

## NPN power TRILINTON™

### Features

- Integrated high voltage active clamping zener
- Clamping energy capability 100% tested
- Very high current gain

### Applications

- Engine ignition control
- Switching regulators
- Motor control
- Light ballast

### Description

The BU900TP is a planar, monolithic, high voltage power TRILINTON™ with a built-in active Zener clamping circuit. This device has been specifically designed for unclamped, inductive applications such as ignition systems, switching regulators, and wherever high voltage and high robustness is required.

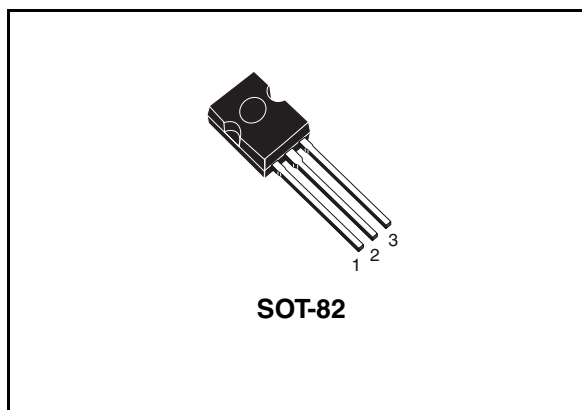


Figure 1. Internal schematic diagram

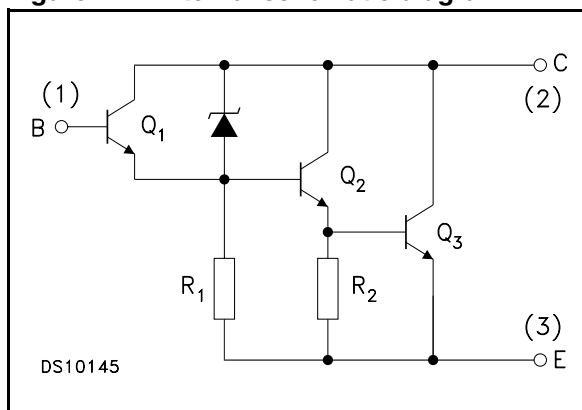


Table 1. Device summary

Part number	Marking	Package	Packaging
BU900TP	BU900TP	SOT-82	Tube

# 1 Electrical ratings

**Table 2. Absolute maximum rating**

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-emitter voltage ( $V_{BE} = 0$ )	370	V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )	13	V
$I_C$	Collector current	5	A
$I_{CM}$	Collector peak current ( $t_P < 5ms$ )	8	A
$I_B$	Base current	1	A
$P_{tot}$	Total dissipation at $T_C = 25^\circ C$	55	W
$T_{stg}$	Storage temperature	-65 to 150	$^\circ C$
$T_J$	Max. operating junction temperature	150	$^\circ C$

**Table 3. Thermal data**

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case	2.27	$^\circ C/W$

## 2 Electrical characteristics

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

**Table 4. Electrical characteristics**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{\text{EBO}}$	Emitter cut-off current ( $I_{\text{C}} = 0$ )	$V_{\text{EB}} = 13 \text{ V}$			100	$\mu\text{A}$
$I_{\text{CES}}$	Collector cut-off current ( $V_{\text{BE}} = 0$ )	$V_{\text{CE}} = 370 \text{ V}$			100	$\mu\text{A}$
$V_{(\text{BR})\text{CES}}$	Collector-emitter breakdown voltage ( $V_{\text{BE}} = 0$ )	$I_{\text{C}} = 50 \text{ mA}$	370		660	V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 2.5 \text{ A}$ $I_{\text{B}} = 1 \text{ mA}$			4	V
		$I_{\text{C}} = 3 \text{ A}$ $I_{\text{B}} = 3 \text{ mA}$			4	V
$V_{\text{BE(sat)}}^{(1)}$	Base-emitter saturation voltage	$I_{\text{C}} = 3 \text{ A}$ $I_{\text{B}} = 3 \text{ mA}$			3.5	V
$h_{\text{FE}}$	DC current gain	$I_{\text{C}} = 1 \text{ A}$ $V_{\text{CE}} = 5 \text{ V}$	7000			
$E_{\text{s/b}}^{(1)}$	Secondary breakdown energy	$I_{\text{C}} = 4 \text{ A}$ $L = 10 \text{ mH}$	80			mJ

1. Pulsed duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$

2.1 Electrical characteristics (curves)

Figure 2. DC current gain

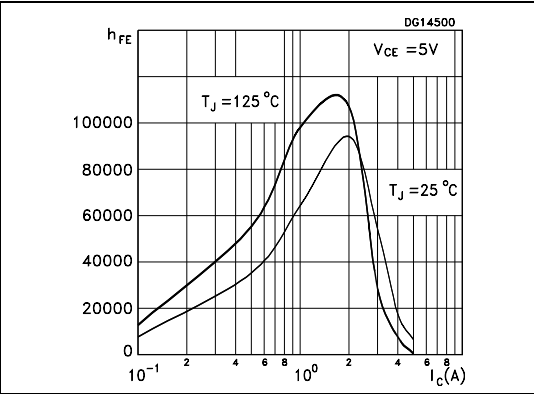


Figure 3. Collector-emitter saturation voltage

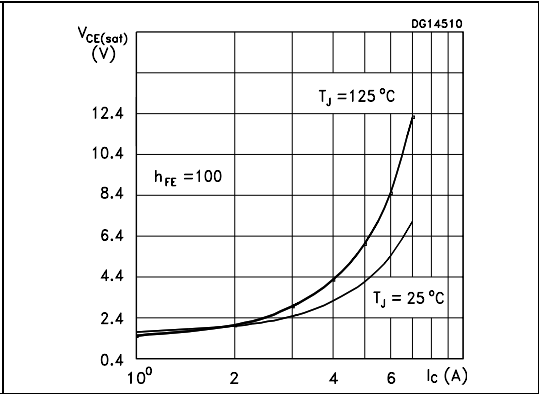


Figure 4. Collector-emitter saturation voltage

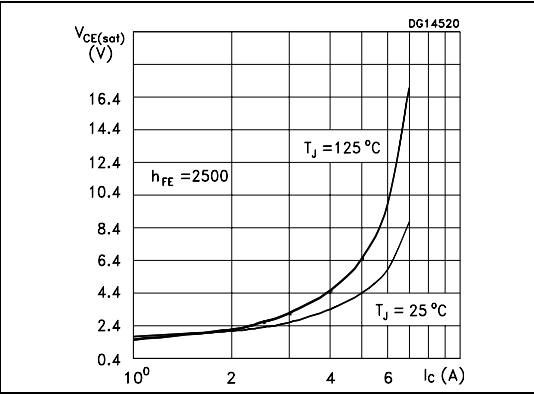
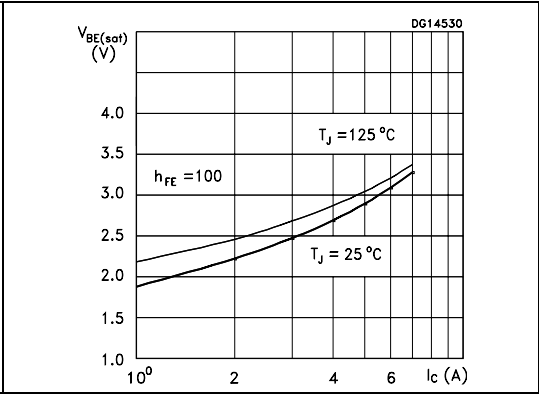


Figure 5. Base-emitter saturation voltage

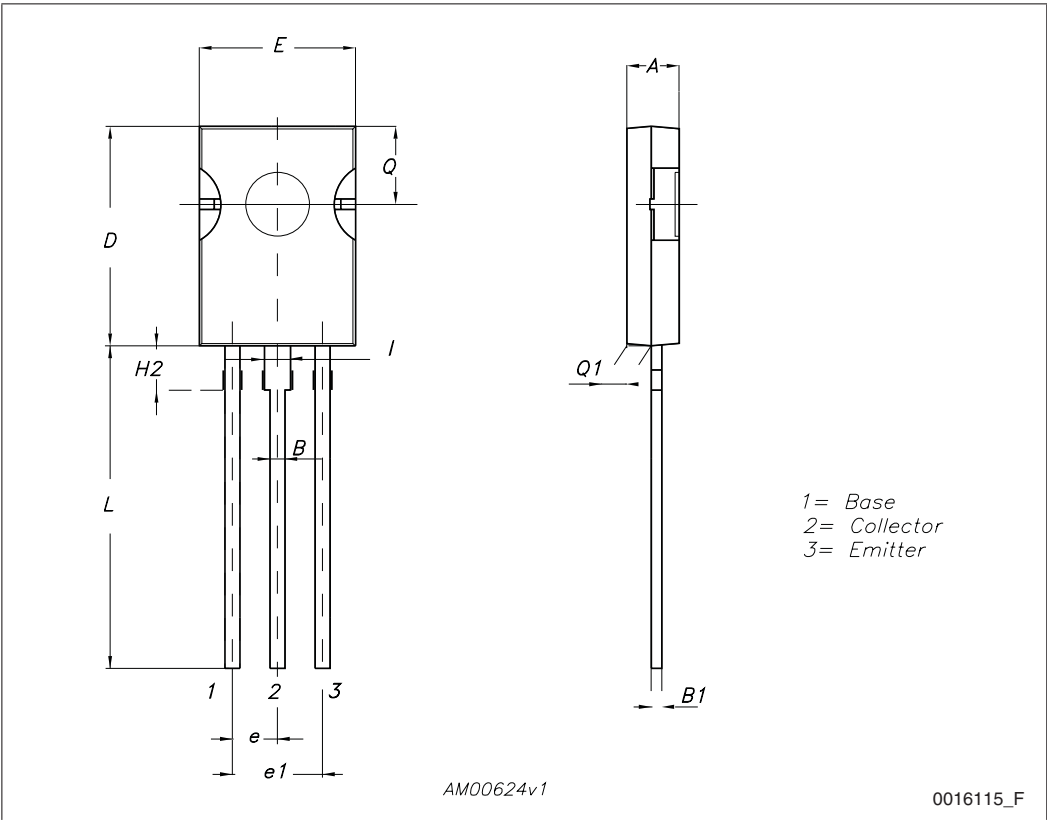


### 3      **Package mechanical data**

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](http://www.st.com)

SOT-82 mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	2.40		2.70
B	0.70		0.90
B1	0.49		0.75
D	10.50		10.80
E	7.40		7.80
e	2.04		2.54
e1	4.07		5.08
L	15.40		16
Q		3.80	
Q1	1		1.30
H2		2.07	
I		1.27	



## 4 Revision history

**Table 5. Document revision history**

Date	Revision	Changes
02-Aug-2007	1	First release.
19-Nov-2008	2	Document status changed from preliminary to datasheet.

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