BUX98A

High power NPN transistor

Features

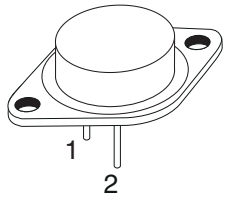
- High voltage capability
- High current capability
- Fast switching speed

Applications

- High frequency and efficency converters
- Linear and switching industrial equipment

Description

The BUX98A is a multi-epitaxial mesa NPN transistor in TO-3 metal case, intended for industrial applications from single and three-phase mains operation.



TO-3
Type R

Figure 1. Internal schematic diagram

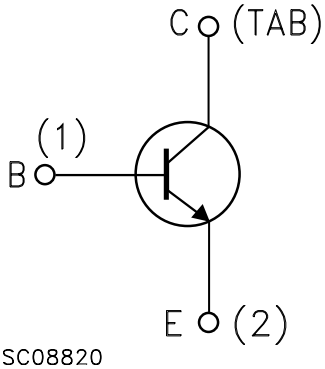


Table 1. Device summary

Order codes	Marking	Package	Packaging
BUX98A	BUX98A	TO-3	Tray

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1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CER}	Collector-emitter voltage ($R_{BE} \leq 10\ \Omega$)	1000	V
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 ($I_C = 0$)	7	V
I_C	Collector current	30	A
I_{CM}	Collector peak current ($t_p \leq 5$ms)	60	A
I_{CP}	Collector peak current non repetitive ($t_p \leq 20\ \mu$s)	80	A
I_B	Base current	8	A
I_{BM}	Base peak current ($t_p \leq 5$ms)	30	A
P_{TOT}	Total power dissipation at $T_c = 25$ °C	250	W
T_{stg}	Storage temperature	-65 to 200	°C
T_J	Max. operating junction temperature	200	

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case max.	0.7	°C/W

2 Electrical characteristics

(T_{case} = 25 °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 V V_{CE} = 1000 V T_C = 125 °C			400 4	µA mA
I_{CER}	Collector cut-off current (R_{BE} = 10 Ω)	V_{CE} = 1000 V V_{CE} = 1000 V T_C = 125 °C			1 8	µA µA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CE} = 1000 V			2	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = 5 V			2	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 200 mA	450			V
$V_{CER(sus)}$ (1)	Collector-emitter sustaining voltage (R_{BE} = 10 Ω)	I_C = 1 A L= 2 mH	1000			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 16 A I_B = 3.2 A I_C = 24 A I_B = 5 A			1.5 5	V V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 16 A I_B = 3.2 A			1.6	V
t_{on} t_s t_f	Resistive load Turn-on time Storage time Fall time	I_C = 16 A V_{CC} = 150 V $I_{B(on)}$ = -$I_{B(off)}$ = 3.2 A			1 3 0.8	µs µs µs

1. Pulsed duration = 300 µs, duty cycle ≤1.5%

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

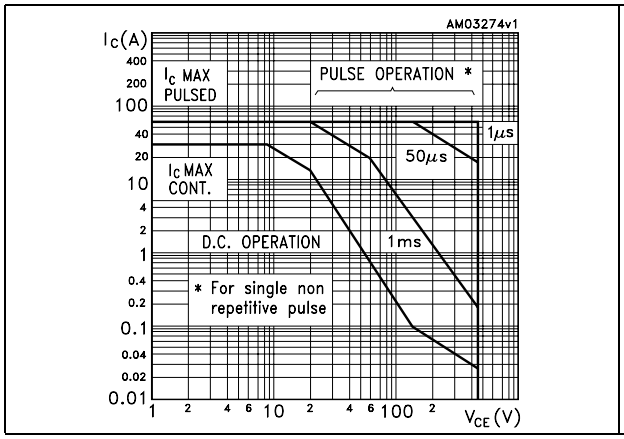


Figure 3. Derating curve

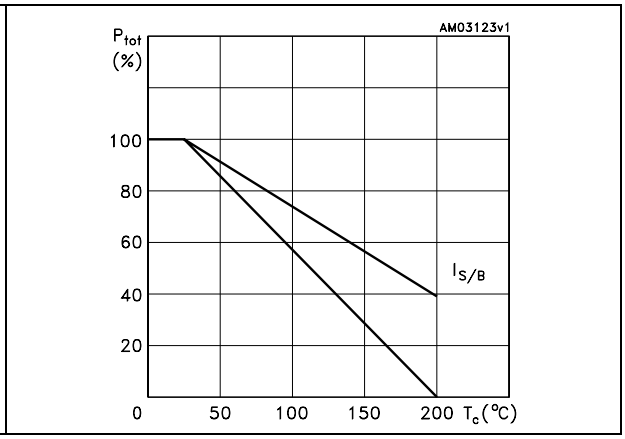


Figure 4. DC current gain

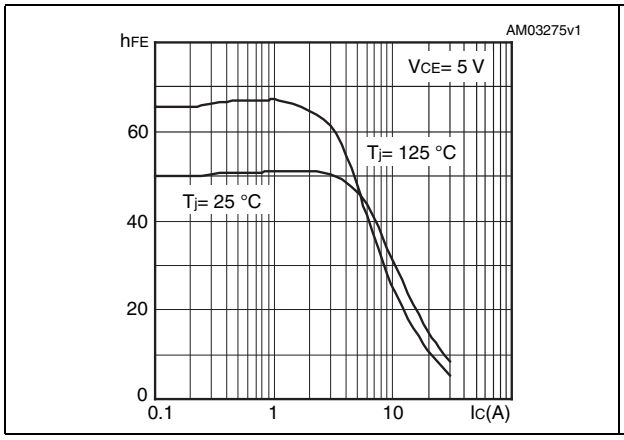


Figure 5. Collector-emitter saturation voltage

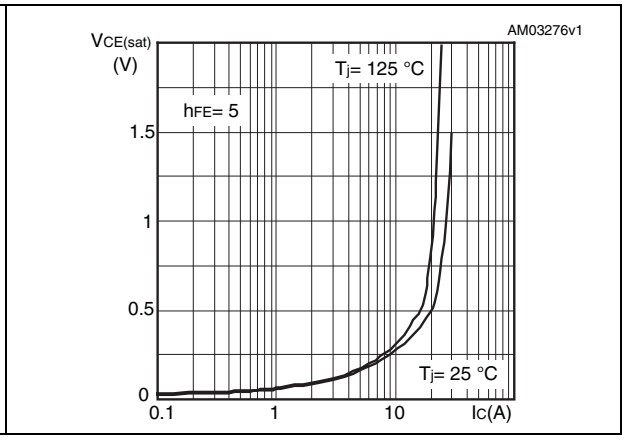


Figure 6. Base-emitter saturation voltage

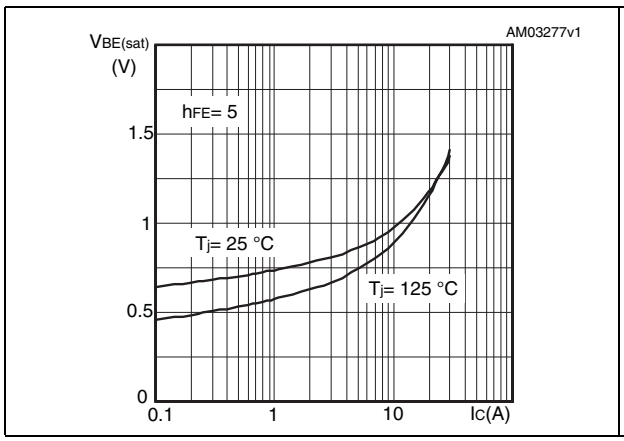


Figure 7. Resistive load switching times (on)

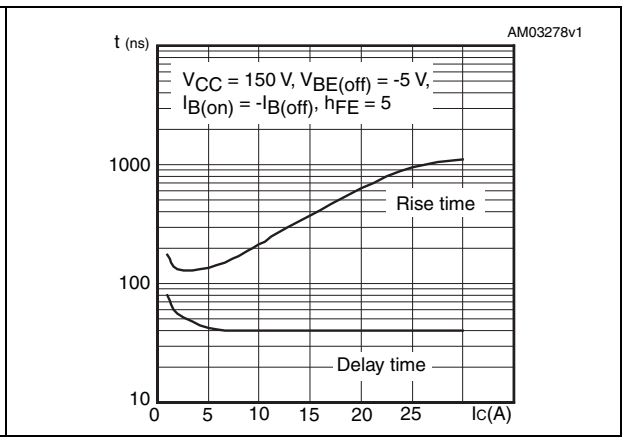


Figure 8. Resistive load switching times (off)

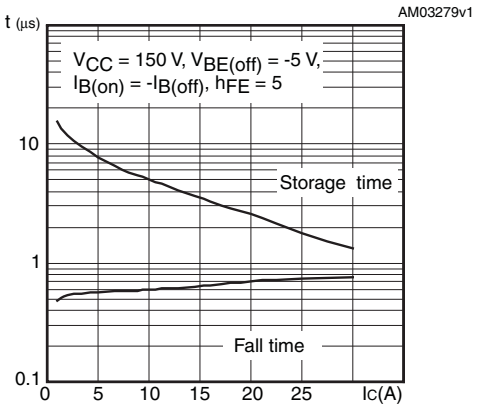
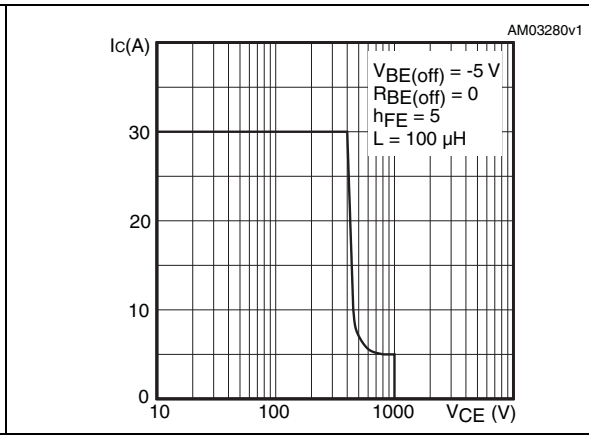
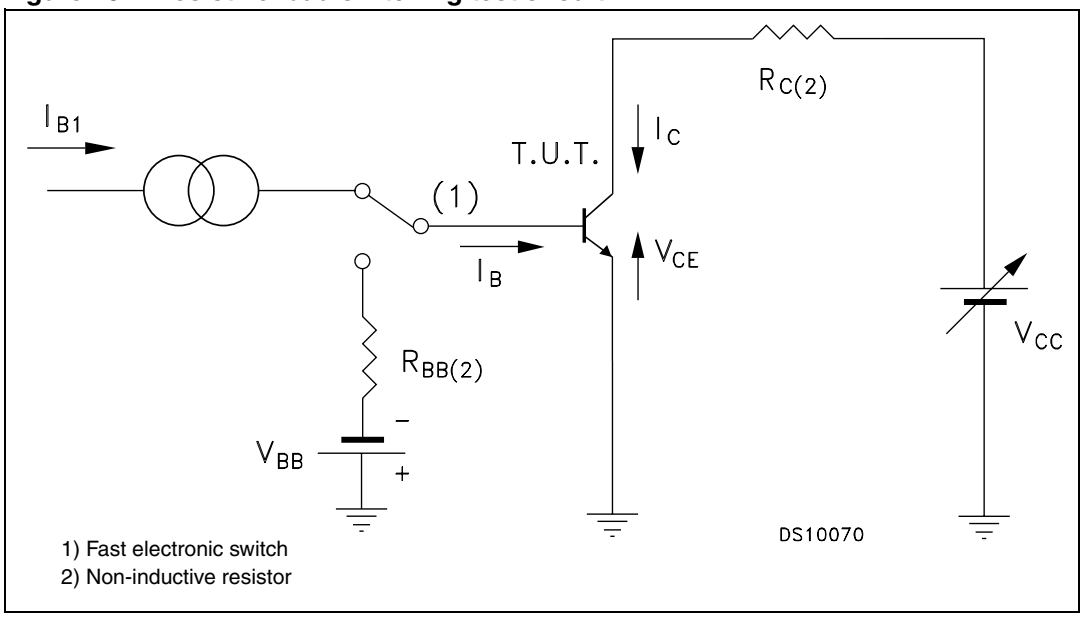


Figure 9. Reverse biased SOA



3 Test circuits

Figure 10. Resistive load switching test circuit

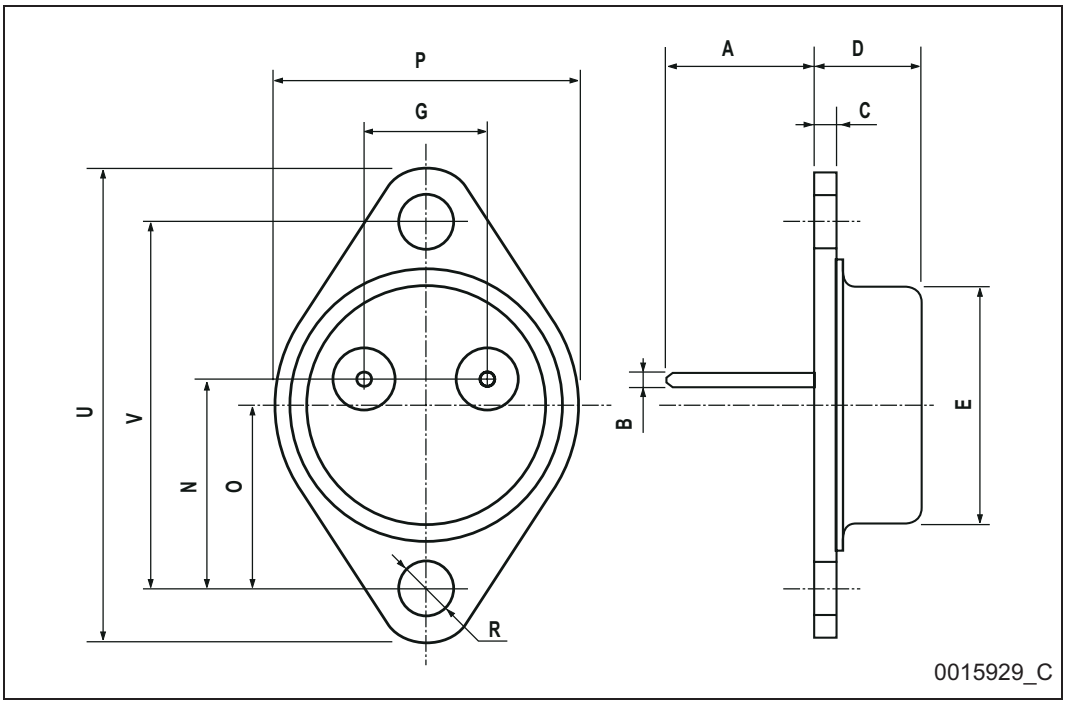


4 Package mechanical data

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

TO-3 type R Mechanical data

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		11.7			0.460	
B	0.96		1.10	0.037		0.043
C			1.70			0.066
D			8.7			0.342
E			20.0			0.787
G		10.9			0.429	
N		16.9			0.665	
P			26.2			1.031
R	3.88		4.09	0.152		0.161
U			39.50			1.555
V		30.10			1.185	



5 Revision history

Table 5. Document revision history

Date	Revision	Changes
21-Jun-2004	4	
24-Nov-2008	5	Inserted new *Section 2.1: Electrical characteristics (curves)*

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