



## HD1530FX

### High Voltage NPN Power Transistor for High Definition and New Super-Slim CRT Display

#### Features

- STATE-OF-THE-ART TECHNOLOGY: DIFFUSED COLLECTOR "ENHANCED GENERATION" EHVS1
- WIDER RANGE OF OPTIMUM DRIVE CONDITIONS
- LESS SENSITIVE TO OPERATING TEMPERATURE VARIATION
- FULLY INSULATED POWER PACKAGE WHICH IS U.L COMPLIANT

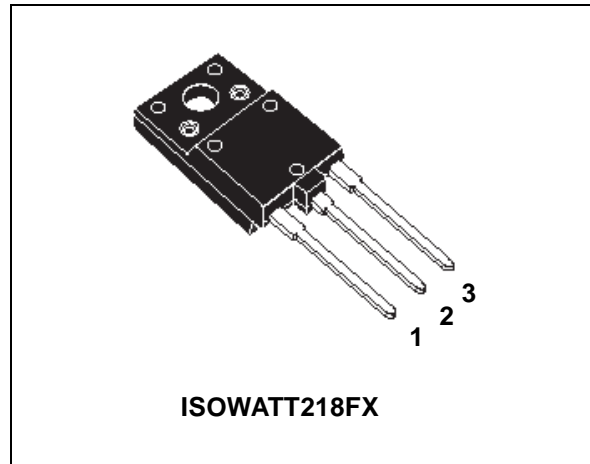
#### Applications

- HORIZONTAL DEFLECTION OUTPUT FOR DIGITAL TV, HDTV, AND HIGH -END MONITORS

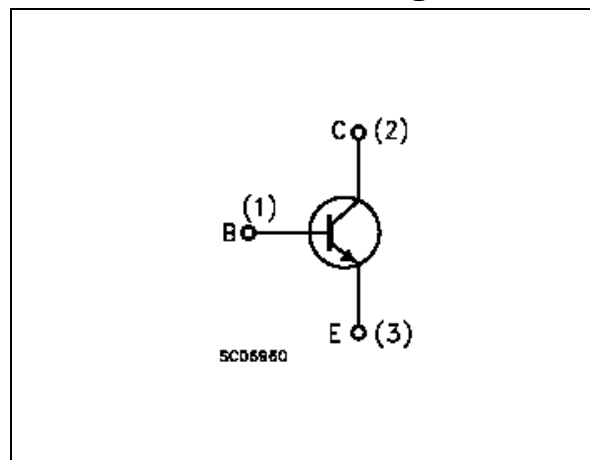
#### Description

The device uses a Diffused Collector in Planar technology which adopts "Enhanced High Voltage Structure" (EHVS1) that was developed to fit High-Definition CRT displays.

The new HD product series features improved silicon efficiency, bringing updated performance to Horizontal Deflection output stages.



#### Internal Schematic Diagram



#### Order Codes

| Part Number | Marking  | Package      | Packing |
|-------------|----------|--------------|---------|
| HD1530FX    | HD1530FX | ISOWATT218FX | TUBE    |

# 1 Absolute Maximum Ratings

**Table 1. Absolute Maximum Ratings**

| Symbol    | Parameter  | Value      | Unit             |
|-----------|--|------------|------------------|
| $V_{CES}$ | Collector-Emitter Voltage ( $V_{BE} = 0$ )                                   | 1500       | V                |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ )                                      | 700        | V                |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )   | 10         | V                |
| $I_C$     | Collector Current  | 26         | A                |
| $I_{CM}$  | Collector Peak Current ( $t_p < 5\text{ms}$ )                                | 40         | A                |
| $I_B$     | Base Current   | 10         | A                |
| $I_{BM}$  | Base Peak Current ( $t_p < 5\text{ms}$ )                                     | 20         | A                |
| $P_{TOT}$ | Total dissipation at $T_c = 25^\circ\text{C}$                                | 70         | W                |
| $V_{ins}$ | Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink | 2500       | V                |
| $T_{STG}$ | Storage Temperature  | -65 to 150 | $^\circ\text{C}$ |
| $T_J$     | Max. Operating Junction Temperature  | 150        | $^\circ\text{C}$ |

## 1.1 Thermal Data

**Table 2. Thermal Data**

| Symbol     | Parameter                        | Value   | Unit                      |
|------------|----------------------------------|---------|---------------------------|
| $R_{thJC}$ | Thermal Resistance Junction-Case | Max 1.8 | $^\circ\text{C}/\text{W}$ |

## 2 Electrical Characteristics

**Table 3. Electrical Characteristics** ( $T_{CASE} = 25^{\circ}C$ ; unless otherwise specified)

| Symbol                           | Parameter   | Test Conditions  | Min. | Typ.       | Max.     | Unit          |
|----------------------------------|---|--|------|------------|----------|---------------|
| $I_{CES}$                        | Collector Cut-off Current<br>( $V_{BE} = 0$ )         | $V_{CE} = 1500V$<br>$V_{CE} = 1500V$ $T_C = 125^{\circ}C$              |      |            | 0.2<br>2 | mA<br>mA      |
| $I_{EBO}$                        | Emitter Cut-off Current<br>( $I_C = 0$ )              | $V_{EB} = 5V$  |      |            | 10       | $\mu A$       |
| $V_{CEO(sus)}$<br><i>Note: 1</i> | Collector-Emitter<br>Sustaining Voltage ( $I_B = 0$ ) | $I_C = 10mA$   | 700  |            |          | V             |
| $V_{EBO}$                        | Emitter-Base Voltage                                  | $I_E = 10mA$   | 10   |            |          | V             |
| $V_{CE(sat)}$<br><i>Note: 1</i>  | Collector-Emitter saturation<br>Voltage               | $I_C = 13A$ $I_B = 3.25A$  |      |            | 2        | V             |
| $V_{BE(sat)}$<br><i>Note: 1</i>  | Base-Emitter saturation Voltage                       | $I_C = 13A$ $I_B = 3.25A$  |      | 1          | 1.5      | V             |
| $h_{FE}$                         | DC Current Gain                                       | $I_C = 1A$ $V_{CE} = 5V$<br>$I_C = 13A$ $V_{CE} = 5V$                  | 5.5  | 30         | 9        |               |
| $t_s$<br>$t_f$                   | INDUCTIVE LOAD<br>Storage Time<br>Fall Time           | $I_C = 12A$ $f_h = 32KHz$<br>$I_{B(on)} = 1.4A$ $I_{B(off)} = -6A$     |      | 3.2<br>230 |          | $\mu s$<br>ns |
| $t_s$<br>$t_f$                   | INDUCTIVE LOAD<br>Storage Time<br>Fall Time           | $I_C = 12A$ $f_h = 48KHz$<br>$I_{B(on)} = 2A$ $I_{B(off)} = -6.7A$     |      | 2.8<br>200 |          | $\mu s$<br>ns |
| $t_s$<br>$t_f$                   | INDUCTIVE LOAD<br>Storage Time<br>Fall Time           | $I_C = 6.5A$ $f_h = 100KHz$<br>$I_{B(on)} = 0.8A$ $I_{B(off)} = -4.5A$ |      | 1.4<br>100 |          | $\mu s$<br>ns |

*Note: 1 Pulsed duration = 300  $\mu s$ , duty cycle  $\leq 1.5\%$ .*

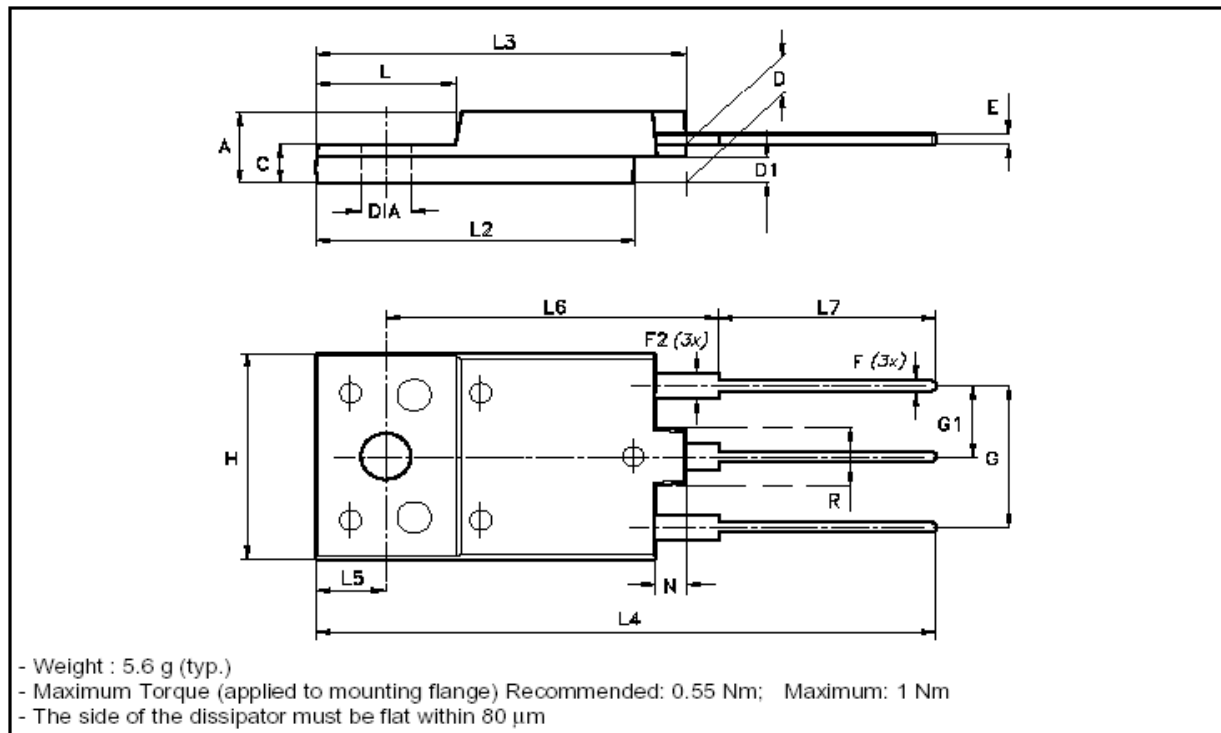
### 3 Package Mechanical Data

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)

Table 4. ISOWATT218FX Mechanical Data

| DIM. | mm    |      |       | inch  |       |       |
|------|-------|------|-------|-------|-------|-------|
|      | MIN.  | TYP. | MAX.  | MIN.  | TYP.  | MAX.  |
| A    | 5.30  |      | 5.70  | 0.209 |       | 0.224 |
| C    | 2.80  |      | 3.20  | 0.110 |       | 0.126 |
| D    | 3.10  |      | 3.50  | 0.122 |       | 0.138 |
| D1   | 1.80  |      | 2.20  | 0.071 |       | 0.087 |
| E    | 0.80  |      | 1.10  | 0.031 |       | 0.043 |
| F    | 0.65  |      | 0.95  | 0.026 |       | 0.037 |
| F2   | 1.80  |      | 2.20  | 0.071 |       | 0.087 |
| G    | 10.30 |      | 11.50 | 0.406 |       | 0.453 |
| G1   |       | 5.45 |       |       | 0.215 |       |
| H    | 15.30 |      | 15.70 | 0.602 |       | 0.618 |
| L    | 9.0   |      | 10.20 | 0.354 |       | 0.402 |
| L2   | 22.80 |      | 23.20 | 0.898 |       | 0.913 |
| L3   | 26.30 |      | 26.70 | 1.035 |       | 1.051 |
| L4   | 43.20 |      | 44.40 | 1.701 |       | 1.748 |
| L5   | 4.30  |      | 4.70  | 0.169 |       | 0.185 |
| L6   | 24.30 |      | 24.70 | 0.957 |       | 0.972 |
| L7   | 14.60 |      | 15.00 | 0.575 |       | 0.591 |
| N    | 1.80  |      | 2.20  | 0.071 |       | 0.087 |
| R    | 3.80  |      | 4.20  | 0.150 |       | 0.165 |
| DIA  | 3.40  |      | 3.80  | 0.134 |       | 0.150 |

Figure 1. ISOWATT218FX Drawing



## 4 Revision History

| Date         | Revision | Changes                         |
|--------------|----------|---------------------------------|
| 05-July-2005 | 1        | Initial release.                |
| 25-July-2005 | 2        | New Template, no content change |
| 19-Aug-2005  | 3        | New ECOPACK® label              |

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners

© 2005 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -  
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)

