

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.

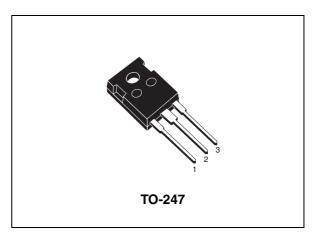


Figure 1. Internal schematic diagram

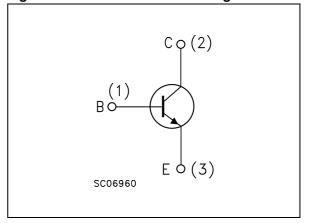


Table 1. Device summary

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 ($R_{BE} = 10 \Omega$)	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	15	Α
I _{CM}	Collector peak current	30	Α
I _{CP}	Collector peak current non repetitive (t _p < 20 µs)	55	Α
I _B	Base current	4	Α
I _{BM}	Base peak current	20	Α
P _{TOT}	Total dissipation at T _{case} = 25 °C	125	W
T _{STG}	Storage temperature	-65 to 150	°C
TJ	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.

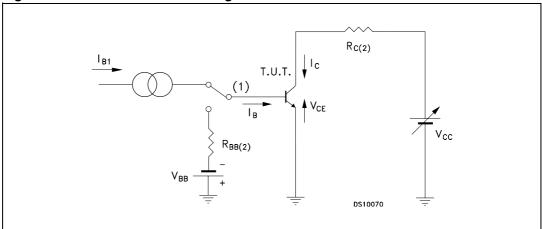
Table 4. Electrical characteristics

Symbol	Parameter	Test condition	s Min.	Тур.	Max.	Unit
I _{CES}	Collector cut-off current (V _{BE} = 0)	V _{CE} = 1000 V V _{CE} = 1000 V T _c = 1	25 °C		200 2	μA mA
I _{CER}	Collector cut-off current $(R_{BE} = 10\Omega)$	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	$I_C = 8 A$ $I_B = 1$ $I_C = 12 A$ $I_B = 2$			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	Resistive load Turn-on time Storage time Fall time	$V_{CC} = 150 \text{ V}$ $I_C = 8$ $I_{B1} = -I_{B2} = 1.6 \text{ A}$	s A		1 3 0.8	µs µs µs
t _s	Inductive load Storage time Fall time	$V_{CC} = 300 \text{ V}$ $I_{C} = 8$ $V_{BE} = -5 \text{ V}$ $I_{B1} =$ $L_{B} = 3 \mu\text{H}$		3 0.13		μs μs
t _s	Inductive load Storage time Fall time	$\begin{aligned} &V_{CC} = 300 \ V & I_{C} = 8 \\ &V_{BE} = -5 \ V & I_{B1} = \\ &L_{B} = 3 \ \mu H & T_{C} = \end{aligned}$	1.6 A		5 0.4	μs μs

^{1.} Pulse test: pulse duration $\leq 300~\mu s,$ duty cycle $\leq 2~\%$

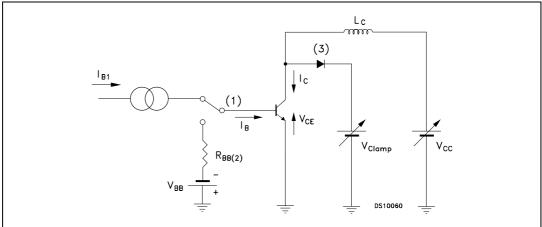
2.1 Test circuit

Figure 2. Resistive load switching test circuit



- 1. Fast electronic switch
- 2. Non-inductive resistor

Figure 3. Inductive load switching test circuit



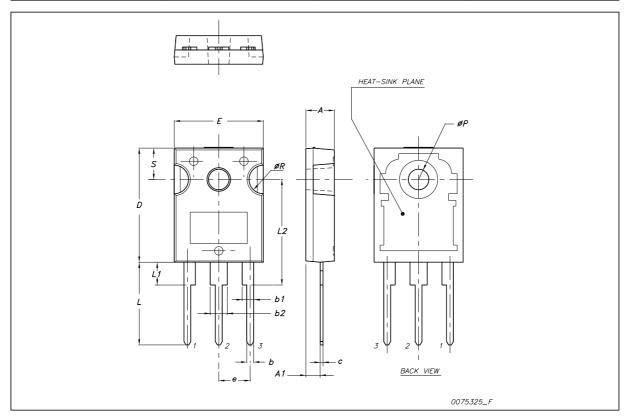
- 1. Fast electronic switch
- 2. Non-inductive resistor
- 3. Fast recovery rectifier

3 Package mechanical data

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TO-247 mechanical data

Dim.	mm.		
	Min.	Тур.	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
С	0.40		0.80
D	19.85		20.15
E	15.45		15.75
е		5.45	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
øΡ	3.55		3.65
øR	4.50		5.50
S		5.50	



BUV48A Revision history

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 <i>Table 4 on page 3</i> .

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