

High voltage NPN power transistor

Features

- High voltage capability (450 V V_{CEO})
- 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.

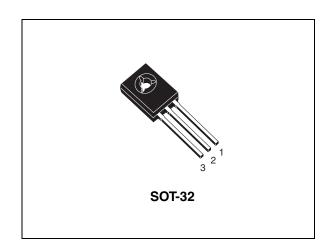


Figure 1. Internal schematic diagram

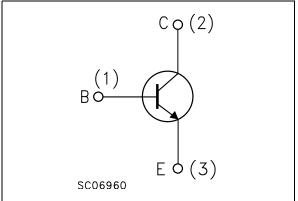


Table 1. Device summary

Order code	Marking	Package	Packaging
BUX87	BUX87	SOT-32	Tube

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Electrical ratings BUX87

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	Α	
I _{CM}	Collector peak current (t _p ≤ 5ms)	1	Α	
Ι _Β	Base current	0.3	Α	
I _{BM}	Base peak current $(t_p \le 5ms)$	0.6	Α	
P _{TOT}	Total power dissipation at T _c = 25 °C	40	W	
T _{stg}	Storage temperature	-65 to 150	oc.	
TJ	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

2 Electrical characteristics

 T_{case} = 25 °C; unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test cor	nditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector cut-off current (V _{BE} = 0)	V _{CE} = 1000 V V _{CE} = 1000 V	T _C = 125 °C			100 1	μA mA
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = 5 V				1	mA
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B = 0)	I _C = 10 mA		450			V
V _{EBO}	Emitter-base voltage (I _C = 0)	I _E = 10 mA		5			V
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$I_C = 0.1 A$ $I_C = 0.2 A$	$I_B = 10 \text{ mA}$ $I_B = 20 \text{ mA}$			0.8 1	V V
V _{BE(sat)} ⁽¹⁾	Base-emitter saturation voltage	I _C = 0.2 A	I _B = 20 mA			1	V
h _{FE} ⁽¹⁾	DC current gain	$I_C = 50 \text{ mA}$ $I_C = 40 \text{ mA}$		12	50		
f _T	Transition frequency	$I_C = 50 \text{ mA}$ f = 1 MHz	V _{CE} = 10 V		20		MHz
	Resistive load	V _{CC} = 250 V	I _C = 200 mA				
t _s	Storage time	$I_{B(on)} = 40 \text{ mA}$	$I_{B(off)} = -80 \text{ mA}$			4.5	μs
t _f	Fall time	$t_P = 20 \mu s$				0.5	μs

^{1.} Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$

Electrical characteristics BUX87

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Derating curve

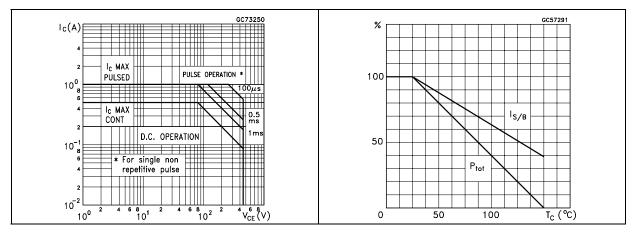


Figure 4. DC current gain

Figure 5. DC current gain

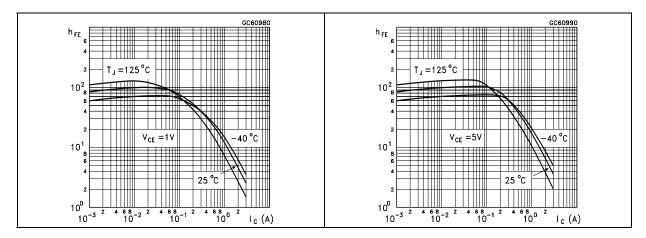
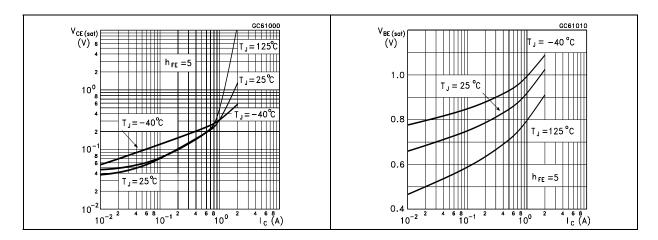
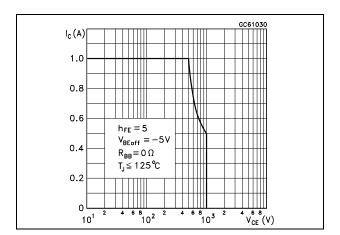


Figure 6. Collector-emitter saturation voltage Figure 7. Base-emitter saturation voltage



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Figure 8. Reverse biased SOA





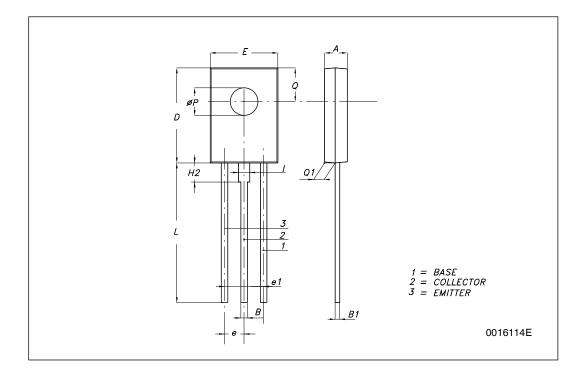
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.



SOT-32 (TO-126) MECHANICAL DATA

DIM.		mm.	
Dilvi.	MIN.	MIN. TYP	
Α	2.4		2.9
В	0.64		0.88
B1	0.39		0.63
D	10.5		11.05
E	7.4		7.8
е	2.04	2.29	2.54
e1	4.07	4.58	5.08
L	15.3		16
Р	2.9		3.2
Q		3.8	
Q1	1		1.52
H2		2.15	
I		1.27	





Revision history BUX87

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: Section 3 on page 6.

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