BUV48A

High voltage fast switching NPN power transistor

Features

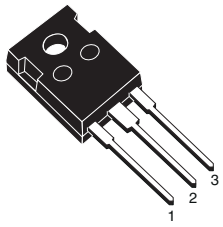
- High current capability
- Fast switching speed

Applications

- Switching mode power supplies
- Flyback and forward single transistor low power converter

Description

The device is a multiepitaxial mesa NPN transistor mounted in TO-247 plastic package. It is intended for switching and industrial applications from single and three-phase mains.



TO-247

Figure 1. Internal schematic diagram

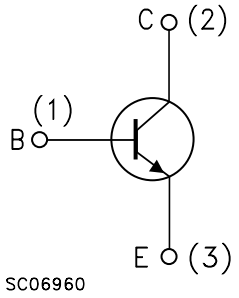


Table 1. Device summary

Order code	Marking	Package	Packaging
BUV48A	BUV48A	TO-247	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CER}	Collector-emitter voltage (R_{BE} = 10 Ω)	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	15	A
I_{CM}	Collector peak current	30	A
I_{CP}	Collector peak current non repetitive (t_p < 20 µs)	55	A
I_B	Base current	4	A
I_{BM}	Base peak current	20	A
P_{TOT}	Total dissipation at T_{case} = 25 °C	125	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter		Value	Unit
R_{thJC}	Thermal resistance junction-case	max	1	°C/W

2 Electrical characteristics

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

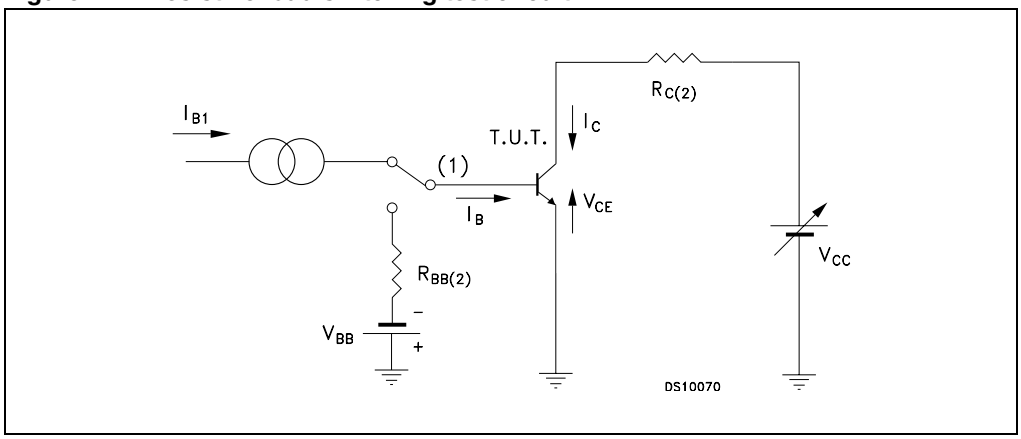
Table 4. Electrical characteristics

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			200 2	µA mA
I_{CER}	Collector cut-off current (R_{BE} = 10Ω)	V_{CE} = 1000 V V_{CE} = 1000 V T_c = 125 °C			500 4	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 = 200 mA	450			V
V_{EBO}	Emitter-base voltage (I_C = 0)	I_E = 50 mA	7		30	V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 8 A I_B = 1.6 A I_C = 12 A I_B = 2.4 A			1.5 5	V V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 8 A I_B = 1.6 A			1.6	V
h_{FE} (1)	DC current gain	I_C = 8 A V_{CE} = 5 V	8			
t_{on} t_s t_f	Resistive load Turn-on time Storage time Fall time	V_{CC} = 150 V I_C = 8 A I_{B1} = -I_{B2} = 1.6 A			1 3 0.8	µs µs µs
t_s t_f	Inductive load Storage time Fall time	V_{CC} = 300 V I_C = 8 A V_{BE} = -5 V I_{B1} = 1.6 A L_B = 3 µH		3 0.13		µs µs
t_s t_f	Inductive load Storage time Fall time	V_{CC} = 300 V I_C = 8 A V_{BE} = -5 V I_{B1} = 1.6 A L_B = 3 µH T_C = 125 °C			5 0.4	µs µs

1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2 %

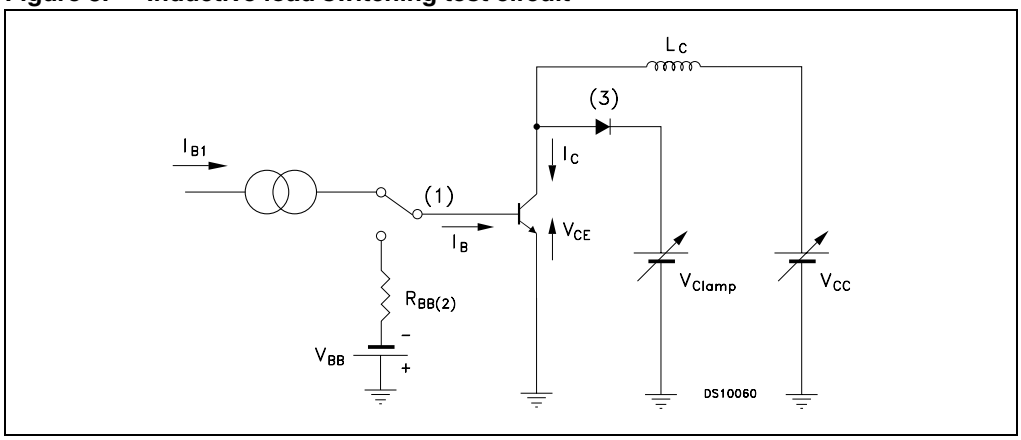
2.1 Test circuit

Figure 2. Resistive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor

Figure 3. Inductive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor
3. Fast recovery rectifier

3 Package mechanical data

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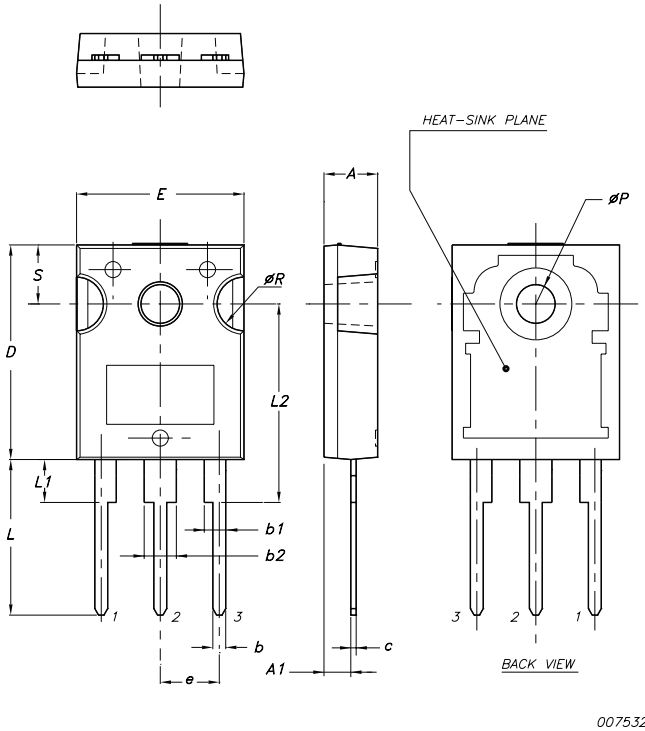
TO-247 mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
øP	3.55		3.65
øR	4.50		5.50
S		5.50	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
29-Oct-2007	8	Package change from TO-218 to TO-247.
16-Nov-2009	9	Added h_{FE} specification *Table 4 on page 3*.

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