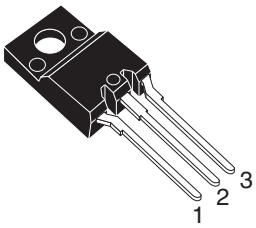
MD2001FH

High voltage NPN Power transistor for standard Definition CRT display

Preliminary Data

Features

- State-of-the-art technology:
  - Diffused collector “Enhanced generation”
- More stable performances versus operating temperature variation
- Low base-drive requirements
- Tighter h_{FE} range at operating collector current
- Fully insulated power package U.L. compliant

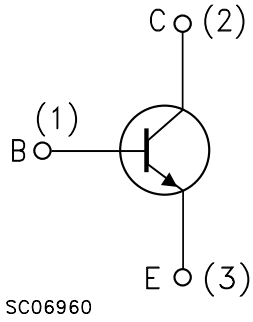


TO-220FH

Applications

- Horizontal deflection output for monitor and real flat TV

Internal schematic diagram



Description

The MD2001FH is manufactured using Diffused Collector in Planar Technology adopting new and enhanced high voltage structure. The new MD product series show improved silicon efficiency bringing updated performance to the Horizontal Deflection stage.

Order codes

Part number	Marking	Package	Packaging
MD2001FH	MD2001FH	TO-220FH	Tube

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	12	A
I_{CM}	Collector peak current (t_P < 5ms)	18	A
I_B	Base current	6	A
P_{TOT}	Total dissipation at T_c = 25°C	40	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
$R_{thj\text{-}case}$	Thermal resistance junction-case	max	3.125	°C/W

2 Electrical characteristics

(T_{case} = 25°C unless otherwise specified)

Table 3. 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 = 6A I_B = 1.5A			1.8	V
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = 6A I_B = 1.5A			1.2	V
h_{FE} (1)	DC current gain	I_C = 6A V_{CE} = 1V I_C = 6A V_{CE} = 5V	 4.5	4.5	 7	
 t_s t_f	Inductive load Storage time Fall time	I_C = 5A $I_{B(on)}$ = 0.9A $V_{BE(off)}$ = -2.7V f_h = 64KHz $L_{BB(off)}$ = 1.6µH		 2.6 0.2		 µs µs

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

2.1 Test circuits

Figure 1. Power losses and inductive load switching

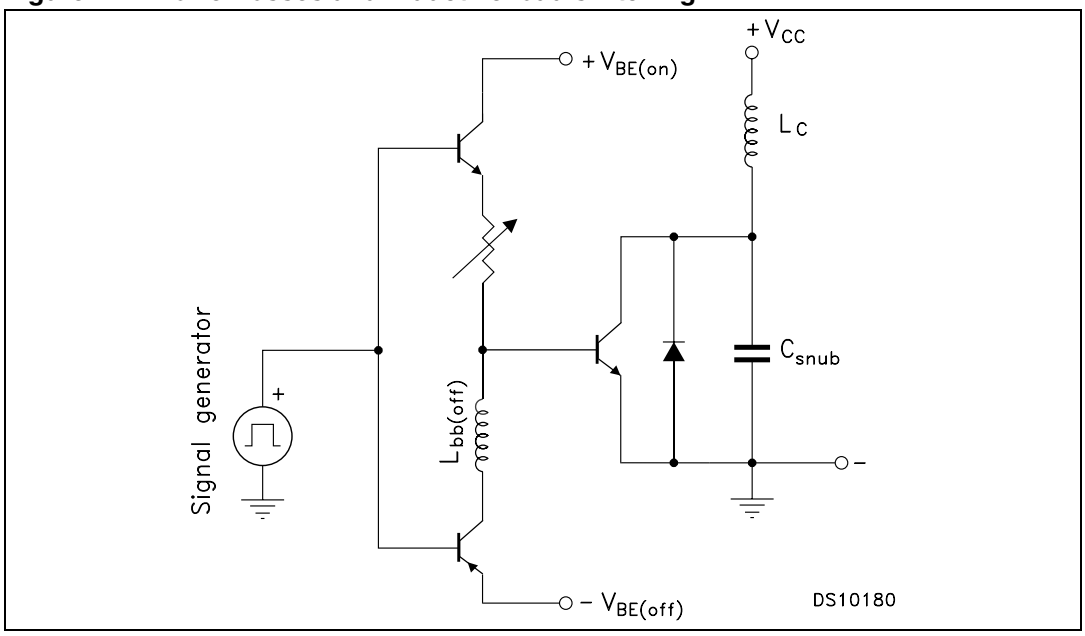
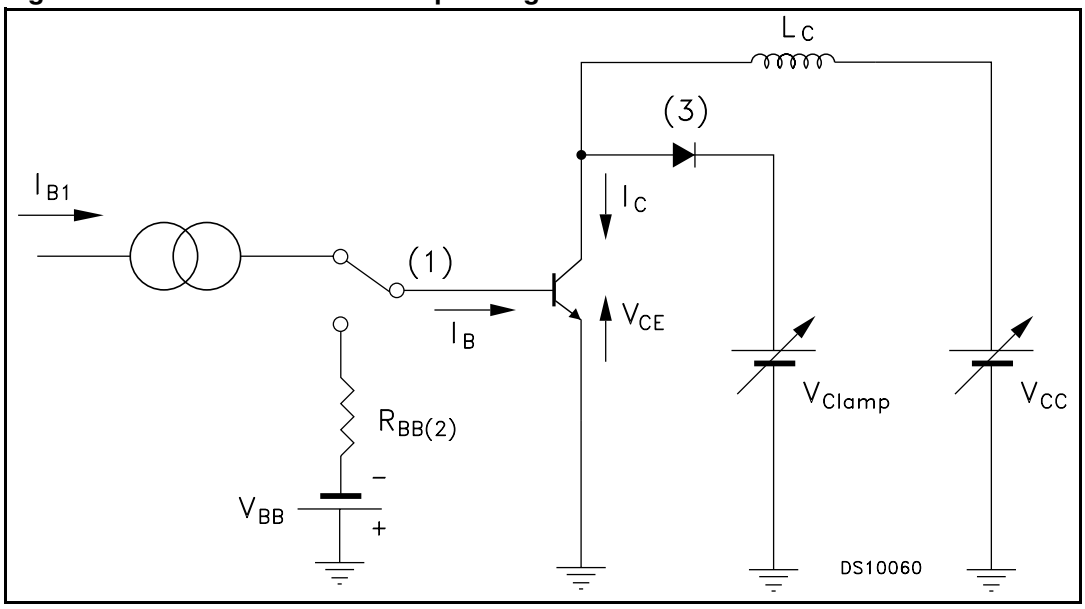


Figure 2. Reverse biased safe operating area

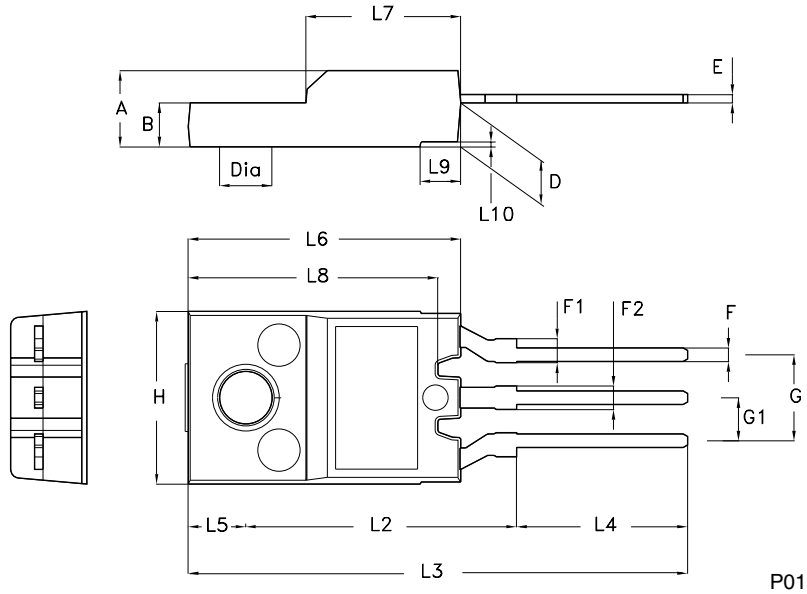


3 Package mechanical data

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

TO-220FH (Fully plastic High voltage) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.4		4.6	0.173		0.181
B	2.5		2.7	0.098		0.106
D	2.5		2.75	0.098		0.108
E	0.45		0.7	0.017		0.027
F	0.75		1	0.030		0.039
F1	1.3		1.8	0.051		0.070
F2	1.3		1.8	0.051		0.070
G	4.95		5.2	0.195		0.204
G1	2.4		2.7	0.094		0.106
H	10		10.4	0.393		0.409
L2		16			0.630	
L3	28.6		30.6	1.126		1.204
L4	9.8		10.6	0.385		0.417
L5		3.4			0.134	
L6	15.9		16.4	0.626		0.645
L7	9		9.3	0.354		0.366
L8	14.5		15	0.570		0.590
L9		2.4			0.094	



4 Revision history

Table 4. Revision history

Date	Revision	Changes
25-May-2007	1	Initial release.

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