



# THE DATASHEET OF DTV1500HDFP





# 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

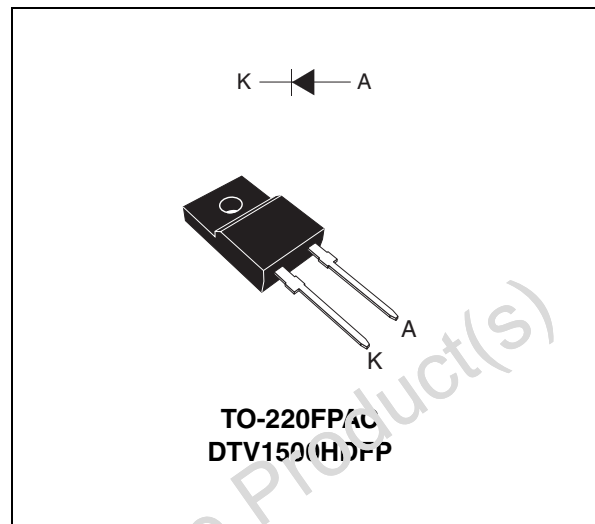
### DESCRIPTION

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	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$		100	1000	
$V_F^{**}$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 6\text{A}$	1.1	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:  $P = 1.15 \times I_{F(AV)} + 0.033 I_F^2 (RMS)$

**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 ( $\delta=0.45$ )

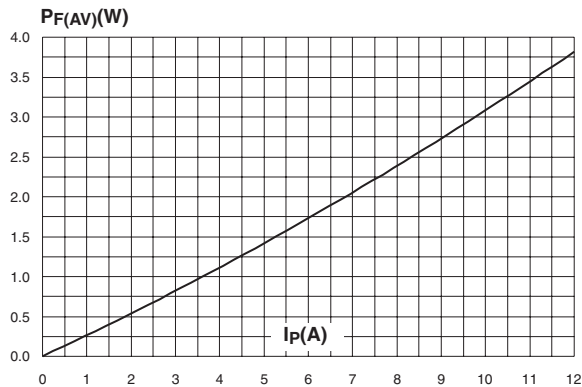


Figure 2: Forward voltage drop versus forward current

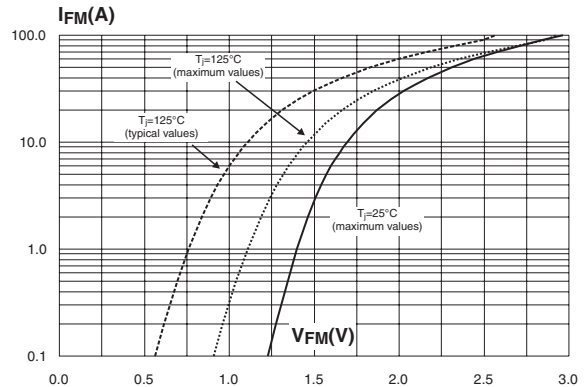


Figure 3: Reverse recovery charges versus  $di_F/dt$  (typical values)

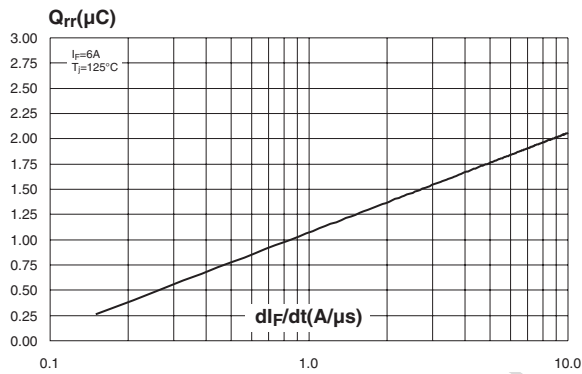


Figure 4: Peak reverse recovery current versus  $di_F/dt$  (typical values)

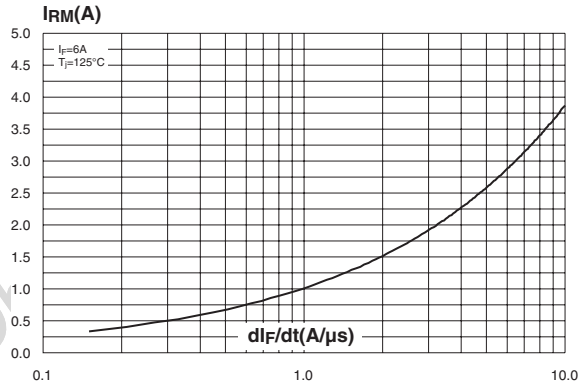


Figure 5: Transient peak forward voltage versus  $di_F/dt$  (typical values)

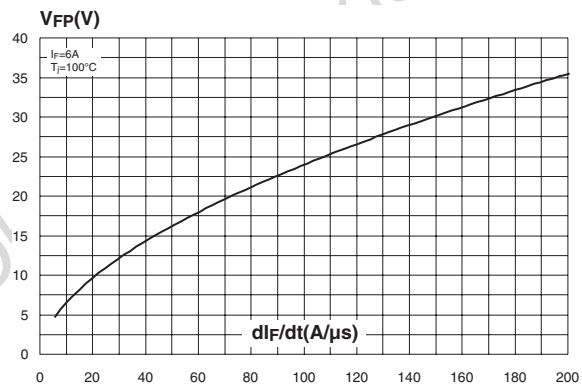
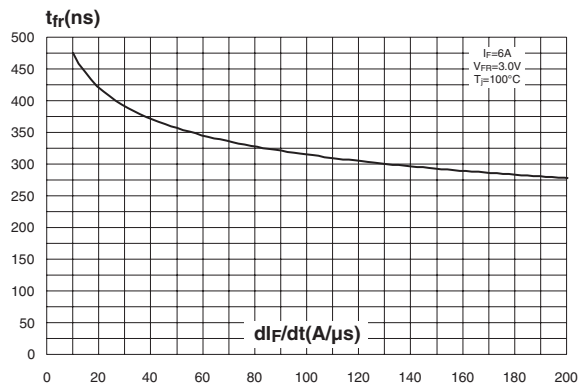
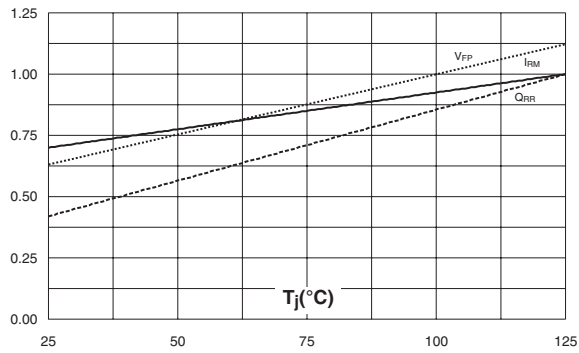


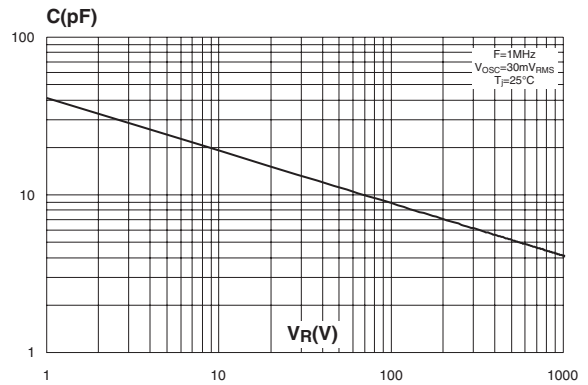
Figure 6: Forward recovery time versus  $di_F/dt$  (typical values)



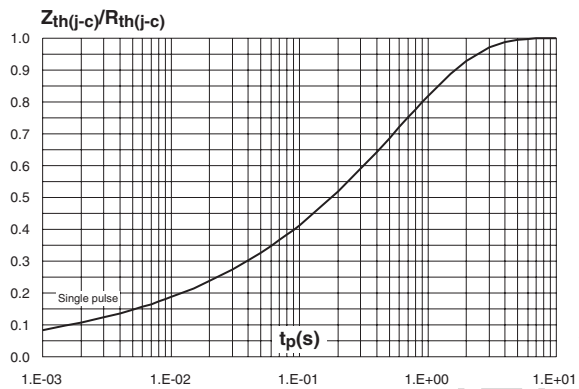
**Figure 7: Relative variations of dynamic parameters versus junction temperature**



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



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



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
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.

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