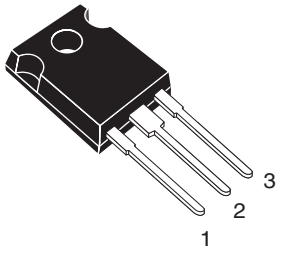
BU508AW

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



TO-247

Applications

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

Description

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

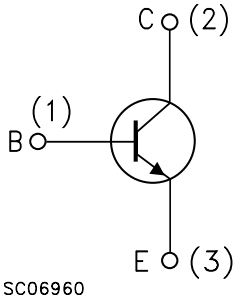


Table 1. Device summary

Order code	Marking	Package	Packaging
BU508AW	BU508AW	TO-247	Tube

Content

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	A
I_{CM}	Collector peak current (t_P < 5ms)	15	A
I_B	Base current	4	A
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
$R_{thj\text{-}case}$	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} = 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			1	V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 4.5A I_B = 2A			1.1	V
h_{FE} (1)	DC current gain	I_C = 0.1A V_{CE} = 5V I_C = 4.5A V_{CE} = 5V	10 5		30	
t_s t_f	Inductive load Storage time Fall time	I_C = 4.5A $I_{B(on)}$ = 0.5A $V_{BE(off)}$ = -2.7V f_h = 16KHz $L_{BB(off)}$ = 4.5µH		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

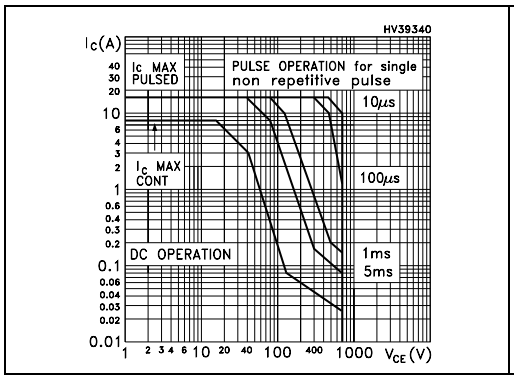


Figure 3. Derating curve

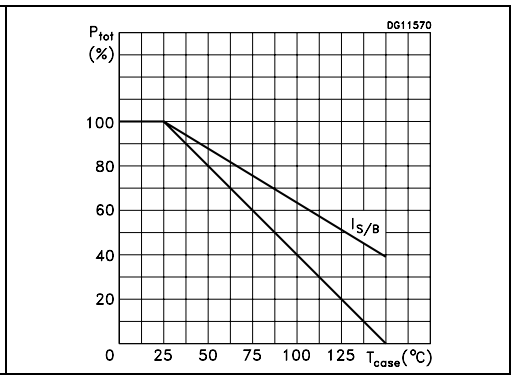


Figure 4. DC current gain

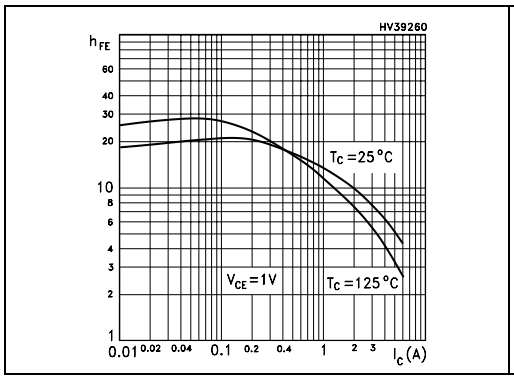


Figure 5. DC current gain

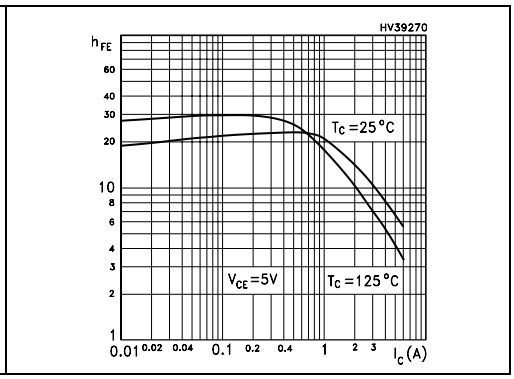


Figure 6. Collector-emitter saturation voltage

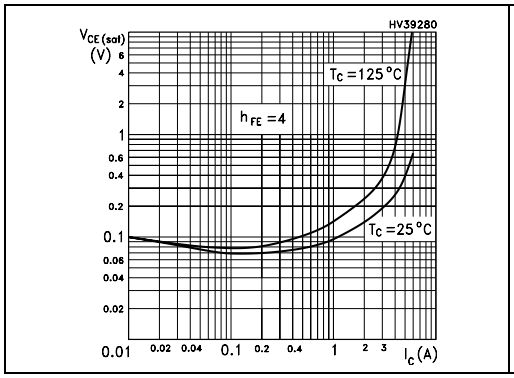


Figure 7. Base-emitter saturation voltage

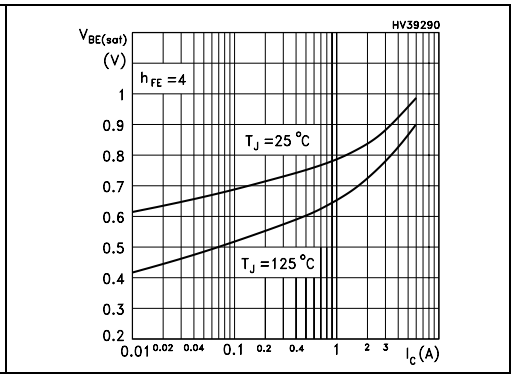
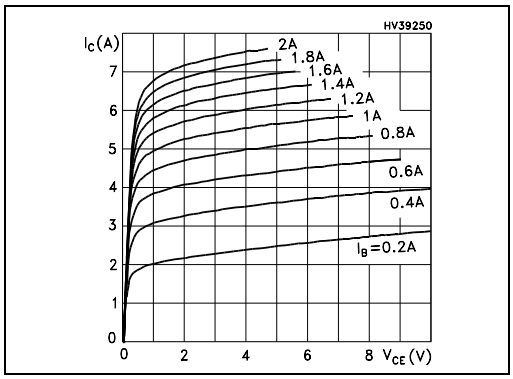


Figure 8. Output characteristics



2.2 Test circuits

Figure 9. Power losses and inductive load switching

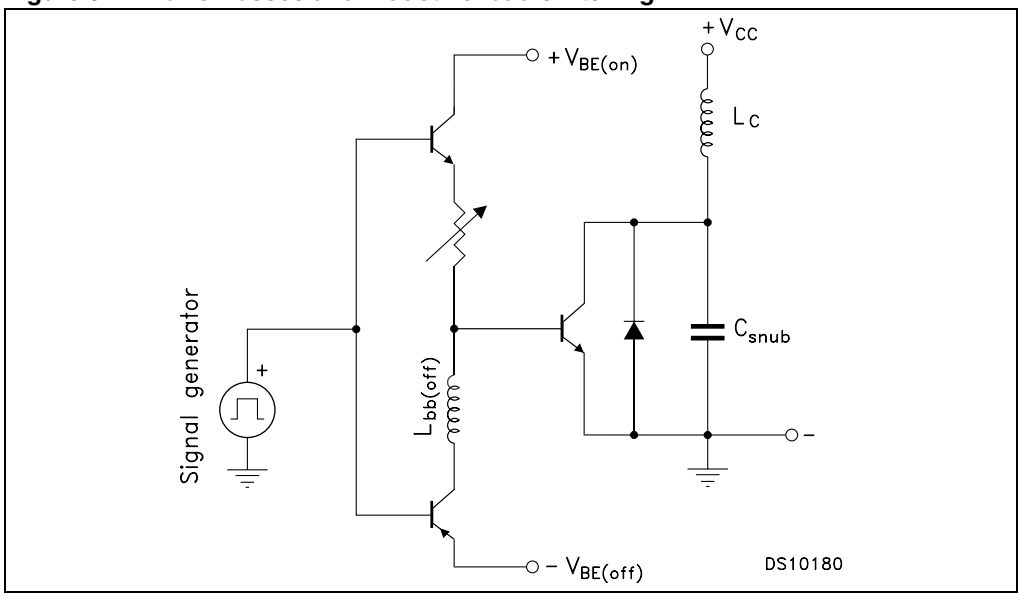
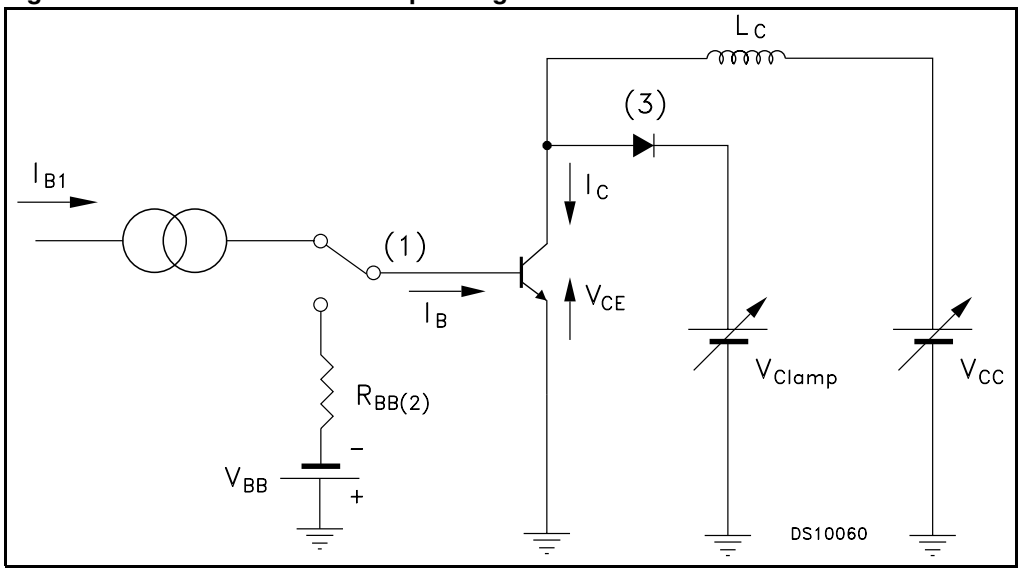


Figure 10. Reverse biased safe operating area

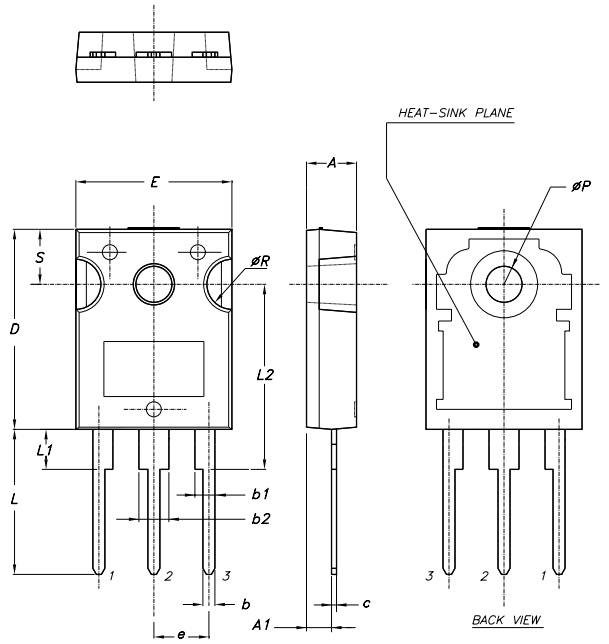


3 Package mechanical data

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.
A	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
c	0.40		0.80	0.015		0.03
D	19.85		20.15	0.781		0.793
E	15.45		15.75	0.608		0.620
e		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	
øP	3.55		3.65	0.140		0.143
øR	4.50		5.50	0.177		0.216
S		5.50			0.216	



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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