



# DTV1500SD

## (CRT TV HORIZONTAL DEFLECTION) HIGH VOLTAGE DAMPER DIODE

**Table 1: Main Product Characteristics**

|                   |        |
|-------------------|--------|
| $I_{F(AV)}$       | 6 A    |
| $I_{Fpeak (max)}$ | 12 A   |
| $V_{RRM}$         | 1500 V |
| $T_j$             | 175°C  |
| $V_F (typ)$       | 1.1 V  |
| $t_{rr} (typ)$    | 150 ns |
| $V_{FP} (typ)$    | 26 V   |

### FEATURES AND BENEFITS

- High breakdown voltage capability
- Specified turn on switching characteristics
- Very fast recovery diode
- Low static and peak forward voltage drop for low dissipation
- Insulated package (TO-220FPAC):  
Insulating voltage = 2000V DC  
Capacitance = 12 pF
- Planar technology allowing high quality and best electrical characteristics

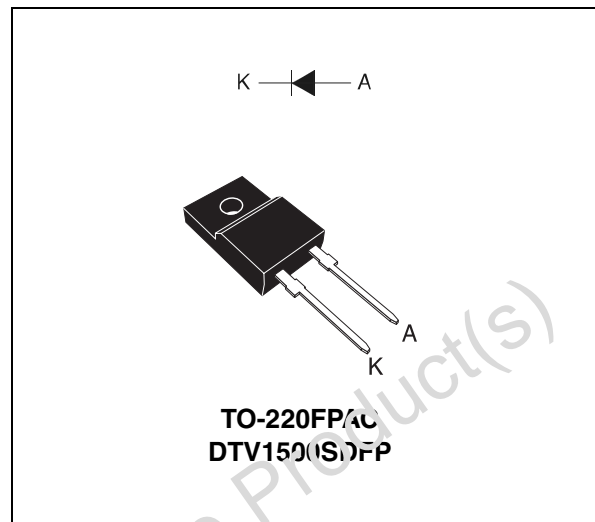
### DESCRIPTION

High voltage diode especially designed for horizontal deflection stage in standard and high resolution displays for TVs.

This device is packaged in TO-220FPAC (insulated package).

**Table 3: Absolute Maximum Ratings**

| Symbol       | Parameter                              | Value                         | Unit |
|--------------|--|-------------------------------|------|
| $V_{RRM}$    | Repetitive peak reverse voltage        | 1500                          | V    |
| $I_{F(RMS)}$ | RMS forward voltage                    | 15                            | A    |
| $I_{Fpeak}$  | Peak working forward current           | $F = 56kHz$<br>12             | A    |
| $I_{FSM}$    | Surge non repetitive forward current   | $t_p = 10ms$ sinusoidal<br>50 | A    |
| $T_{stg}$    | Storage temperature range              | -65 to 175                    | °C   |
| $T_j$        | Maximum operating junction temperature | 175                           | °C   |



**Table 2: Order Code**

| Part Number | Marking     |
|-------------|-------------|
| DTV1500SDFP | DTV1500SDFP |

**Table 4: Thermal Resistance**

| Symbol        | Parameter                           | Value (max). | Unit |
|---------------|-------------------------------------|--------------|------|
| $R_{th(j-c)}$ | Junction to case thermal resistance | 5.8          | °C/W |

**Table 5: Static Electrical Characteristics**

| Symbol     | Parameter               | Test conditions           |                   | Typ | Max. | Unit          |
|------------|-------------------------|---------------------------|-------------------|-----|------|---------------|
| $I_R^*$    | Reverse leakage current | $T_j = 25^\circ\text{C}$  | $V_R = V_{RRM}$   |     | 100  | $\mu\text{A}$ |
|            |                         | $T_j = 125^\circ\text{C}$ |                   | 100 | 1000 |               |
| $V_F^{**}$ | Forward voltage drop    | $T_j = 25^\circ\text{C}$  | $I_F = 6\text{A}$ | 1.2 | 1.75 | V             |
|            |                         | $T_j = 125^\circ\text{C}$ |                   | 1.1 | 1.5  |               |

Pulse test: \*  $t_p = 5\text{ ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation:  $P = 1.23 \times I_{F(AV)} + 0.045 I_F^2(\text{RMS})$

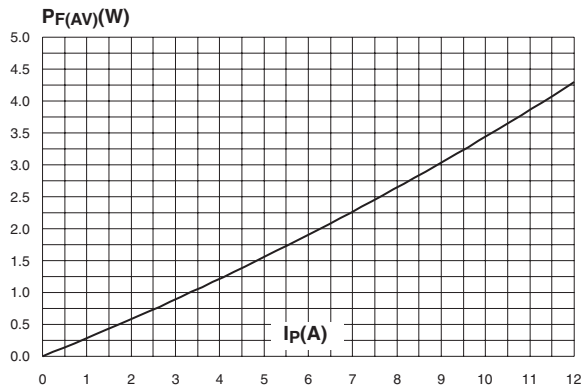
**Table 6: Recovery Characteristics**

| Symbol   | Parameter             | Test conditions          |   | Typ  | Max. | Unit |
|----------|-----------------------|--------------------------|---|------|------|------|
| $t_{rr}$ | Reverse recovery time | $T_j = 25^\circ\text{C}$ | $I_F = 1\text{A}$ $di_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{V}$ | 150  | 250  | ns   |
|          |                       |                          | $I_F = 100\text{mA}$ $I_{rr} = 10\text{mA}$ $I_R = 100\text{mA}$          | 1000 |      |      |

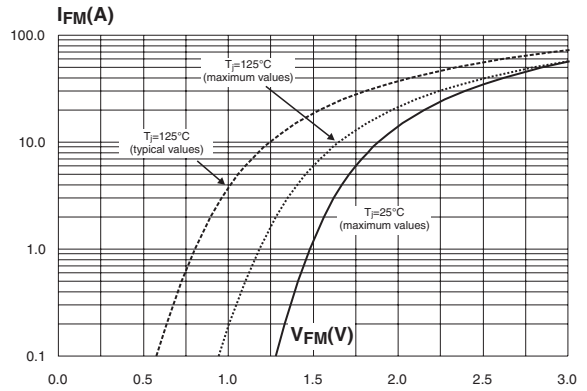
**Table 7: Turn-On Switching Characteristics**

| Symbol   | Parameter             | Test conditions           |   | Typ | Max. | Unit |
|----------|-----------------------|---------------------------|---|-----|------|------|
| $t_{fr}$ | Forward recovery time | $T_j = 100^\circ\text{C}$ | $I_F = 6\text{A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$<br>$V_{FR} = 3\text{V}$ |     | 500  | ns   |
| $V_{FP}$ | Peak forward voltage  | $T_j = 100^\circ\text{C}$ | $I_F = 6\text{A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$                         | 26  | 36   | V    |

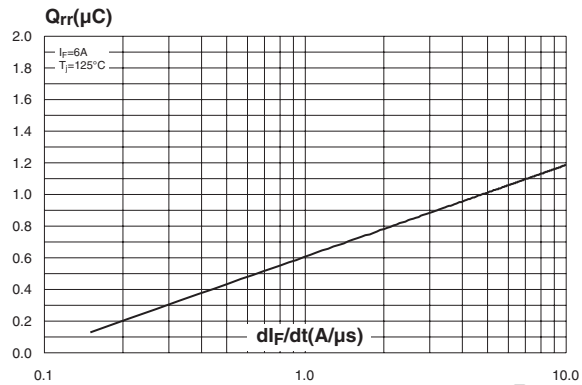
**Figure 1: Conduction losses versus average current ( $\delta=0.45$ )**



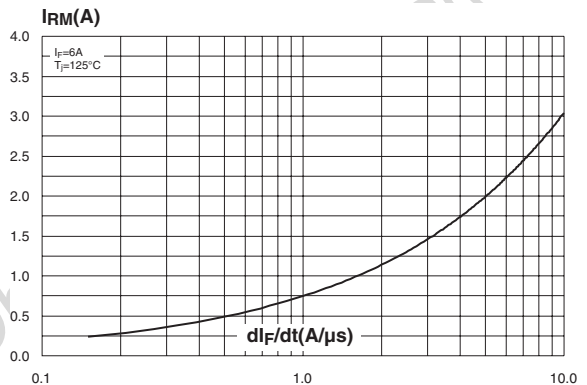
**Figure 2: Forward voltage drop versus forward current**



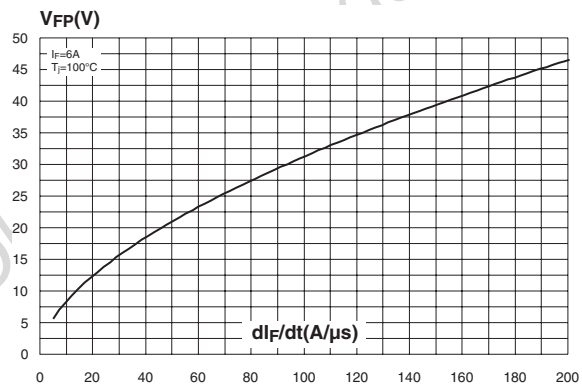
**Figure 3: Reverse recovery charges versus  $dI_F/dt$  (typical values)**



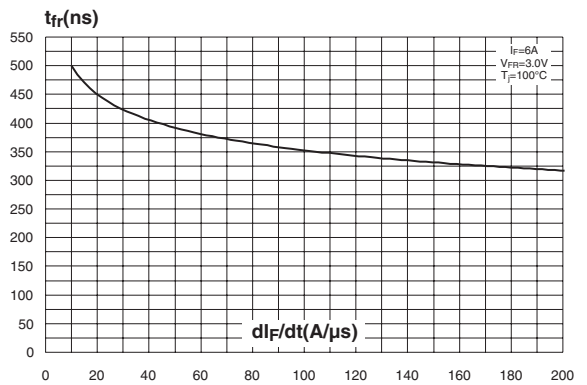
**Figure 4: Peak reverse recovery current versus  $dI_F/dt$  (typical values)**



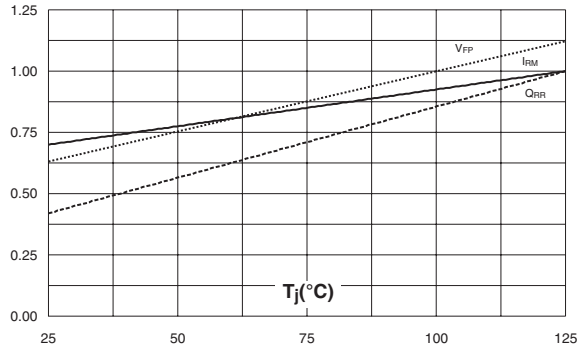
**Figure 5: Transient peak forward voltage versus  $dI_F/dt$  (typical values)**



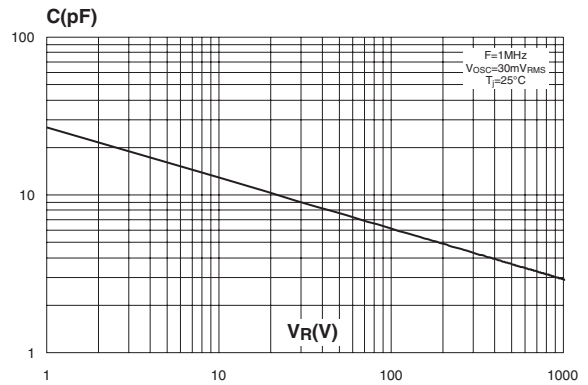
**Figure 6: Forward recovery time versus  $dI_F/dt$  (typical values)**



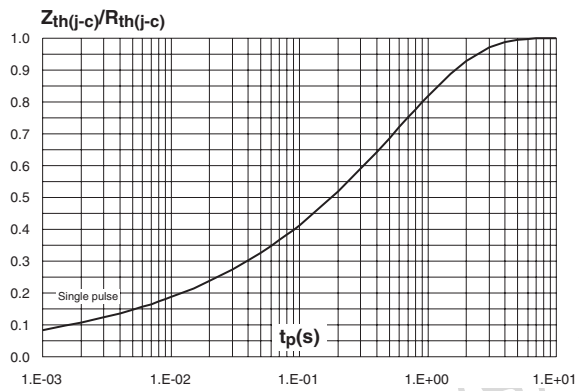
**Figure 7: Relative variations of dynamic parameters versus junction temperature**



**Figure 8: Junction capacitance versus reverse voltage applied (typical values)**



**Figure 9: Relative variation of thermal impedance junction case versus pulse duration**



Obsolete Product(s)

Figure 10: TO-220FPAC Package Mechanical Data

| REF. | DIMENSIONS  |      |           |       |
|------|-------------|------|-----------|-------|
|      | Millimeters |      | Inches    |       |
|      | Min.        | Max. | Min.      | 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        | 0.70 | 0.017     | 0.027 |
| F    | 0.75        | 1    | 0.030     | 0.039 |
| F1   | 1.15        | 1.70 | 0.045     | 0.067 |
| F2   | 1.15        | 1.70 | 0.045     | 0.067 |
| G    | 4.95        | 5.20 | 0.195     | 0.204 |
| G1   | 2.40        | 2.70 | 0.094     | 0.106 |
| H    | 10          | 10.4 | 0.393     | 0.409 |
| L2   | 16 Typ.     |      | 0.63 Typ. |       |
| L3   | 28.6        | 30.6 | 1.126     | 1.204 |
| L4   | 9.8         | 10.6 | 0.385     | 0.417 |
| L6   | 15.9        | 16.4 | 0.626     | 0.645 |
| L7   | 9.00        | 9.30 | 0.354     | 0.366 |
| Di.  | 3           | 3.20 | 0.118     | 0.126 |

Table 8: Ordering Information

| Part Number | Marking     | Package    | Weight | Base qty | Delivery mode |
|-------------|-------------|------------|--------|----------|---------------|
| DTV1500SDFP | DTV1500SDFP | TO-220FPAC | 1.8 g  | 50       | Tube          |

Table 9: Revision History

| Date        | Revision | Description of Changes   |
|-------------|----------|--|
| 05-Jul-2004 | 1        | First issue.   |
| 25-Nov-2004 | 2        | Table 3 page 1: $T_{stg}$ and $T_j$ from upgraded from 150°C to 175°C. |
| 16-Mar-2005 | 3        | $I_{Fpeak}$ parameter included.  |

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)