

BU508AW

High voltage NPN power transistor for standard definition CRT display

Features

- State-of-the-art technology:
 - Diffused collector "Enhanced generation"
- Stable performances versus operating temperature variation
- Low base-drive requirement
- Tight h_{FE} range at operating collector current
- High ruggedness
- TO-247 semi-insulated power package

Applications

- Horizontal deflection output for CRT TV
- Switch mode power supplies for CRT TV



The BU508AW is manufactured using diffused collector in planar technology adopting new and enhanced high voltage structure for updated performance to the horizontal deflection stage.

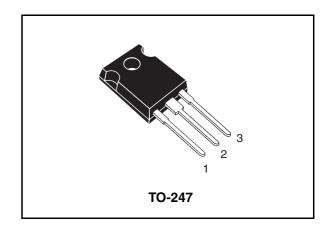


Figure 1. Internal schematic diagram

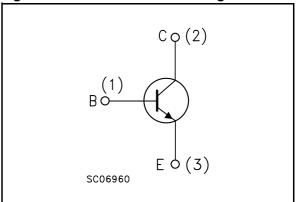


Table 1. Device summary

Order code	Marking	Package	Packaging
BU508AW	BU508AW	TO-247	Tube

Content BU508AW

Content

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BU508AW Electrical ratings

1 Electrical ratings

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
V _{CES}	Collector-emitter voltage (V _{BE} = 0)	1500	V
V _{CEO}	Collector-emitter voltage (I _B = 0)	700	V
V _{EBO}	Collector-base voltage (I _C = 0)	9	V
I _C	Collector current	8	Α
I _{CM}	Collector peak current (t _P < 5ms)	15	Α
Ι _Β	Base current	4	Α
P _{TOT}	Total dissipation at T _c = 25°C	125	W
T _{stg}	Storage temperature	-65 to 150	°C
T _J	Max. operating junction temperature	150	

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R _{thj-case}	Thermal resistance junction-case max	1	°C/W

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Electrical characteristics BU508AW

2 Electrical characteristics

 $(T_{case} = 25^{\circ}C \text{ unless otherwise specified})$

Table 4. Electrical characteristics

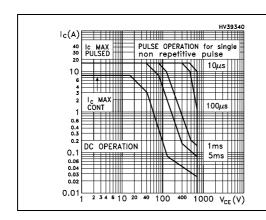
Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector cut-off current (V _{BE} =0)	V _{CE} = 1500V V _{CE} = 1500V; T _C = 125°C	;		0.2 2	mA mA
I _{EBO} Emitter cut-off current (I _C =0)		V _{EB} = 9V			1	mA
V _{CEO(sus)} (1) Collector-emitter sustaining voltage (I _C =0)		I _C = 100mA	700			V
V _{CE(sat)} (1)	Collector-emitter saturation voltage	$I_C = 4.5A$ $I_B = 1.6A$	١		1	V
V _{BE(sat)} (1)	Base-emitter saturation voltage	$I_C = 4.5A$ $I_B = 2A$	١		1.1	V
h _{FE} ⁽¹⁾	DC current gain	$I_C = 0.1A$ $V_{CE} = 5$ $I_C = 4.5A$ $V_{CE} = 5$			30	
t _s	Inductive load Storage time Fall time	$I_{C} = 4.5 A$ $I_{B(on)} = 0.5 A$ $V_{BE(off)} = -2.7 V$ $f_{h} = 16 KHz$ $L_{BB(off)} = 4.5 \mu H$		2.5 0.2		μs μs

^{1.} Pulsed: Pulse duration = 300 ms, duty cycle 1.5 %

2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

Figure 3. Derating curve



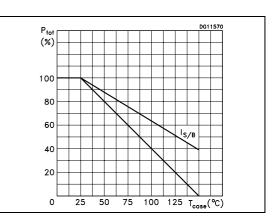
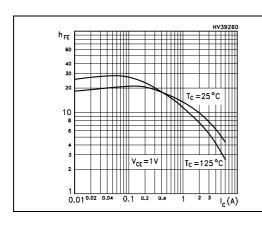


Figure 4. DC current gain

Figure 5. DC current gain



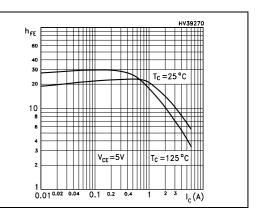
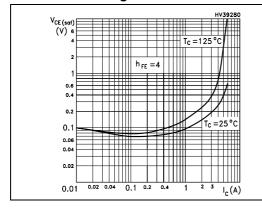
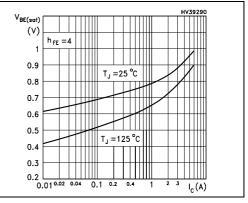


Figure 6. Collector-emitter saturation voltage

Figure 7. Base-emitter saturation voltage

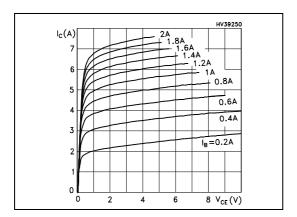




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Electrical characteristics BU508AW

Figure 8. Output characteristics



2.2 Test circuits

Figure 9. Power losses and inductive load switching

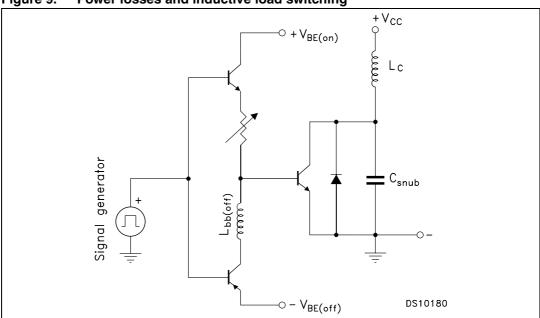
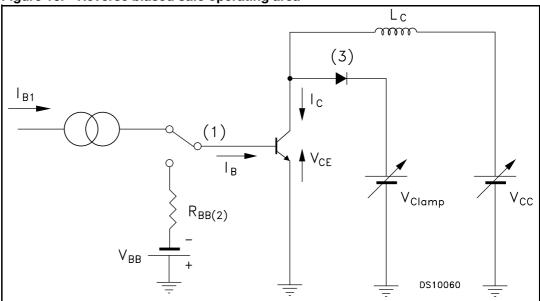


Figure 10. Reverse biased safe operating area



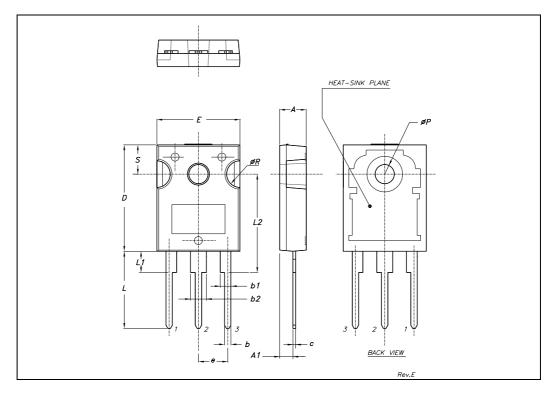
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3 Package mechanical data

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-247 MECHANICAL DATA

DIM.	mm.			inch			
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.	
Α	4.85		5.15	0.19		0.20	
A1	2.20		2.60	0.086		0.102	
b	1.0		1.40	0.039		0.055	
b1	2.0		2.40	0.079		0.094	
b2	3.0		3.40	0.118		0.134	
С	0.40		0.80	0.015		0.03	
D	19.85		20.15	0.781		0.793	
Е	15.45		15.75	0.608		0.620	
е		5.45			0.214		
L	14.20		14.80	0.560		0.582	
L1	3.70		4.30	0.14		0.17	
L2		18.50			0.728		
øΡ	3.55		3.65	0.140		0.143	
øR	4.50		5.50	0.177		0.216	
S		5.50			0.216		



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Revision history BU508AW

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
02-Mar-2007	1	Initial release.
14-Aug-2007	2	Complete document, added all curves (2.1: Electrical characteristics (curves)

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