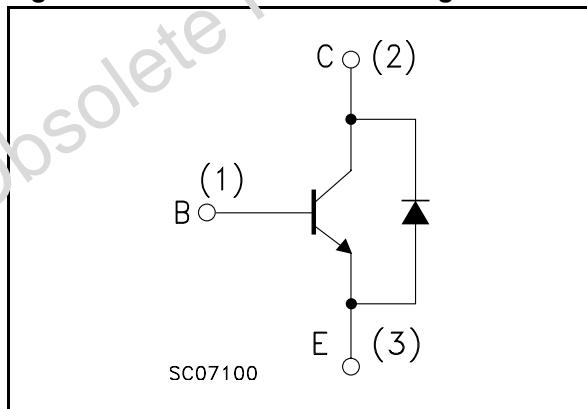


Table 1. Device summary

Order code	Marking	Package	Packaging
BULT106D	BULT106D	SOT-32	Tube

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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 ($t_P < 5\text{ms}$)	4	A
I_B	Base current	0.4	A
I_{BM}	Base peak current ($t_P < 5\text{ms}$)	0.8	A
P_{tot}	Total dissipation at $T_c = 25\text{ °C}$	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
$R_{thj-case}$	Thermal resistance junction-case	3.9	°C/W

2 Electrical characteristics

($T_{case} = 25^\circ C$ 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	$I_C = 0.5 A \quad I_B = 0.1 A$ $I_C = 1 A \quad I_B = 0.2 A$ $I_C = 2 A \quad I_B = 0.4 A$			0.4 0.8 1.2	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 2 A \quad I_B = 0.4 A$			1.5	V
h_{FE}	DC current gain	$I_C = 10 mA \quad V_{CE} = 5 V$ $I_C = 1 A \quad V_{CE} = 5 V$ $I_C = 3 A \quad V_{CE} = 10 V$	10 10 4	20	30	
V_F	Diode forward voltage	$I_C = 2 A$			2	V

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

3 Package mechanical data

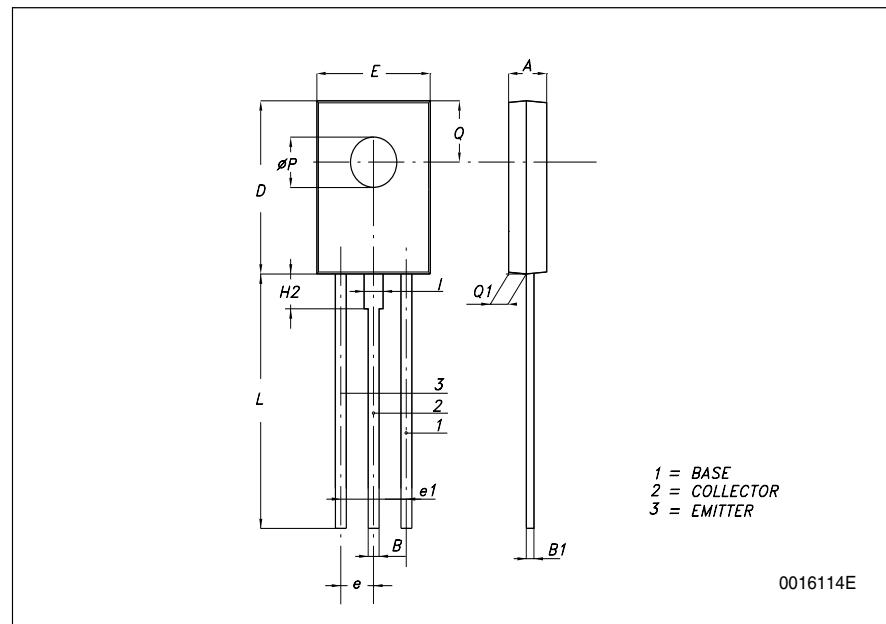
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SOT-32 (TO-126) mechanical data

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	

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4 Revision history

Table 5. Document revision history

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

Obsolete Product(s) - Obsolete Product(s)

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