

# BUX87 HIGH VOLTAGE NPN SILICON POWER TRANSISTOR

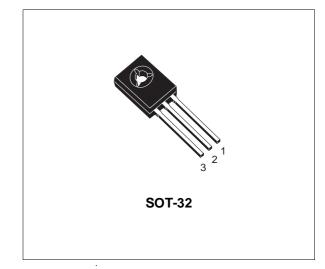
- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY (450V VCEO)
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- HIGH DC CURRENT GAIN

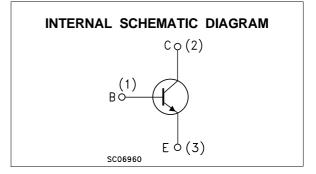
#### **APPLICATIONS**

 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.





#### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
VCES	Collector-Emitter Voltage (V <sub>BE</sub> = -1.5V)	1000	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)	450	V
V <sub>EBO</sub>	Emitter-Base Voltage ( $I_C = 0$ )	5	V
Ι <sub>C</sub>	Collector Current	0.5	A
I <sub>СМ</sub>	Collector Peak Current (t <sub>p</sub> < 5 ms)	1	A
Ι <sub>Β</sub>	Base Current	0.3	А
I <sub>BM</sub>	Base Peak Current (t <sub>p</sub> < 5 ms)	0.6	A
P <sub>tot</sub>	Total Dissipation at $T_c = 25$ °C	40	W
T <sub>stg</sub>	Storage Temperature	-65 to 150	°C
Tj	Max. Operating Junction Temperature	150	°C

# THERMAL DATA

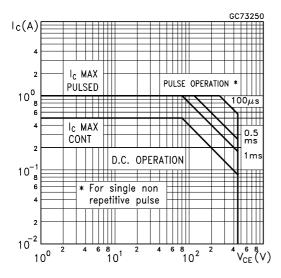
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	3.12	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

# **ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25 \, {}^{\circ}C$ unless otherwise specified)

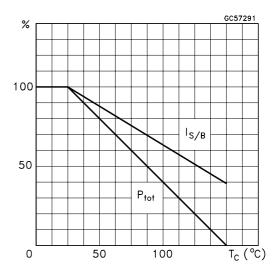
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
ICEV	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	$V_{CE} = 1000 V$ $V_{CE} = 1000 V$ $T_j = 125 °C$			100 1	μA mA
I <sub>EBO</sub>	Emitter Cut-off Current $(I_C = 0)$	$V_{EB} = 5 V$			1	mA
$V_{CEO(sus)^*}$	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	450			V
$V_{\text{BEO}}$	Collector-Base Sustaining Voltage	I <sub>C</sub> = 10 mA	5			V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage				0.8 1	V V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	$I_{C} = 0.2 \text{ A}$ $I_{B} = 0.02 \text{ A}$			1	V
h <sub>FE</sub> *	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⊤	Transition Frequency	$I_C = 50 \text{ mA}$ $V_{CE} = 10 \text{ V} \text{ f}=1\text{MHz}$		20		MHz
ts	RESISTIVE LOAD Storage Time	$V_{CC} = 250 \text{ V}$ $I_C = 200 \text{ mA}$ $I_{B1} = 40 \text{ mA}$ $I_{B2} = -80 \text{ mA}$		4.5		
ι <sub>s</sub> t <sub>f</sub>	Fall Time	$t_p = 20 \ \mu s$		4.5 0.5		μs μs

\* Pulsed: Pulse duration =  $300 \,\mu$ s, duty cycle 1.5 %

# Safe Operating Area

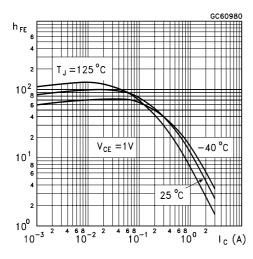


# **Derating Curve**

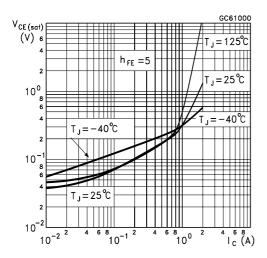


57

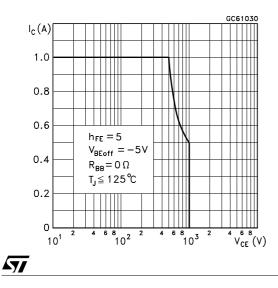
## DC Current Gain



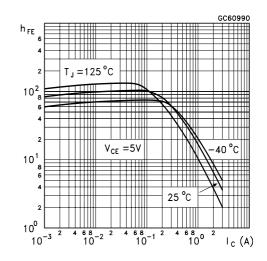
Collector Emitter Saturation Voltage



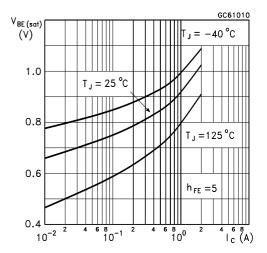
#### **Reverse Biased SOA**



# DC Current Gain

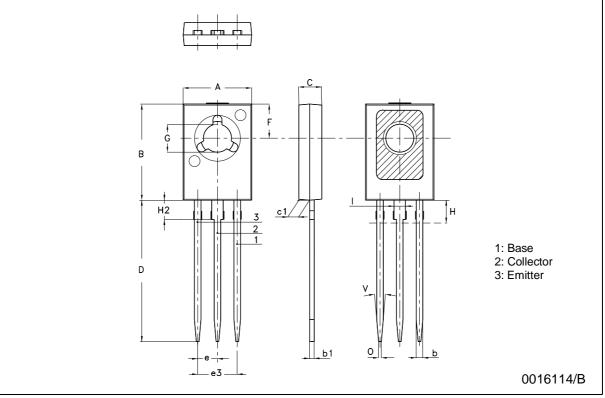


#### Base Emitter Saturation Voltage



DIM.	mm		inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А	7.4		7.8	0.291		0.307
В	10.5		10.8	0.413		0.425
b	0.7		0.9	0.028		0.035
b1	0.40		0.65	0.015		0.025
С	2.4		2.7	0.094		0.106
c1	1.0		1.3	0.039		0.051
D	15.4		16.0	0.606		0.630
е		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
G	3		3.2	0.118		0.126
Н			2.54			0.100
H2		2.15			0.084	
I		1.27			0.05	
0		0.3			0.011	





**477** 

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics. The ST logo is a trademark of STMicroelectronics.

The ST logo is a trademark of ST Microelectronics.

All other names are the property of their respective owners.

© 2003 STMicroelectronics – All Rights reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

http://www.st.com

57