



DMV1500HD

DAMPER + MODULATION DIODE FOR CRT TV

Table 1: Main Product Characteristics

	DAMPER	MODUL.
$I_{F(AV)}$	6 A	3 A
$I_{Fpeak (max)}$	12 A	12 A
V_{RRM}	1500 V	600 V
$t_{rr} (typ)$	150 ns	60 ns
$V_F (typ)$	1.0 V	1.0 V
$V_{FP} (typ)$	21 V	5 V

FEATURES AND BENEFITS

- Full kit in one package
- High breakdown voltage capability
- Very fast recovery diode
- Specified turn on switching characteristics
- Low static and peak forward voltage drop for low dissipation
- Insulated version:
Insulated voltage = 2000 V_{RMS}
Capacitance = 7 pF
- Planar technology allowing high quality and best electrical characteristics
- Outstanding performance of well proven DTV as damper and new faster Turbo 2 600V technology as modulation

DESCRIPTION

High voltage semiconductor especially designed for horizontal deflection stage in standard and high resolution video display with E/W correction.

The insulated TO-220FPAB package includes both the DAMPER diode and the MODULATION diode, thanks to a dedicated design.

Assembled on automated line, it offers very low dispersion values on insulating and thermal performances.

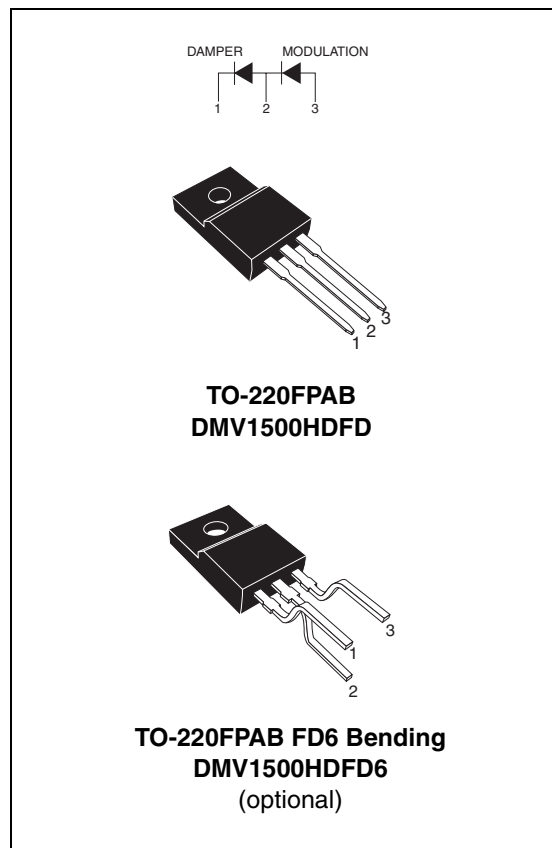


Table 2: Order Codes

Part Number	Marking
DMV1500HDFD	DMV1500HD
DMV1500HDFD6	DMV1500HD

DMV1500HD

Table 3: Absolute Maximum Ratings

Symbol	Parameter		Value		Unit
			Damper	Modul.	
V_{RRM}	Repetitive peak reverse voltage		1500	600	V
I_{Fpeak}	Peak working forward current	$F = 56kHz$	12	12	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10ms$ sinusoidal	75	50	A
T_{stg}	Storage temperature range		-40 to +150		°C
T_j	Maximum operating junction temperature		150		°C

Table 4: Thermal Resistance

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case thermal resistance	3.8	°C/W

Table 5: Static Electrical Characteristics

Symbol	Parameter	Test conditions		Value				Unit
				$T_j = 25^\circ C$		$T_j = 125^\circ C$		
				Typ.	Max.	Typ.	Max.	
I_R^*	Reverse leakage current	Damper	$V_R = 1500 V$		100	100	1000	μA
		Modul.	$V_R = 600 V$		3	3	30	
V_F^{**}	Forward voltage drop	Damper	$I_F = 6 A$	1.1	1.6	1	1.35	V
		Modul.	$I_F = 6 A$	1.15	1.4	1	1.25	

Pulse test: * $t_p = 5 ms, \delta < 2\%$
 ** $t_p = 380 \mu s, \delta < 2\%$

To evaluate the maximum conduction losses of the **DAMPER** and **MODULATION** diodes use the following equations:

DAMPER: $P = 1.05 \times I_{F(AV)} + 0.05 \times I_F^2 (RMS)$

MODULATION: $P = 0.89 \times I_{F(AV)} + 0.055 \times I_F^2 (RMS)$

Table 6: Recovery Characteristics

Symbol	Parameter	Test conditions		Value				Unit
				Damper		Modul.		
				Typ.	Max.	Typ.	Max.	
t_{rr}	Reverse recovery time	$I_F = 100mA$ $I_R = 100mA$ $I_{rr} = 10mA$	$T_j = 25^\circ C$	1000		250	400	ns
		$I_F = 1A$ $dI_F/dt = -50 A/\mu s$ $V_R = 30V$	$T_j = 25^\circ C$	150	250	60	85	

Table 7: Turn-On Switching Characteristics

Symbol	Parameter	Test conditions			Value		Unit
					Typ.	Max.	
t_{fr}	Forward recovery time	Damper	$I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $V_{FR} = 3\text{ V}$	$T_j = 100^\circ\text{C}$	330	470	ns
		Modul.	$I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$ $V_{FR} = 2\text{ V}$	$T_j = 100^\circ\text{C}$	85	125	
V_{FP}	Peak forward voltage	Damper	$I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$	$T_j = 100^\circ\text{C}$	21	29	V
		Modul.	$I_F = 6\text{ A}$ $di_F/dt = 80\text{ A}/\mu\text{s}$	$T_j = 100^\circ\text{C}$	5	7.5	

Figure 1: Power dissipation versus peak forward current (triangular waveform, $\delta=0.45$)

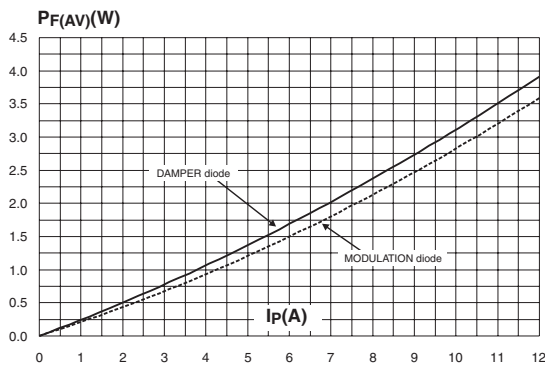


Figure 2: Average forward current versus ambient temperature

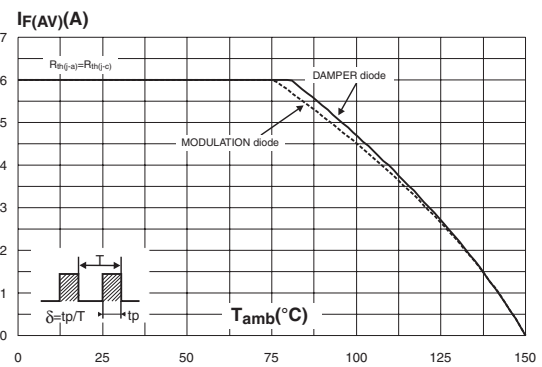


Figure 3: Forward voltage drop versus forward current (damper diode)

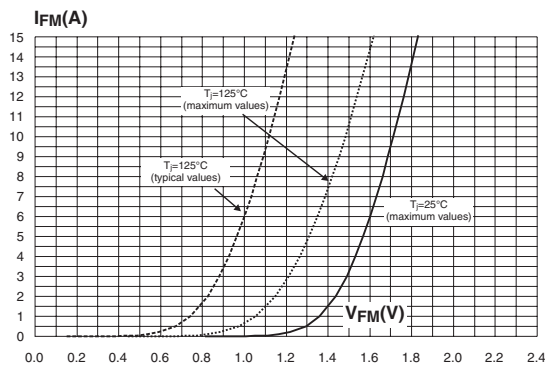


Figure 4: Forward voltage drop versus forward current (modulation diode)

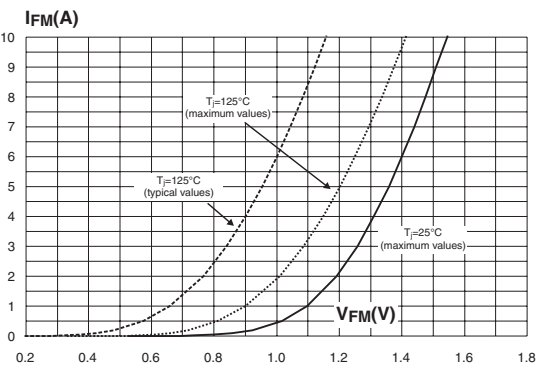


Figure 5: Relative variation of thermal impedance junction to case versus pulse duration

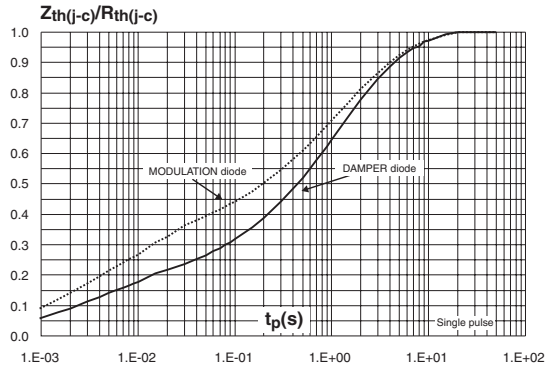


Figure 7: Reverse recovery charges versus di_F/dt (modulation diode, typical values)

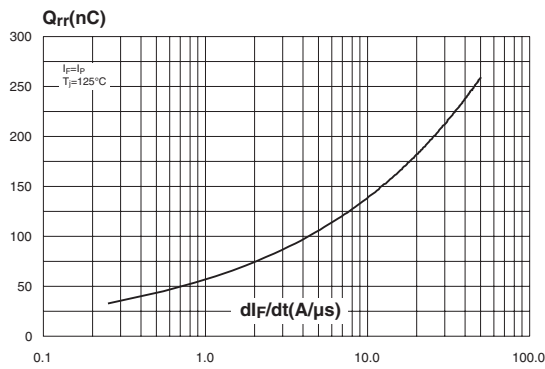


Figure 9: Peak reverse recovery current versus di_F/dt (modulation diode, typical values)

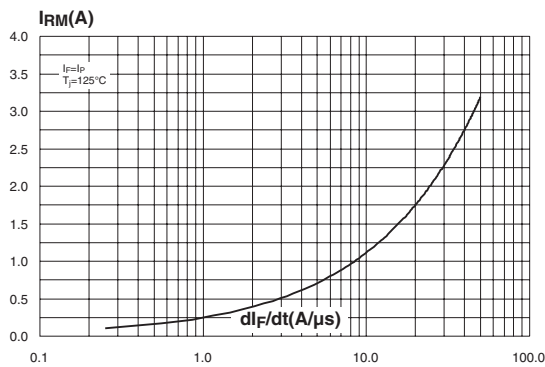


Figure 6: Reverse recovery charges versus di_F/dt (damper diode, typical values)

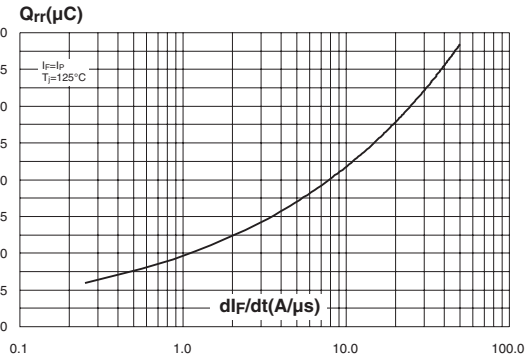


Figure 8: Peak reverse recovery current versus di_F/dt (damper diode, typical values)

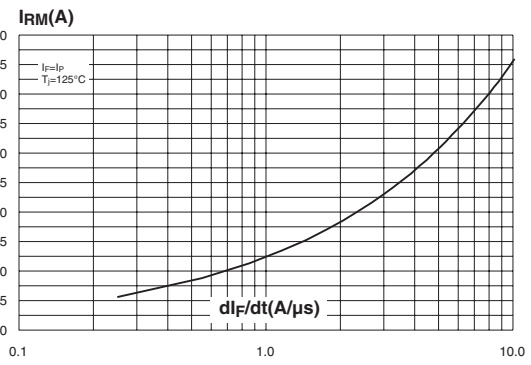


Figure 10: Transient peak forward voltage versus di_F/dt (damper diode, typical values)

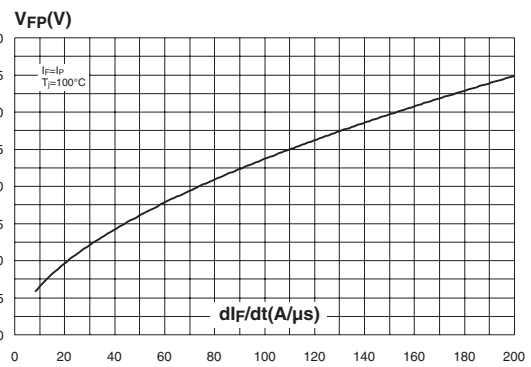


Figure 11: Transient peak forward voltage versus di_F/dt (modulation diode, typical values)

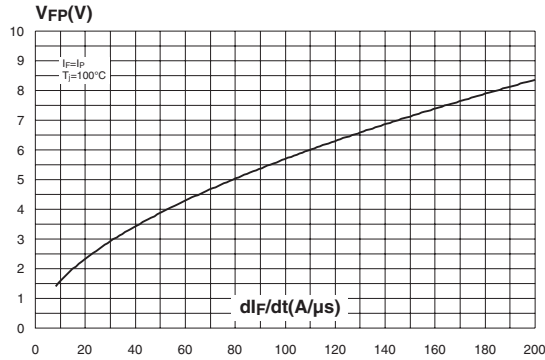


Figure 12: Forward recovery time versus di_F/dt (damper diode, typical values)

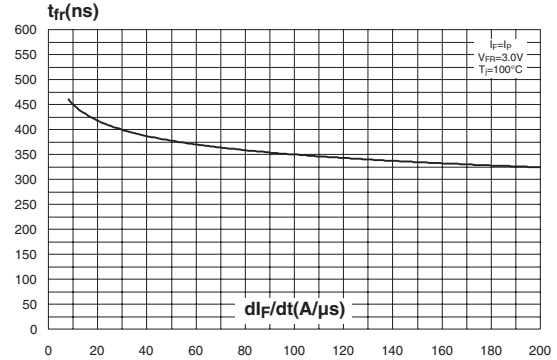


Figure 13: Forward recovery time versus di_F/dt (modulation diode, typical values)

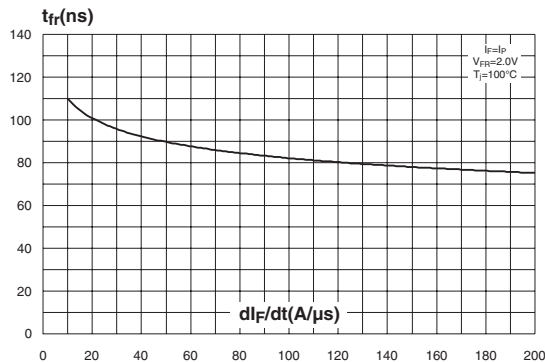


Figure 14: Relative variation of dynamic parameters versus junction temperature

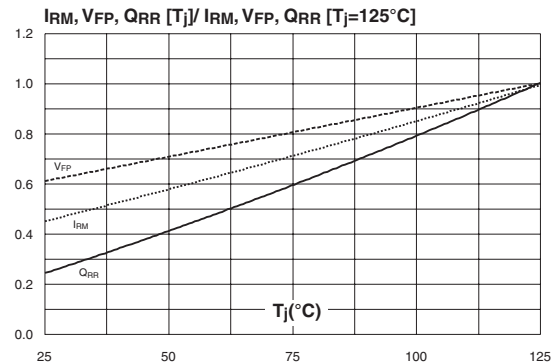


Figure 15: Junction capacitance versus reverse voltage applied (typical values)

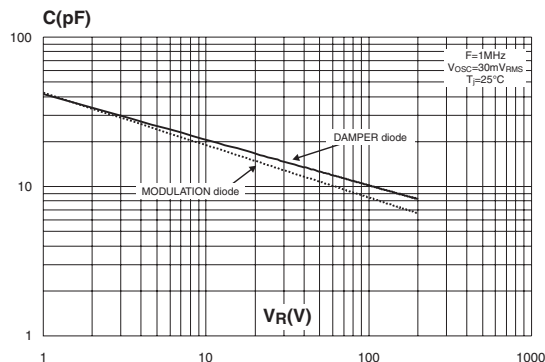


Figure 17: TO-220FPAB FD6 Option Package Mechanical Data

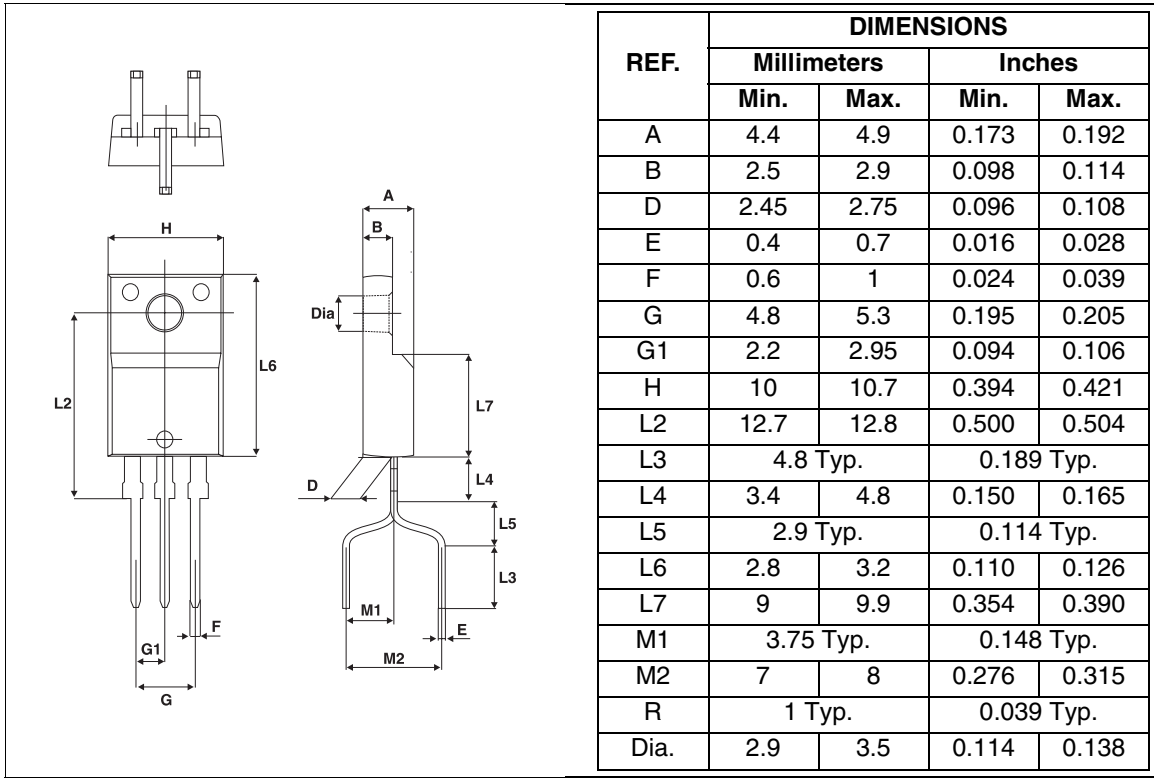


Figure 18: TO-220FPAB FD6 PCB layout (typical, in millimeters)

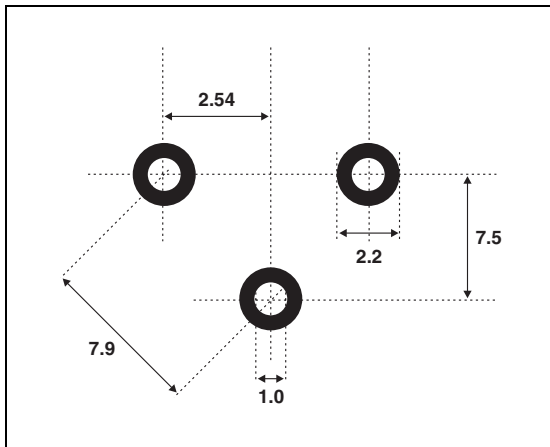


Figure 19: TO-220FPAB Package Mechanical Data

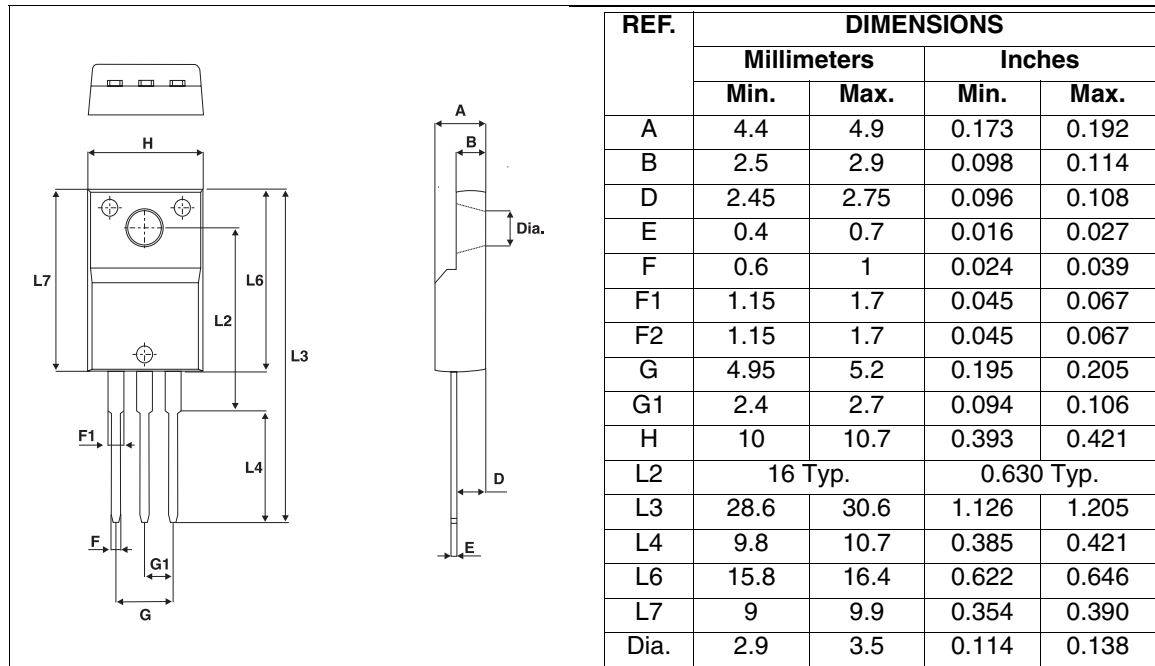


Table 8: Ordering Information

Part Number	Marking	Package	Weight	Base qty	Delivery mode
DMV1500HDFD	DMV1500HD	TO-220FPAB	2.4 g	50	Tube
DMV1500HDFD6	DMV1500HD	TO-220FPAB F6	2.4 g	45	Tube

Table 9: Revision History

Date	Revision	Description of Changes
16-Mar-2005	1	First issue

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