



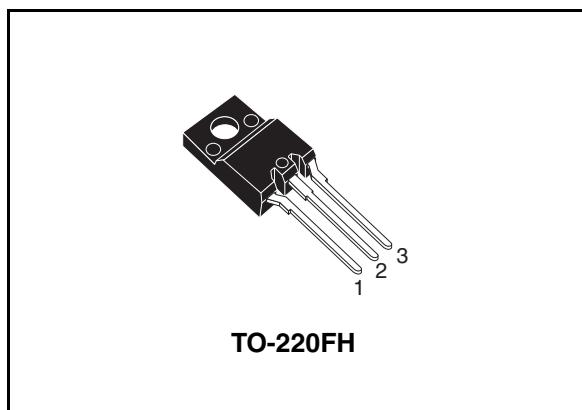
## MD1802FH

### High voltage NPN Power transistor for standard Definition CRT display

Preliminary Data

#### General 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
- High ruggedness
- Fully insulated power package U.L. compliant
- In compliance with the 2002/93/EC European directive



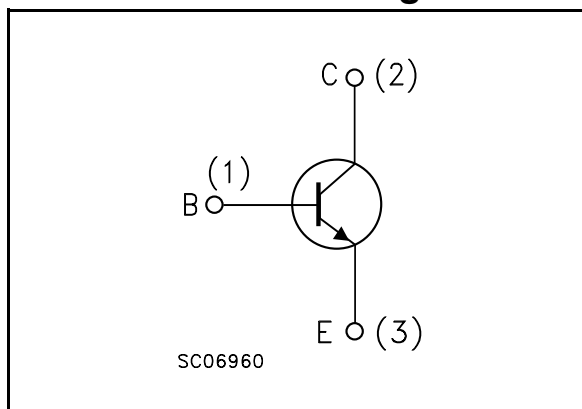
#### Applications

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

#### Description

The MD1802FH 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.

#### Internal schematic diagram



#### Order codes

Part Number	Marking	Package	Packing
MD1802FH	MD1802FH	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	10	A
$I_{CM}$	Collector peak current ( $t_P < 5\text{ms}$ )	15	A
$I_B$	Base current	5	A
$P_{TOT}$	Total dissipation at $T_C = 25^\circ\text{C}$	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
$R_{thj-case}$	Thermal resistance junction-case	max 3.125	°C/W

## 2 Electrical characteristics

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

**Table 3. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{\text{CES}}$	Collector cut-off current ( $V_{\text{BE}} = 0$ )	$V_{\text{CE}} = 1500\text{V}$ $V_{\text{CE}} = 1500\text{V}; T_{\text{C}} = 125^{\circ}\text{C}$			0.2 2	mA mA
$I_{\text{EBO}}$	Emitter cut-off current ( $I_{\text{C}} = 0$ )	$V_{\text{EB}} = 9\text{V}$			1	mA
$V_{\text{CEO(sus)}}^{(1)}$	Collector-emitter sustaining voltage ( $I_{\text{C}} = 0$ )	$I_{\text{C}} = 100\text{mA}$	700			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 5\text{A}$ $I_{\text{B}} = 1.25\text{A}$			1.5	V
$V_{\text{BE(sat)}}^{(1)}$	Base-emitter saturation voltage	$I_{\text{C}} = 5\text{A}$ $I_{\text{B}} = 1.25\text{A}$			1.2	V
$h_{\text{FE}}^{(1)}$	DC current gain	$I_{\text{C}} = 1\text{A}$ $V_{\text{CE}} = 5\text{V}$ $I_{\text{C}} = 5\text{A}$ $V_{\text{CE}} = 1\text{V}$ $I_{\text{C}} = 5\text{A}$ $V_{\text{CE}} = 5\text{V}$	5.5	23 5.5	8.5	
$t_{\text{s}}$ $t_{\text{f}}$	Inductive load Storage time Fall time	$I_{\text{C}} = 4\text{A}$ $I_{\text{B(on)}} = 500\text{mA}$ $V_{\text{BE(off)}} = -2.7\text{V}$ $f_{\text{h}} = 16\text{KHz}$ $L_{\text{BB(off)}} = 4.5\mu\text{H}$		2.4 0.2		$\mu\text{s}$ $\mu\text{s}$

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

## 2.1 Test circuits

Figure 1. Power losses and inductive load switching

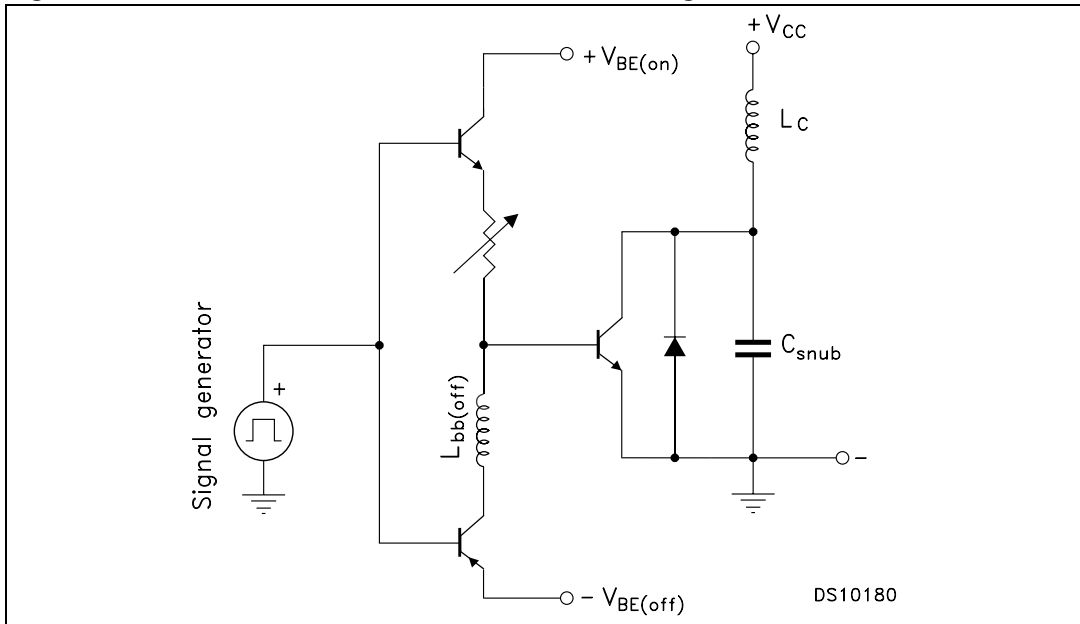
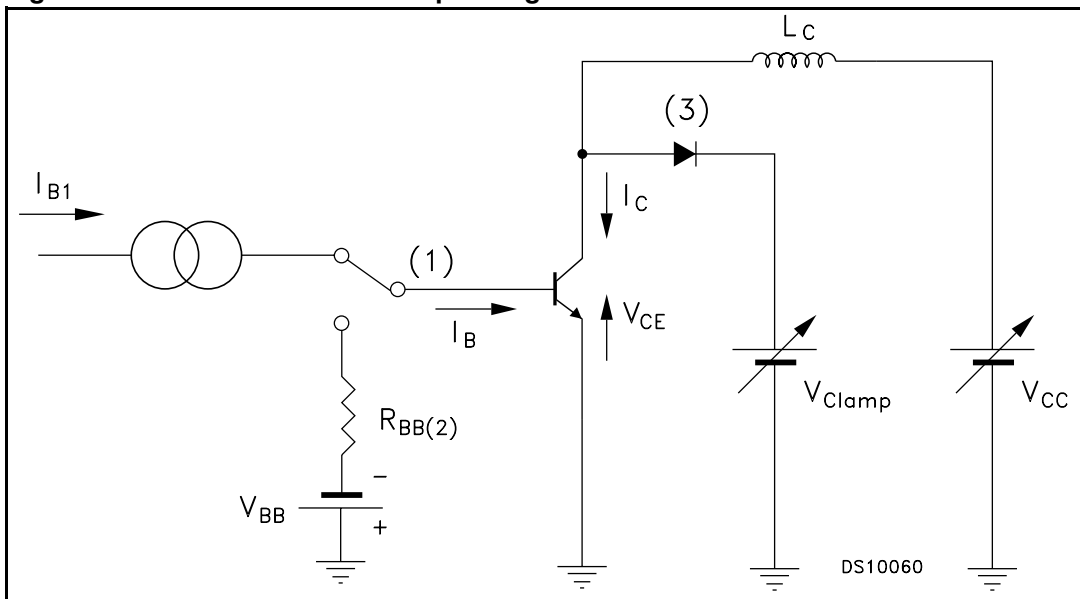


Figure 2. Reverse biased safe operating area

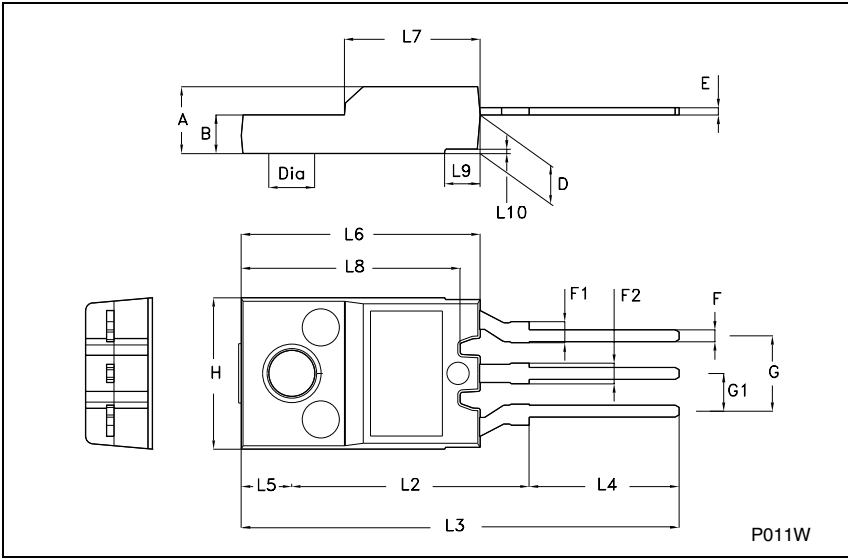


### 3 Package mechanical data

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](http://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
02-Aug-2006	1	Initial release.

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