



# MDV04-600

## HIGH VOLTAGE ULTRA-FAST DIODE FOR VIDEO

### MAJOR PRODUCT CHARACTERISTICS

<b>I<sub>Fpeak</sub></b>	<b>4 A</b>
<b>V<sub>R</sub>RM</b>	<b>600 V</b>
<b>t<sub>rr</sub></b>	<b>55 ns</b>
<b>V<sub>F</sub> (max)</b>	<b>1.2 V</b>

### FEATURES AND BENEFITS

- TURBOSWITCH™ OUTSTANDING BENEFITS.
- HIGH REVERSE VOLTAGE : 600 V
- LOW POWER LOSSES INDUCING LOW TEMPERATURE AND HIGH RELIABILITY.
- OPTIMIZED TRADE-OFF BETWEEN t<sub>rr</sub> AND SOFTNESS FOR VIDEO HORIZONTAL DEFLECTION.



### DESCRIPTION

High voltage ultra-fast diode especially designed for modulation and flyback rectification in standard and high resolution displays for TV's and monitors. The device is packaged in a DO-201AD axial envelope.

### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		VALUE	Unit
V <sub>R</sub> RM	Repetitive peak reverse voltage		600	V
I <sub>F</sub> peak	Forward peak current (1)	δ=0.5 Ta=115°C triangular	4	A
I <sub>F</sub> RM	Repetitive peak forward current	t <sub>p</sub> =5μs F=1kHz square	100	A
I <sub>F</sub> SM	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	80	A
T <sub>stg</sub>	Storage temperature range		- 40 to 150	°C
T <sub>j</sub>	Maximum operating junction temperature		150	°C

(1) on infinite heatsink with 10mm lead length

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### THERMAL RESISTANCES

Symbol	Parameter	Max.	Unit
$R_{th(j-l)}$	Junction to lead	20	°C/W
$R_{th(j-a)}$	Junction to ambient on printed circuit L lead = 10mm	75	°C/W

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$V_R = 480V$ $T_j = 25^\circ C$ $T_j = 125^\circ C$		50 0.75	$\mu A$ mA
$V_F$ **	Forward voltage drop	$I_F = 4 A$ $T_j = 25^\circ C$ $T_j = 125^\circ C$		1.28 1.20	V V

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

### DYNAMIC ELECTRICAL CHARACTERISTICS TURN-OFF SWITCHING

Symbol	Parameter	Test Conditions	Typ.	Max.	Unit
$t_{rr}$	Reverse recovery time	$I_F = 0.5A$ $I_R = 1A$ $I_{rr} = 0.25A$	55	75	ns
		$I_F = 100 \text{ mA}$ $I_R = 100 \text{ mA}$ $I_{rr} = 10 \text{ mA}$	130		ns

### DYNAMIC ELECTRICAL CHARACTERISTICS TURN-ON SWITCHING

Symbol	Parameter	Test Conditions	Typ.	Max.	Unit
$t_{fr}$	Forward recovery time	$I_F = 4 A$ $di_F/dt = 100 A/\mu s$ Measured at $1.1 \times V_F \text{ max.}$ $T_j = 25^\circ C$		0.5	$\mu s$
$V_{FP}$	Peak forward voltage				15

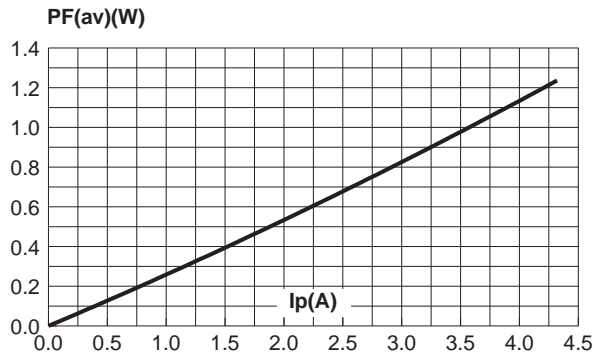
To evaluate the maximum conduction losses use the following equation :

$$P = \frac{1.0 \times I_p}{2} \times \delta + \frac{0.050 \times I_p^2}{3} \times \delta$$

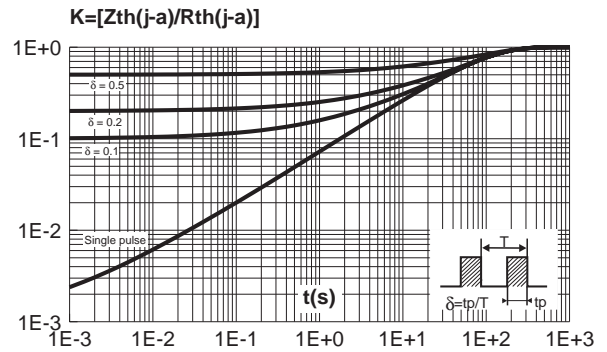
$\delta$  : duty cycle  
 $I_p$  : Peak current

Ex : for  $I_p = 4 A$  and  $\delta = 0.5$ ,  $P = 1.2 \text{ Watts}$ .

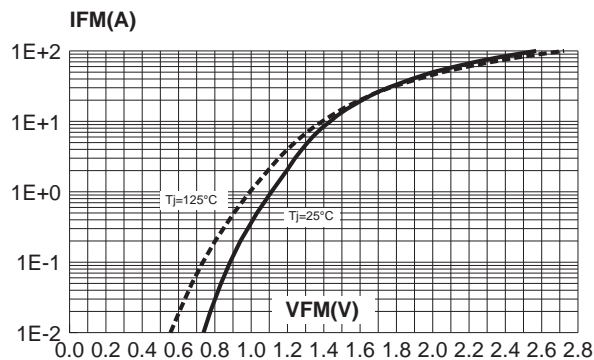
**Fig. 1:** Power dissipation versus peak forward current (triangular waveform,  $\delta=0.5$ ).



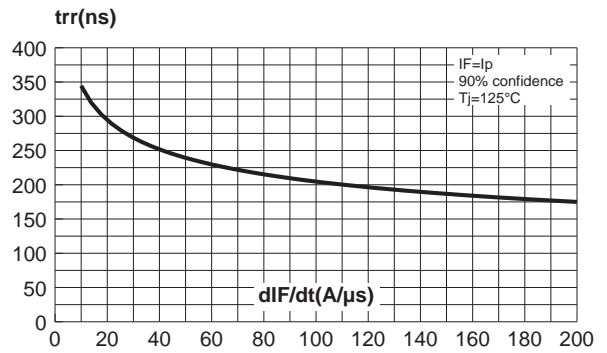
**Fig. 2:** Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board,  $e(\text{Cu})=35\mu\text{m}$ ), recommended pad layout).



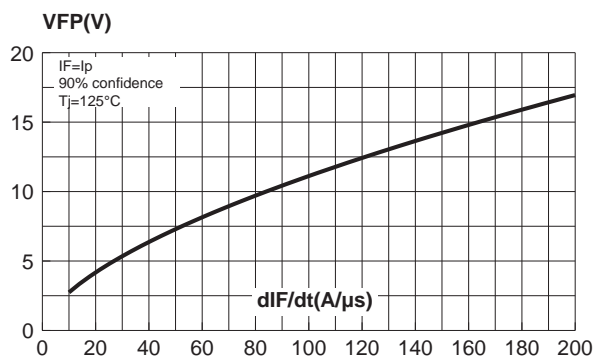
**Fig. 3:** Forward voltage drop versus forward current (maximum values).



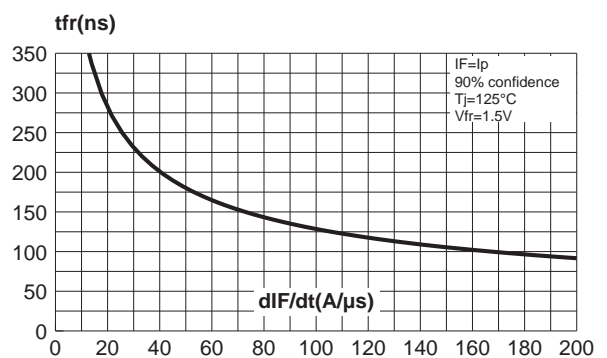
**Fig. 4:** Reverse recovery time versus  $dIF/dt$ .



**Fig. 5:** Transient peak forward voltage versus  $dIF/dt$ .



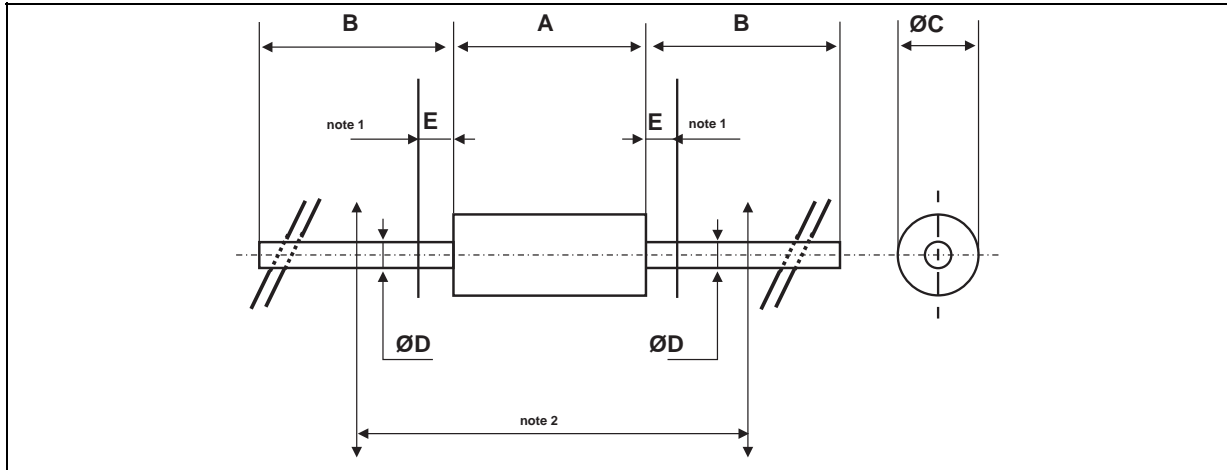
**Fig. 6:** Forward recovery time versus  $dIF/dt$ .



## MDV04-600

### PACKAGE MECHANICAL DATA

DO-201AD



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter $\varnothing D$ is not controlled over zone E 2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59"(15 mm)
B	25.40		1.000		
$\varnothing C$		5.30		0.209	
$\varnothing D$		1.30		0.051	
E		1.25		0.049	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
MDV04-600	MDV04-600	DO-201AD	1.166g.	600	Ampopack
MDV04-600RL	MDV04-600	DO-201AD	1.166g.	1900	Tape & reel

- Epoxy meets UL94,V0
- Polarity : Cathode indicated by polarity band

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