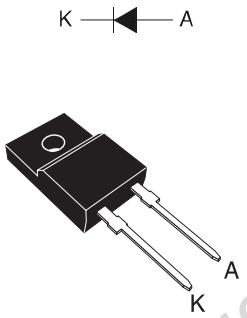
# DTV1500SD

## (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 |




**TO-220FPAC**
**DTV1500SDFP**

### 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

**Table 2: Order Code**

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

### 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 | 12 | A |
| $I_{FSM}$ | Surge non repetitive forward current | $t_p$ = 10ms sinusoidal | 50 | A |
| $T_{stg}$ | Storage temperature range | | -65 to 175 | °C |
| $T_j$ | Maximum operating junction temperature | | 175 | °C |

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**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°C | $V_R = V_{RRM}$ | | 100 | µA |
| | | $T_j$ = 125°C | | 100 | 1000 | |
| $V_F$ ** | Forward voltage drop | $T_j$ = 25°C | $I_F$ = 6A | 1.2 | 1.75 | V |
| | | $T_j$ = 125°C | | 1.1 | 1.5 | |

Pulse test: * tp = 5 ms, $\delta$ < 2%
** tp = 380 µs, $\delta$ < 2%

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

**Table 6: Recovery Characteristics**

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

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

| Symbol | Parameter | Test conditions | | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| $t_{fr}$ | Forward recovery time | $T_j$ = 100°C | $I_F$ = 6A $dI_F/dt$ = 80 A/µs $V_{FR}$ = 3V | | 500 | ns |
| $V_{FP}$ | Peak forward voltage | $T_j$ = 100°C | $I_F$ = 6A $dI_F/dt$ = 80 A/µs | 26 | 36 | V |

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**Figure 1: Conduction losses versus average current (δ=0.45)**

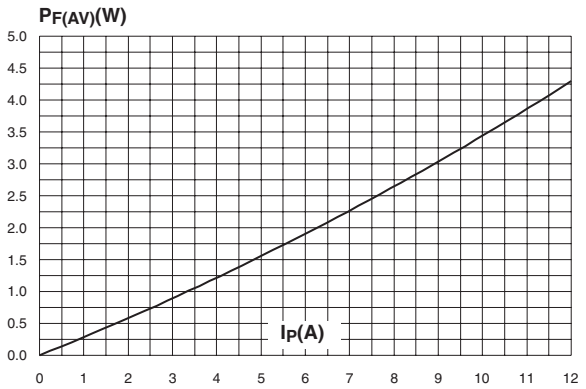


**Figure 2: Forward voltage drop versus forward current**

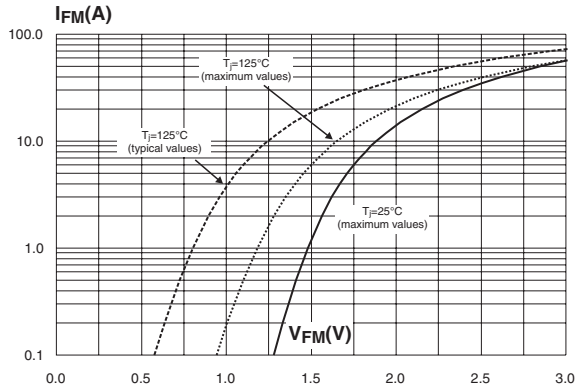


**Figure 3: Reverse recovery charges versus $dI_F/dt$ (typical values)**

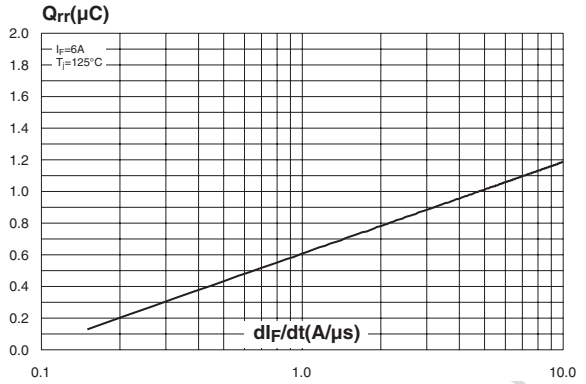


**Figure 4: Peak reverse recovery current versus $dI_F/dt$ (typical values)**

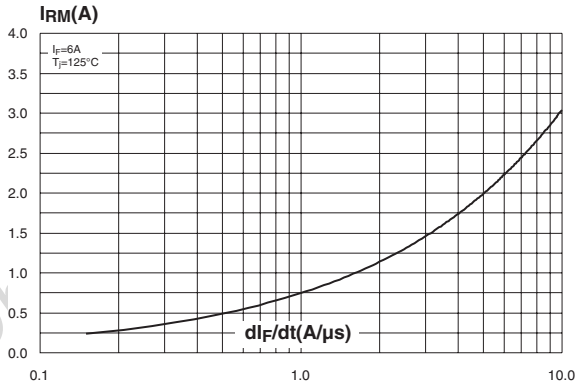


**Figure 5: Transient peak forward voltage versus $dI_F/dt$ (typical values)**

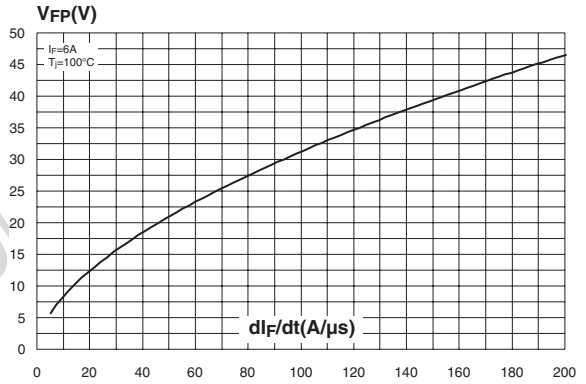


**Figure 6: Forward recovery time versus $dI_F/dt$ (typical values)**

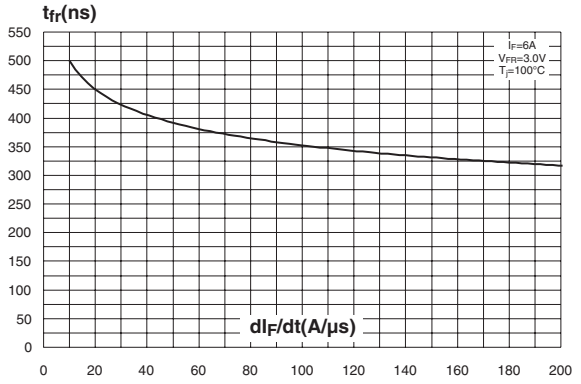

**Figure 7: Relative variations of dynamic parameters versus junction temperature**

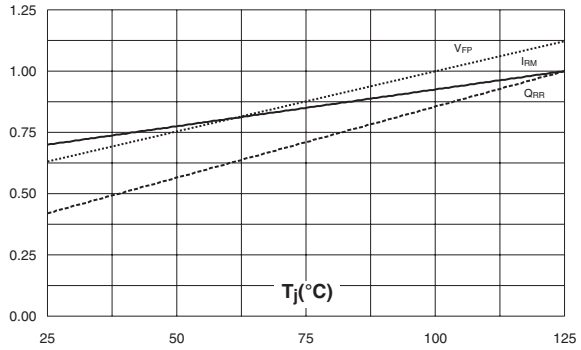


**Figure 8: Junction capacitance versus reverse voltage applied (typical values)**

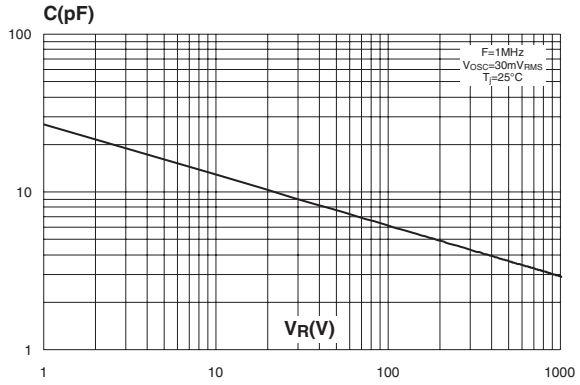


**Figure 9: Relative variation of thermal impedance junction case versus pulse duration**

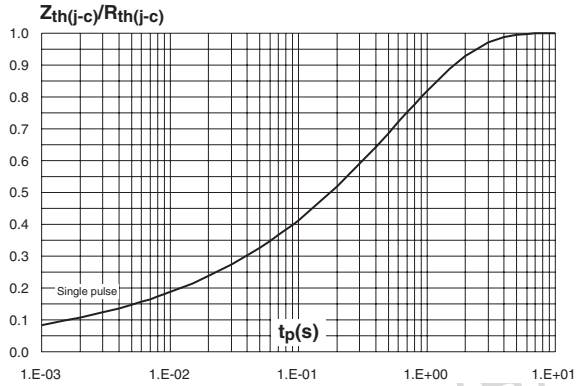


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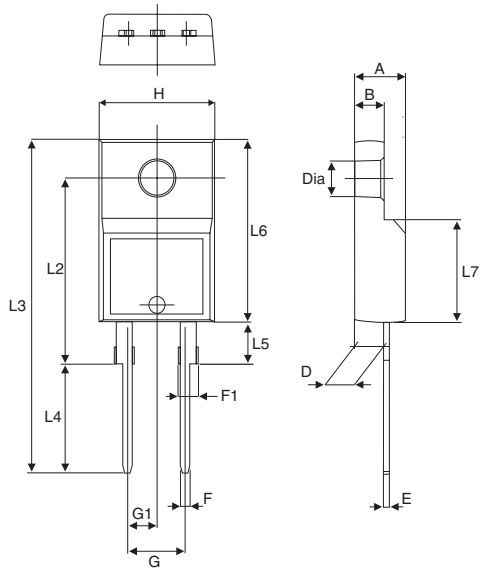
**Figure 10: TO-220FPAC Package Mechanical Data**




| 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 |
| Dia. | 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. |

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