



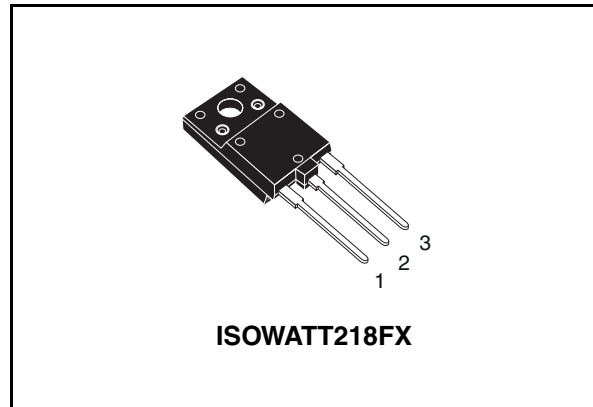
MD1802FX

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



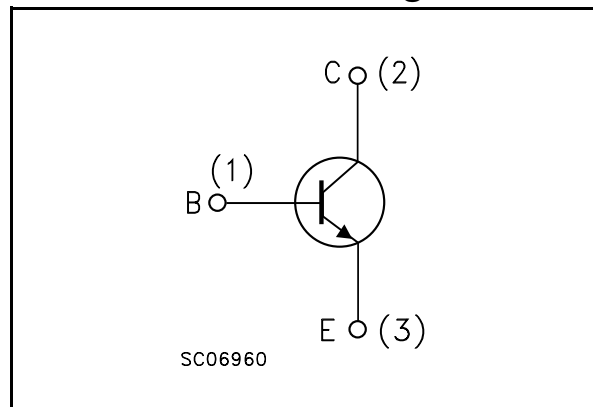
Applications

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

Description

The MD1802FX 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 |
|-------------|----------|--------------|---------|
| MD1802FX | MD1802FX | ISOWATT218FX | 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 $T_C = 25^\circ\text{C}$ | 57 | 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 2.2 | °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_{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_{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_{s} t_{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 | | μs μs |

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

2.1 Test circuits

Figure 1. Power losses and inductive load switching

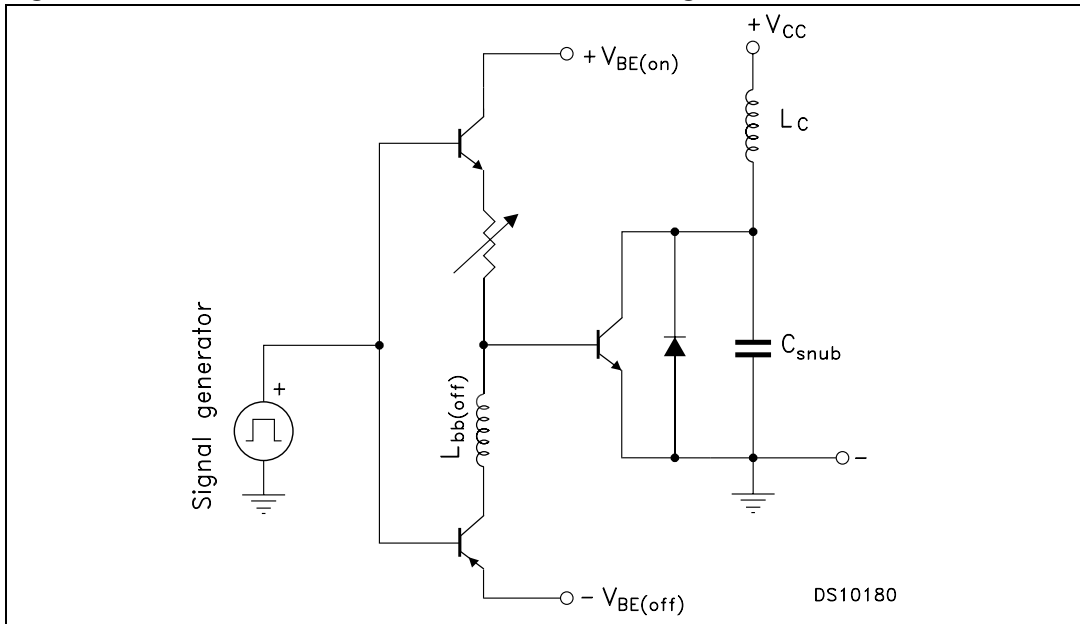
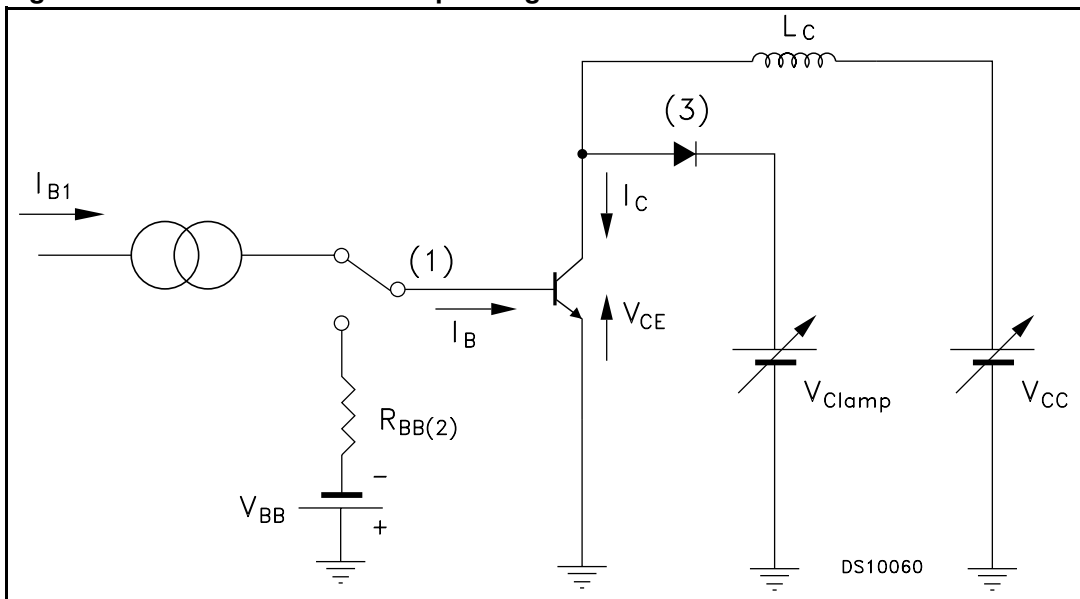


Figure 2. Reverse biased safe operating area

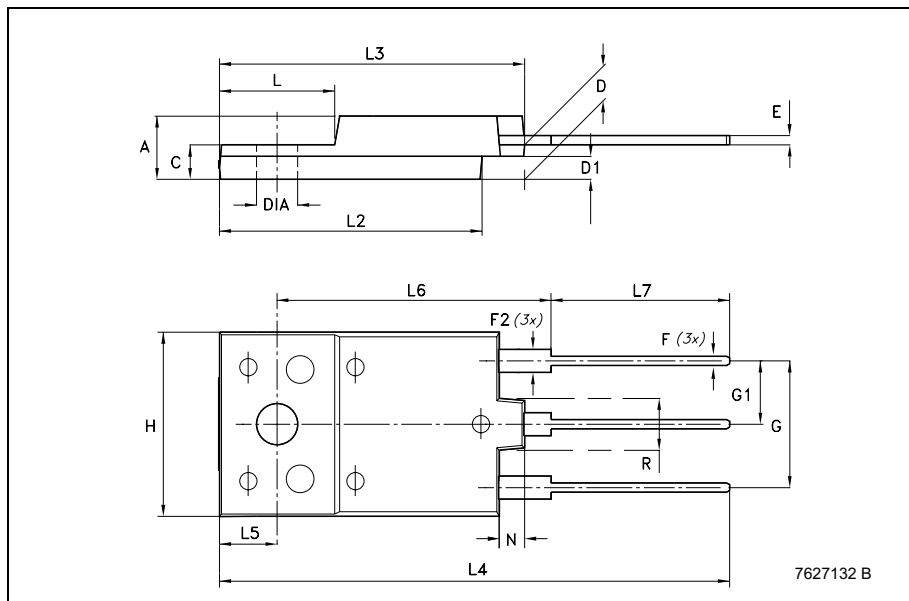


3 Package mechanical data

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

ISOWATT218FX MECHANICAL DATA

| DIM. | mm. | | |
|------|-------|------|-------|
| | MIN. | TYP | MAX. |
| A | 5.30 | | 5.70 |
| C | 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 | |
| H | 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 |



4 Revision history

Table 4. Revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 02-Aug-2006 | 1 | Initial release. |

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