

## **BUX87**

# HIGH VOLTAGE NPN SILICON POWER TRANSISTOR

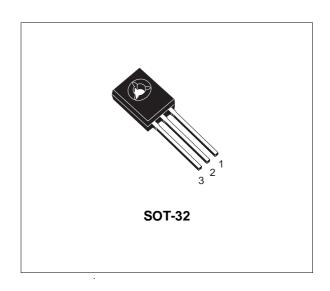
- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY (450V V<sub>CEO</sub>)
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- HIGH DC CURRENT GAIN

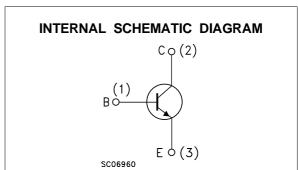
#### **APPLICATIONS**

 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
V <sub>CES</sub>	Collector-Emitter Voltage (V <sub>BE</sub> = -1.5V)	1000	V
$V_{CEO}$	Collector-Emitter Voltage (I <sub>B</sub> = 0)	450	V
$V_{EBO}$	Emitter-Base Voltage (I <sub>C</sub> = 0)	5	V
Ic	Collector Current	0.5	А
I <sub>CM</sub>	Collector Peak Current (t <sub>p</sub> < 5 ms)	1	А
I <sub>B</sub>	Base Current	0.3	А
I <sub>BM</sub>	Base Peak Current (t <sub>p</sub> < 5 ms)	0.6	Α
P <sub>tot</sub>	Total Dissipation at T <sub>c</sub> = 25 °C	40	W
T <sub>stg</sub>	Storage Temperature	-65 to 150	°C
Tj	Max. Operating Junction Temperature	150	°C

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#### THERMAL DATA

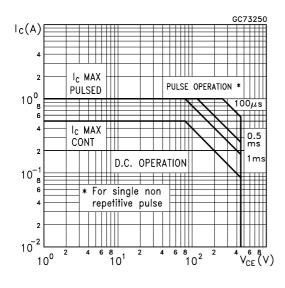
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	3.12	°C/W	
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W	

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

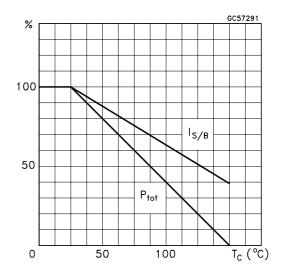
Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I <sub>CEV</sub>	Collector Cut-off Current (V <sub>BE</sub> = -1.5V)	V <sub>CE</sub> = 1000 V V <sub>CE</sub> = 1000 V T <sub>j</sub> = 125 °C			100 1	μA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)</sub> *	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	450			V
V <sub>BEO</sub>	Collector-Base Sustaining Voltage	I <sub>C</sub> = 10 mA	5			V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 0.1 A I <sub>B</sub> = 0.01 A I <sub>C</sub> = 0.2 A I <sub>B</sub> = 0.02 A			0.8 1	V
V <sub>BE(sat)</sub> *	Base-Emitter Saturation Voltage	I <sub>C</sub> = 0.2 A I <sub>B</sub> = 0.02 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 <sub>C</sub> = 50 mA V <sub>CE</sub> = 10 V f=1MHz		20		MHz
	RESISTIVE LOAD	V <sub>CC</sub> = 250 V I <sub>C</sub> = 200 mA				
t <sub>s</sub>	Storage Time	$I_{B1} = 40 \text{ mA}$ $I_{B2} = -80 \text{ mA}$		4.5		μs
t <sub>f</sub>	Fall Time	$t_p = 20 \mu s$		0.5		μs

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

### Safe Operating Area

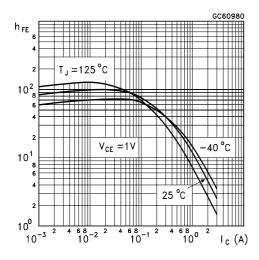


### **Derating Curve**

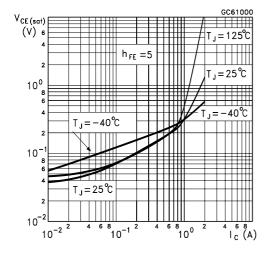


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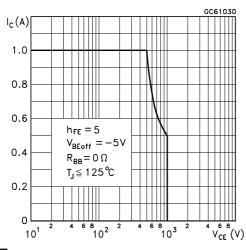
#### DC Current Gain



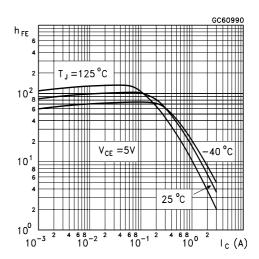
#### Collector Emitter Saturation Voltage



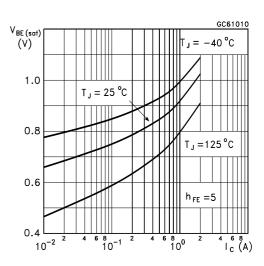
#### Reverse Biased SOA



#### DC Current Gain



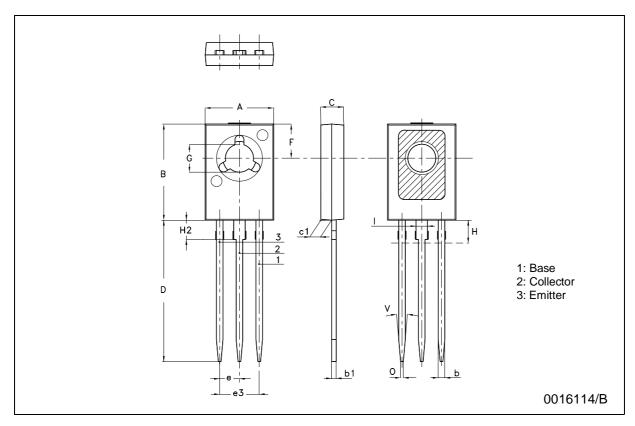
#### Base Emitter Saturation Voltage



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# SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm			inch			
DIIVI.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Α	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		
V		10°			10°		



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