

S2000AF

High voltage NPN Power transistor for standard Definition CRT display

Preliminary Data

Features

- State-of-the-art technology:
 - Diffused collector "Enhanced generation"
- Stable performances versus operating temperature variation
- Low base-drive requirement
- Tigh h_{FE} range at operating collector current
- High ruggedness
- Fully insulated power package U.L. compliant
- In compliance with the 2002/93/EC European directive

ISOWATT218FX

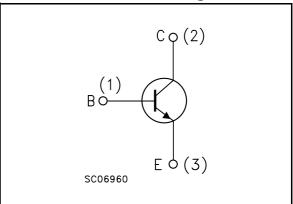
Applications

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

Description

The S2000AF is manufactured using Diffused Collector in Planar Technology adopting new and enhanced high voltage structure for updated performance to the Horizontal Deflection stage.

Internal schematic diagram



Order codes

Part Number	Marking	Package	Packaging
S2000AF	S2000AF	ISOWATT218FX	Tube

Electrical ratings S2000AF

1 Electrical ratings

Table 1. 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
I _B	Base current	4	Α
P _{TOT}	Total dissipation at T _c = 25°C	50	W
V _{ins}	Insulation withstand voltage (RMS) from all three leads to external heatsink	2500	V
T _{stg}	Storage temperature	-65 to 150	°C
T _J	Max. operating junction temperature	150	

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{\text{thj-case}}$	Thermal resistance junction-case max	2.5	°C/W

2 Electrical characteristics

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

Table 3. 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	$I_{C} = 4.5A$ $I_{B} = 2A$ $I_{C} = 4.5A$ $I_{B} = 1A$			1 5	V
V _{BE(sat)} (1)	Base-emitter saturation voltage	$I_{C} = 4.5A$ $I_{B} = 1A$	1		1.2	V
h _{FE} ⁽¹⁾	DC current gain	$I_{C} = 1A \qquad V_{CE} = 5V$ $I_{C} = 4.5A \qquad V_{CE} = 5V$			30 9	
t _s	Inductive load Storage time Fall time	$\begin{split} I_{C} &= 4.5 A & I_{B(on)} = 0.5 A \\ V_{BE(off)} &= -2.7 V & f_{h} = 16 K Hz \\ L_{BB(off)} &= 4.5 \mu H \end{split}$		2.5 0.2		μs μs

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

Electrical characteristics S2000AF

2.1 Test circuits

Figure 1. Power losses and inductive load switching

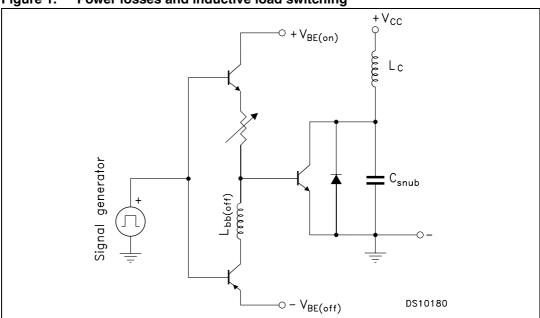
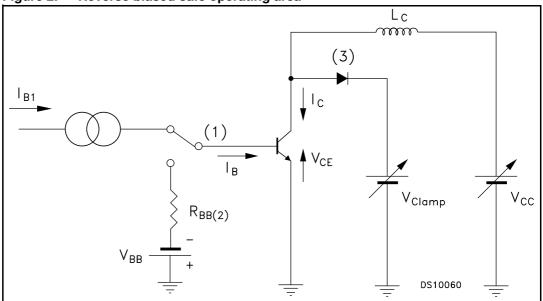


Figure 2. Reverse biased safe operating area



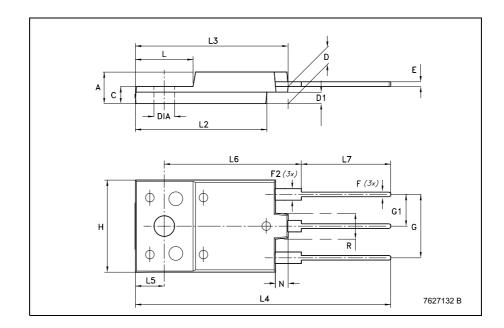
3 Package mechanical data

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

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ISOWA7	ΓT218FX	MECHA	NICAL	$D\Delta T\Delta$

DIM	mm.				
DIM.	MIN.	TYP	MAX.		
Α	5.30		5.70		
С	2.80		3.20		
D	3.10		3.50		
D1	1.80		2.20		
E	0.80		1.10		
F	0.65		0.95		
F2	1.80		2.20		
G	10.30		11.50		
G1		5.45			
Н	15.30		15.70		
L	9		10.20		
L2	22.80		23.20		
L3	26.30		26.70		
L4	43.20		44.40		
L5	4.30		4.70		
L6	24.30		24.70		
L7	14.60		15		
N	1.80		2.20		
R	3.80		4.20		
Dia	3.40		3.80		



S2000AF Revision history

4 Revision history

Table 4. Revision history

Date	Revision	Changes
02-Mar-2007	1	Initial release.

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