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# BUX87

## High voltage NPN power transistor

### Features

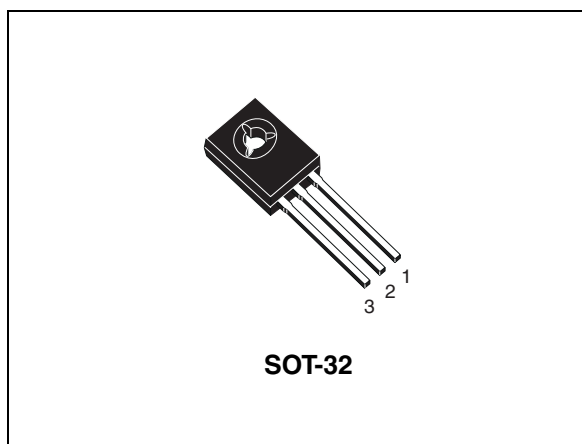
- High voltage capability (450 V  $V_{CE0}$ )
- Minimum lot-to-lot spread for reliable operation
- High DC current gain

### Applications

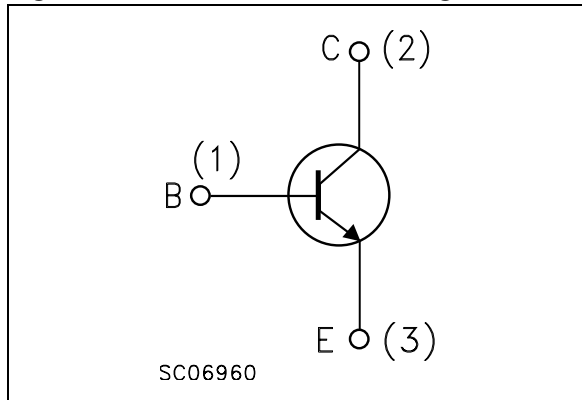
- Flyback and forward single transistor low power converters

### Description

The BUX87 is manufactured using high voltage multi-epitaxial planar technology for high switching speeds and high voltage withstand capability.



**Figure 1. Internal schematic diagram**



**Table 1. Device summary**

Order code	Marking	Package	Packaging
BUX87	BUX87	SOT-32	Tube

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-emitter voltage ( $V_{BE} = 0$ )	1000	V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	450	V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )	5	V
$I_C$	Collector current	0.5	A
$I_{CM}$	Collector peak current ( $t_p \leq 5ms$ )	1	A
$I_B$	Base current	0.3	A
$I_{BM}$	Base peak current ( $t_p \leq 5ms$ )	0.6	A
$P_{TOT}$	Total power dissipation at $T_c = 25\text{ }^\circ\text{C}$	40	W
$T_{stg}$	Storage temperature	-65 to 150	°C
$T_J$	Max. operating junction temperature	150	

**Table 3. Thermal data**

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case max.	3.1	°C/W

**BUX87**

**Electrical characteristics**

## 2 Electrical characteristics

$T_{case} = 25\text{ }^{\circ}\text{C}$ ; unless otherwise specified.

**Table 4. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector cut-off current ( $V_{BE} = 0$ )	$V_{CE} = 1000\text{ V}$ $V_{CE} = 1000\text{ V } T_C = 125\text{ }^{\circ}\text{C}$			100 1	$\mu\text{A}$ $\text{mA}$
$I_{EBO}$	Emitter cut-off current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			1	$\text{mA}$
$V_{CEO(sus)}^{(1)}$	Collector-emitter sustaining voltage ( $I_B = 0$ )	$I_C = 10\text{ mA}$	450			$\text{V}$
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )	$I_E = 10\text{ mA}$	5			$\text{V}$
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = 0.1\text{ A } I_B = 10\text{ mA}$ $I_C = 0.2\text{ A } I_B = 20\text{ mA}$			0.8 1	$\text{V}$ $\text{V}$
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = 0.2\text{ A } I_B = 20\text{ mA}$			1	$\text{V}$
$h_{FE}^{(1)}$	DC current gain	$I_C = 50\text{ mA } V_{CE} = 5\text{ V}$ $I_C = 40\text{ mA } V_{CE} = 5\text{ V}$	12	50		
$f_T$	Transition frequency	$I_C = 50\text{ mA } V_{CE} = 10\text{ V}$ $f = 1\text{ MHz}$		20		$\text{MHz}$
$t_s$ $t_f$	Resistive load Storage time Fall time	$V_{CC} = 250\text{ V } I_C = 200\text{ mA}$ $I_{B(on)} = 40\text{ mA } I_{B(off)} = -80\text{ mA}$ $t_P = 20\text{ }\mu\text{s}$			4.5 0.5	$\mu\text{s}$ $\mu\text{s}$

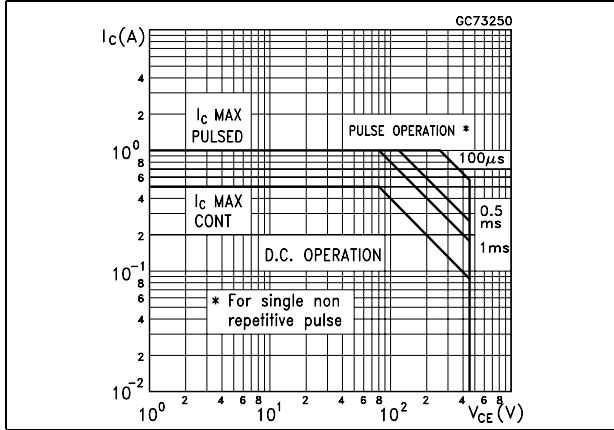
1. Pulsed duration = 300  $\mu\text{s}$ , duty cycle  $\leq 1.5\%$

**Electrical characteristics**

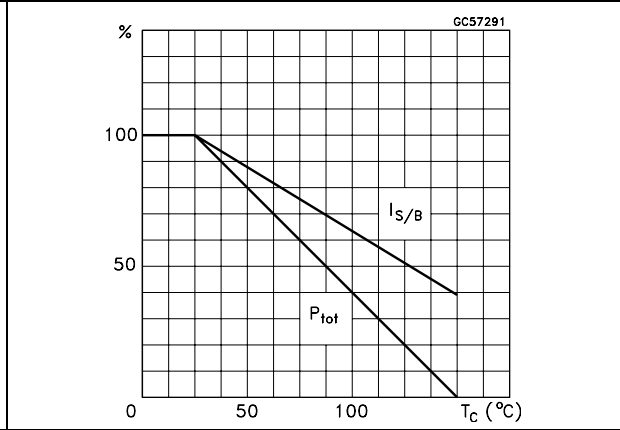
**BUX87**

**2.1 Electrical characteristics (curves)**

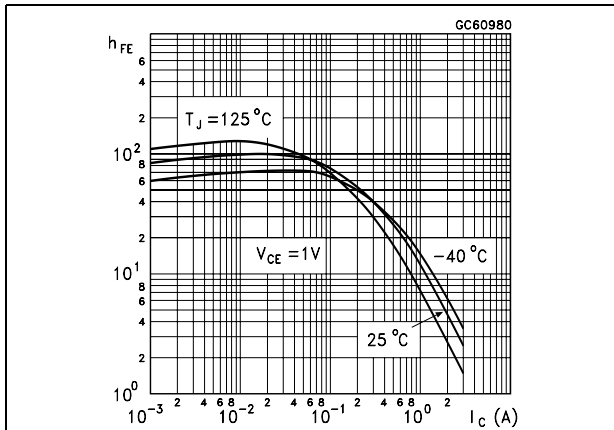
**Figure 2. Safe operating area**



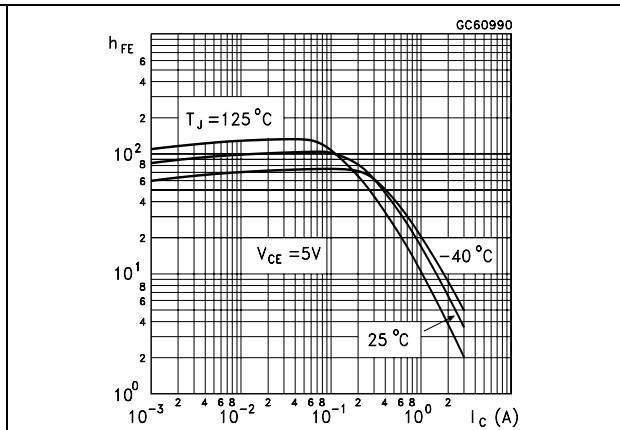
**Figure 3. Derating curve**



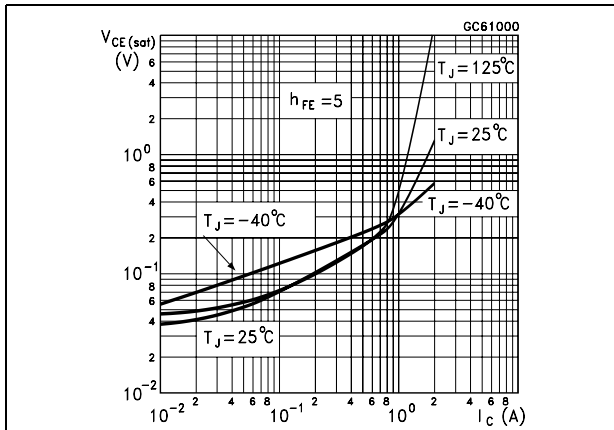
**Figure 4. DC current gain**



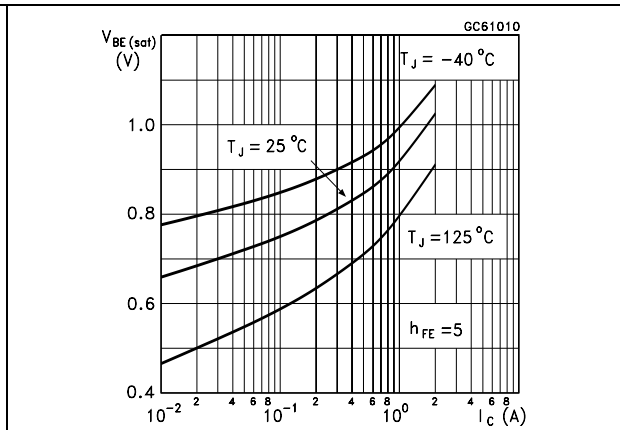
**Figure 5. DC current gain**



**Figure 6. Collector-emitter saturation voltage**



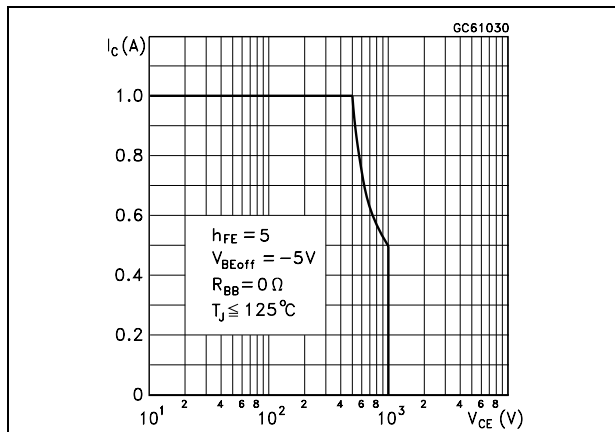
**Figure 7. Base-emitter saturation voltage**



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**Electrical characteristics**

**Figure 8. Reverse biased SOA**



### 3 Package mechanical data

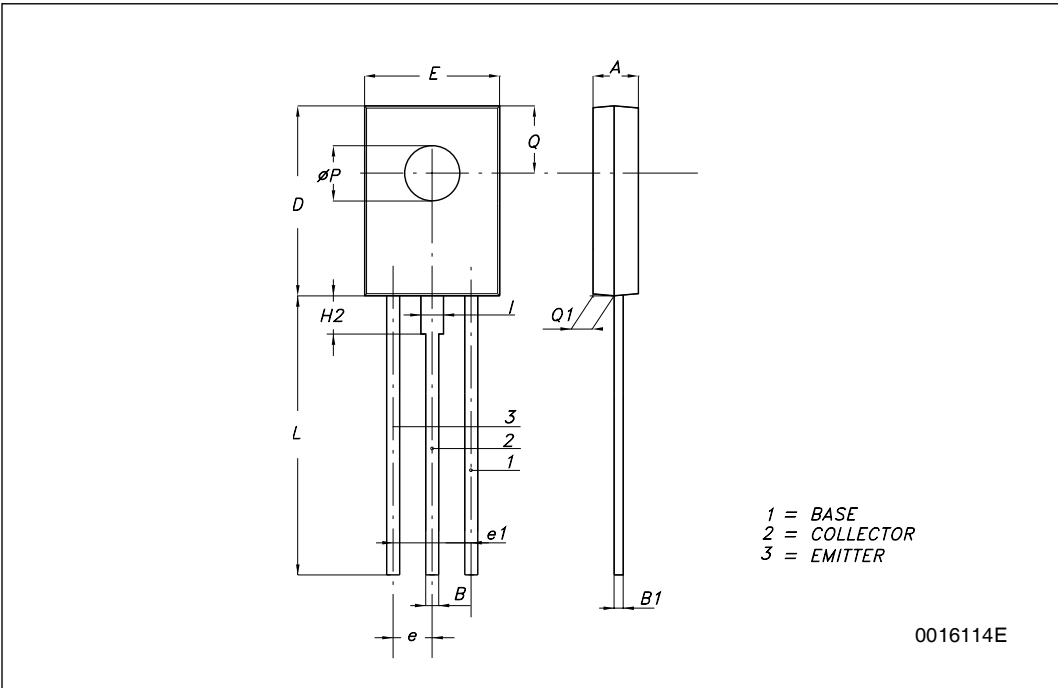
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**Package mechanical data**

**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
21-Jun-2004	4	Document migration, no content change.
30-Apr-2009	5	Modified: <a href="#">Section 3 on page 6</a> .

## BUX87

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