



DTV1500HD

(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
$V_F (typ)$	1.0 V
$t_{rr} (typ)$	150 ns
$V_{FP} (typ)$	21 V

FEATURES AND BENEFITS

- High breakdown voltage capability
- High frequency operation
- 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 TV's.

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 current	15	A
I_{Fpeak}	Peak working forward current	F = 56kHz 12	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10ms$ sinusoidal 75	A
T_{stg}	Storage temperature range	-65 to 175	°C
T_j	Maximum operating junction temperature	175	°C

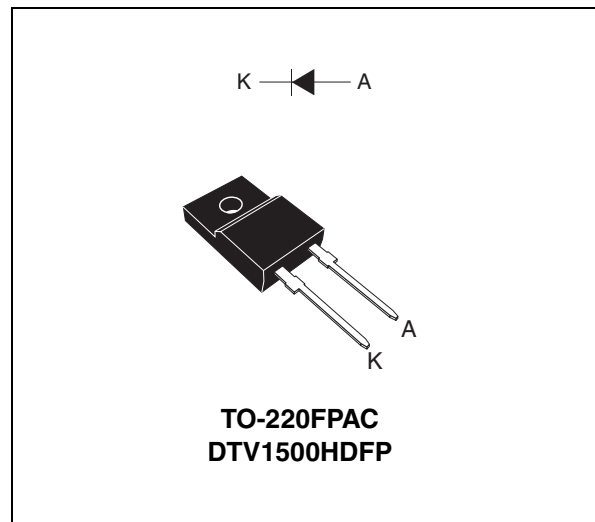


Table 2: Order Codes

Part Number	Marking
DTV1500HDFP	DTV1500HDFP

DTV1500HD

Table 4: Thermal Resistance

Symbol	Parameter	Value (max).	Unit
$R_{th(j-c)}$	Junction to case thermal resistance	5.4	°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	μA
		$T_j = 125^\circ\text{C}$		100	1000	
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 6\text{A}$	1.1	1.6	V
		$T_j = 125^\circ\text{C}$		1.0	1.35	

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: $P = 1.15 \times I_{F(AV)} + 0.033 I_F^2(\text{RMS})$

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	$T_j = 100^\circ\text{C}$	$I_F = 6\text{A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $V_{FR} = 3\text{V}$		470	ns
V_{FP}	Peak forward voltage		$I_F = 6\text{A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$	21	29	V

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

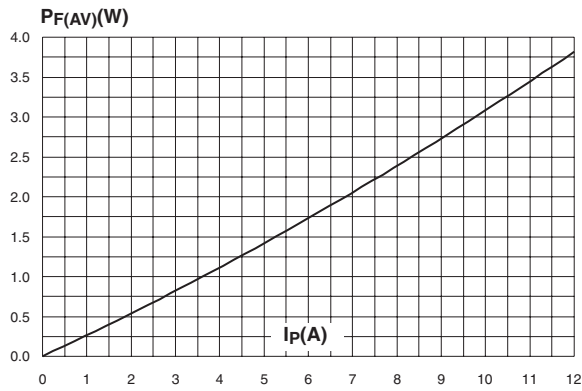


Figure 2: Forward voltage drop versus forward current

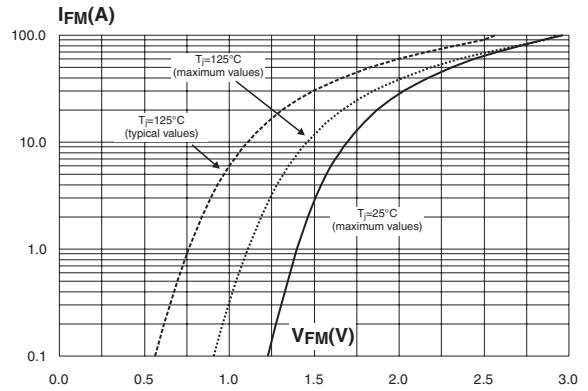


Figure 3: Reverse recovery charges versus dI_F/dt (typical values)

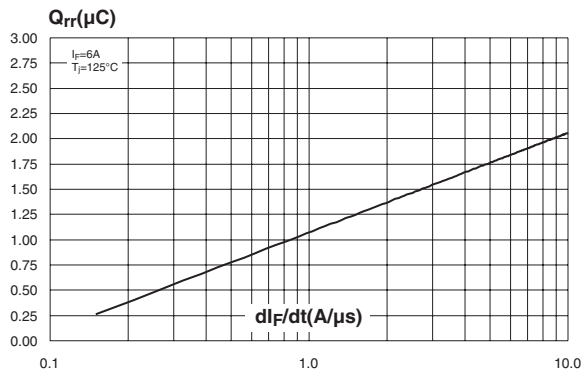


Figure 4: Peak reverse recovery current versus dI_F/dt (typical values)

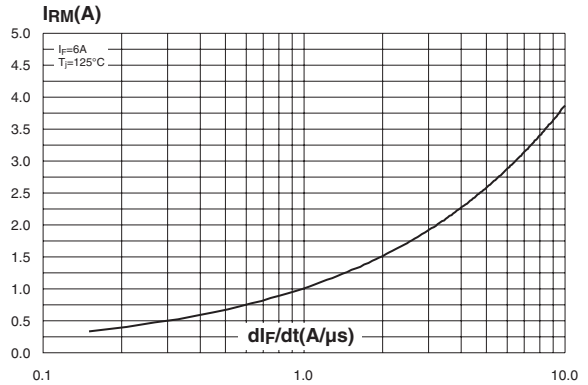


Figure 5: Transient peak forward voltage versus dI_F/dt (typical values)

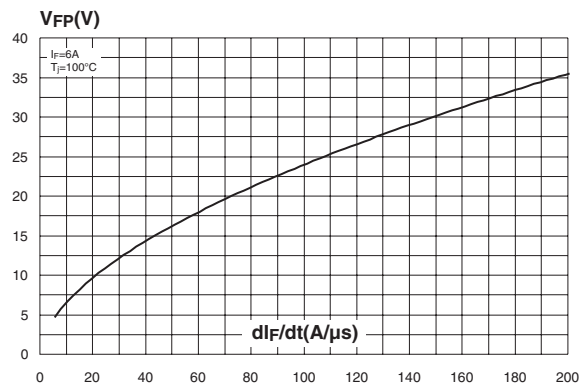


Figure 6: Forward recovery time versus dI_F/dt (typical values)

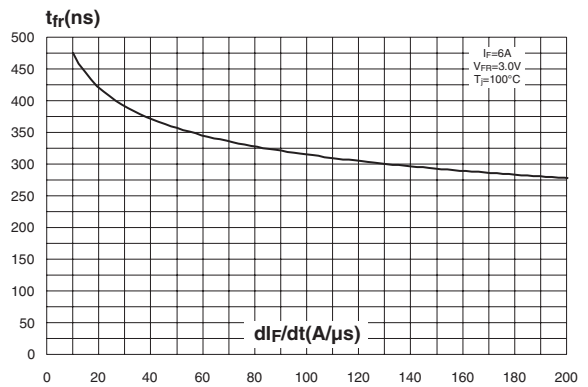


Figure 7: Relative variations of dynamic parameters versus junction temperature

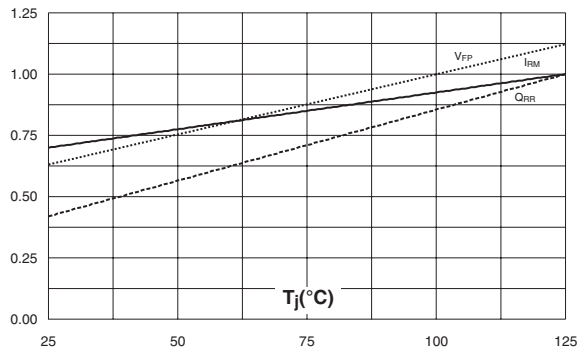


Figure 8: Junction capacitance versus reverse voltage applied (typical values)

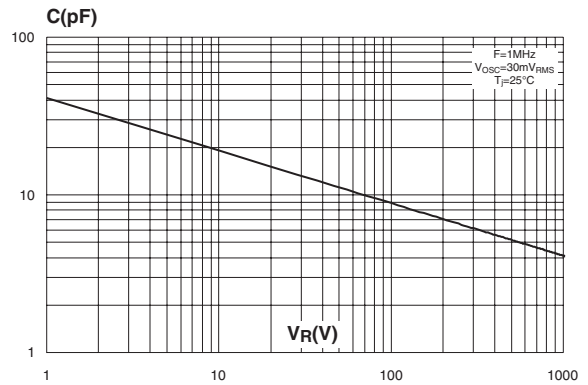


Figure 9: Relative variation of thermal impedance junction case versus pulse duration

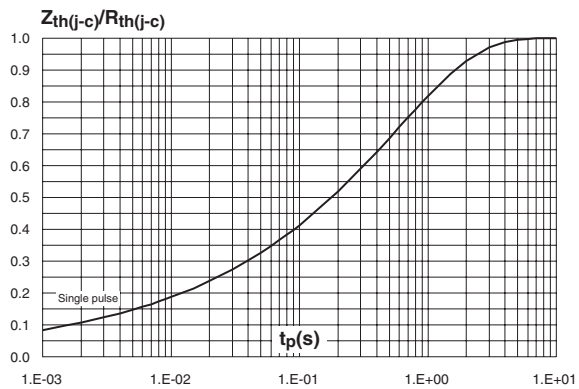


Figure 10: TO-220FPAC Package Mechanical Data

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
DTV1500HDFP	DTV1500HDFP	TO-220FPAC	1.8 g	50	Tube

Table 9: Revision History

Date	Revision	Description of Changes
05-Jul-2004	1	First issue.
19-Nov-2004	2	Figure 3 on page 3: $Q_{rr}(nC)$ changed to $Q_{rr}(\mu s)$.
25-Nov-2004	3	Minor layout update.
16-Mar-2005	4	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