

High voltage fast-switching NPN Power Transistor

Preliminary Data

General features

- NPN Transistor
- High voltage capability
- Low spread of dynamic parameters
- Minimum lot-to-lot spread for reliable operation
- Very high switching speed
- In compliance with the 2002/93/EC European Directive

Description

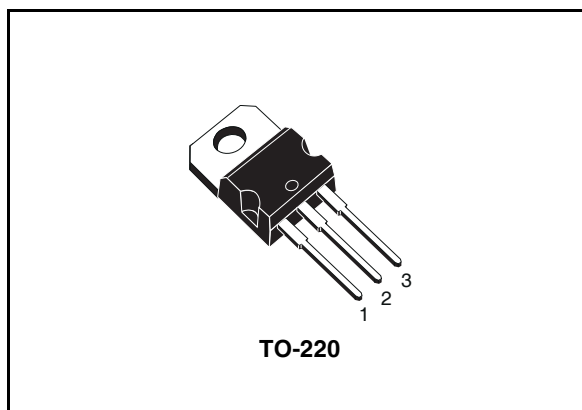
The device is manufactured using high voltage Multi-Epitaxial Planar technology for high switching speeds and medium voltage capability.

It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds.

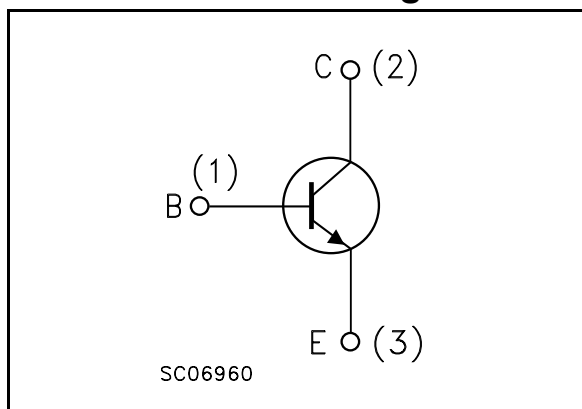
The device is designed for use as PFC in high frequency ballast half Bridge voltage fed topology.

Applications

- Electronic ballast for fluorescent lighting
- Dedicated for PFC solution in half-bridge voltage fed topology.



Internal schematic diagram



Order codes

Part Number	Marking	Package	Packing
BUL805	BUL805	TO-220	Tube

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1 Electrical ratings

Table 1. Absolute maximum rating

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter voltage ($V_{BE} = 0$)	800	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	450	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	9	V
I_C	Collector current	5	A
I_{CM}	Collector peak current ($t_P < 5\text{ms}$)	10	A
I_B	Base current	2	A
I_{BM}	Base peak current ($t_P < 5\text{ms}$)	4	A
P_{tot}	Total dissipation at $T_C = 25^\circ\text{C}$	80	W
T_{stg}	Storage temperature	-65 to 150	$^\circ\text{C}$
T_J	Max. operating junction temperature	150	$^\circ\text{C}$

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case max	1.56	$^\circ\text{C/W}$
$R_{thj-amb}$	Thermal resistance junction-amb max	62.5	$^\circ\text{C/W}$

2 Electrical characteristics

($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current ($V_{\text{BE}} = -1.5\text{V}$)	$V_{\text{CE}} = 800\text{V}$ $V_{\text{CE}} = 800\text{V}$ $T_{\text{j}} = 125^{\circ}\text{C}$			100 500	μA μA
I_{CEO}	Collector cut-off current ($I_{\text{B}} = 0$)	$V_{\text{CE}} = 450\text{V}$			250	μA
V_{EBO}	Emitter-base voltage ($I_{\text{C}} = 0$)	$I_{\text{E}} = 10\text{mA}$	9			V
$V_{\text{CEO(sus)}}^{(1)}$	Collector-emitter sustaining voltage ($I_{\text{B}} = 0$)	$I_{\text{C}} = 100\text{mA}$ $L = 25\text{mH}$	450			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 1\text{A}$ $I_{\text{B}} = 0.2\text{A}$ $I_{\text{C}} = 2\text{A}$ $I_{\text{B}} = 0.4\text{A}$ $I_{\text{C}} = 3\text{A}$ $I_{\text{B}} = 0.6\text{A}$			0.4 0.6 0.8	V V V
$V_{\text{BE(sat)}}^{(1)}$	Base-emitter saturation voltage	$I_{\text{C}} = 1\text{A}$ $I_{\text{B}} = 0.2\text{A}$ $I_{\text{C}} = 2\text{A}$ $I_{\text{B}} = 0.4\text{A}$ $I_{\text{C}} = 3\text{A}$ $I_{\text{B}} = 0.6\text{A}$			1.1 1.3 1.5	V V V
h_{FE}	DC current gain	$I_{\text{C}} = 10\text{mA}$ $V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 2\text{A}$ $V_{\text{CE}} = 5\text{V}$	10 10		20	

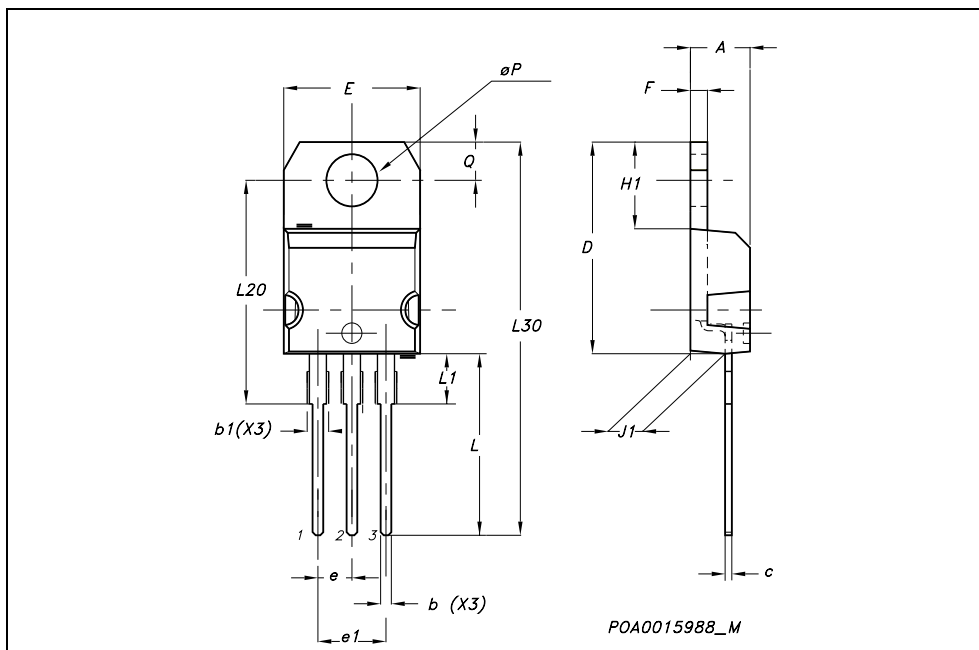
Note (1) Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$

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

TO-220 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
b	0.61		0.88	0.024		0.034
b1	1.15		1.70	0.045		0.066
c	0.49		0.70	0.019		0.027
D	15.25		15.75	0.60		0.620
E	10		10.40	0.393		0.409
e	2.40		2.70	0.094		0.106
e1	4.95		5.15	0.194		0.202
F	1.23		1.32	0.048		0.052
H1	6.20		6.60	0.244		0.256
J1	2.40		2.72	0.094		0.107
L	13		14	0.511		0.551
L1	3.50		3.93	0.137		0.154
L20		16.40			0.645	
L30		28.90			1.137	
øP	3.75		3.85	0.147		0.151
Q	2.65		2.95	0.104		0.116



4 Revision history

Table 4. Revision history

Date	Revision	Changes
19-May-2006	1	Initial release.

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