



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

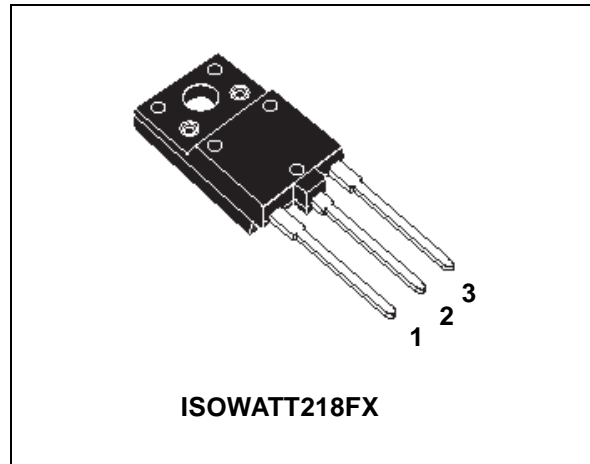
Applications

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

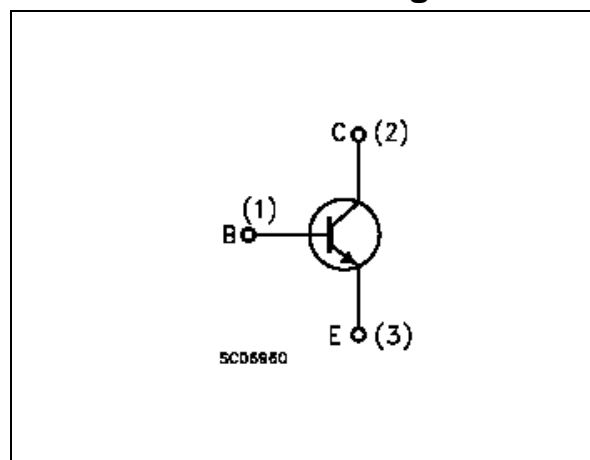
Description

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

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

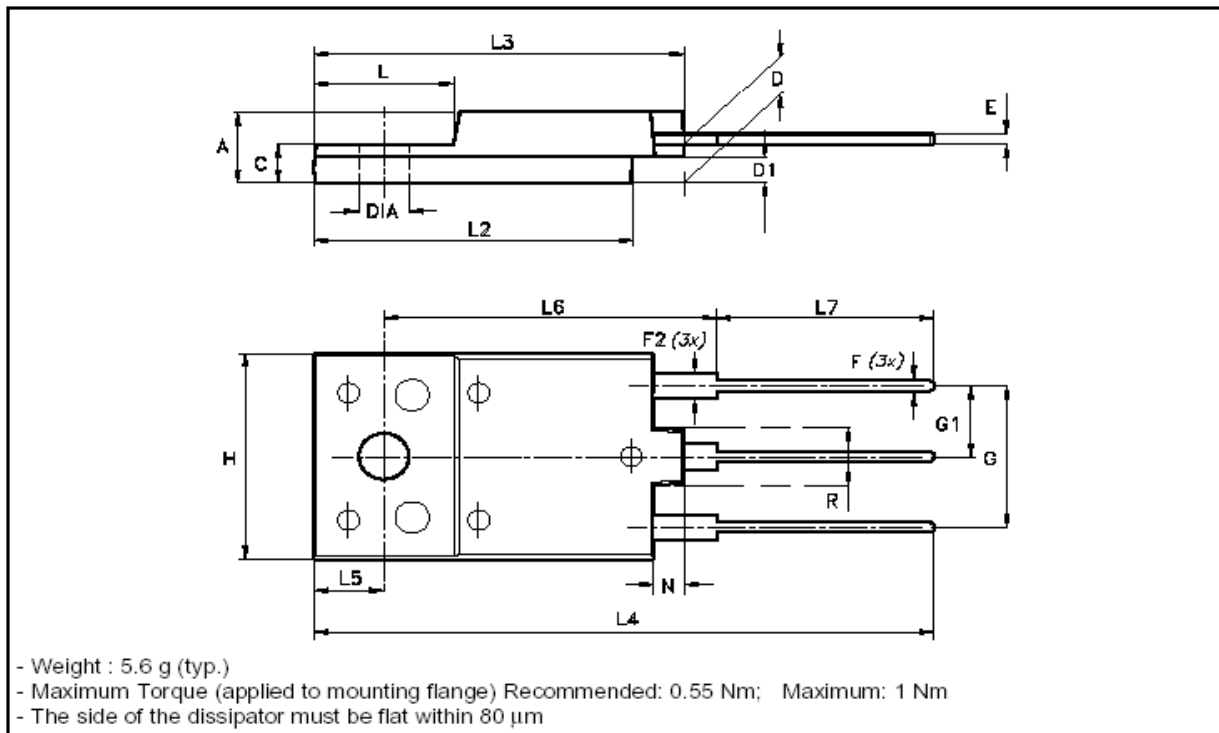
3 Package Mechanical Data

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

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 |

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