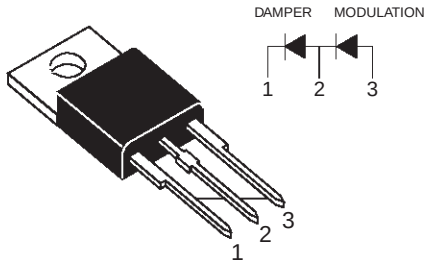
DMV56

DAMPER + MODULATION DIODE FOR VIDEO

MAIN PRODUCT CHARACTERISTICS

	MODUL	DAMPER
$I_{F(AV)}$	6 A	6 A
V_{RRM}	600 V	1500 V
t_{rr}	50 ns	135 ns
V_F (max)	1.5 V	1.5 V



TO-220I
(Bending option F5 available)

FEATURES AND BENEFITS

- FULL KIT IN ONE PACKAGE
- DMV56 IS SUITED FOR A MINIMUM OF 56kHZ DEFLECTION
- OUTSTANDING PERFORMANCE OF DTV56 AS DAMPER AND TURBOSWITCH™ "A" AS MODULATION
- LEAD BENDING OPTION AVAILABLE
- INSULATED PACKAGE (2500 V_{RMS})

DESCRIPTION

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

The TO-220I insulated package includes both the DAMPER diode and the MODULATION diode. Assembled on automated line and UL recognized. Best insulating and dissipating characteristics, thanks to the internal ceramic insulation layer.

ABSOLUTE RATINGS

Symbol	Parameter		VALUE		Unit
			MODUL	DAMPER	
V_{RRM}	Repetitive peak reverse voltage		600	1500	V
$I_{F(AV)}$	Forward average current	Tc = 130°C, δ= 0.5	6	6	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms	60	80	
T_{stg}	Storage temperature range		- 40 to + 150		°C
T_j	Maximum operating junction temperature		150		

TURBOSWITCH is a trademark of STMicroelectronics

ELECTRICAL CHARACTERISTICS OF THE DAMPER DIODES OF THE DMV56

Symbol	Parameter	Test Conditions		Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	Tj = 25°C		100	µA
			Tj = 125°C	0.1	1	mA
V_F **	Forward voltage drop	I_F = 6 A	Tj = 25°C		1.8	V
			Tj = 125°C	1.0	1.5	
t_{rr}	Reverse recovery time	I_F = 1 A dI_F/dt = -50A/µs V_R = 30 V	Tj = 25°C	110	135	ns
		I_F = 100 mA I_R = 100 mA I_{RR} = 10mA		750		
t_{fr}	Forward recovery time	I_F = 6 A dI_F/dt = 80 A/µs Measured at V_{FR} = 3 V	Tj = 100°C	350		ns
V_{FP}	Peak forward voltage			19	26	V

Pulse test : *tp = 5 ms, δ < 2%
**tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equations:

$P = 1.15 \times I_{F(AV)} + 0.059 \times I_F{}^2{}_{(RMS)}$

ELECTRICAL CHARACTERISTICS OF THE MODULATION DIODE OF THE DMV56

Symbol	Parameter	Test Conditions		Typ.	Max.	Unit
I_R *	Reverse leakage current	V_R = 480V	Tj= 25°C Tj = 125°C		100 2	µA mA
V_F **	Forward voltage drop	I_F = 5A	Tj= 25°C Tj = 125°C		1.75 1.5	V
t_{rr}	Reverse recovery time	I_F = 1A dI_F/dt = -50A/µs V_R = 30V	Tj = 25°C		50	ns
		I_F = 100mA I_R = 100mA I_{RR} = 10mA		110	350	ns
t_{fr}	Forward recovery time	I_F = 5A dI_F/dt = 80A/µs Measured at V_{FR} = 1.1 x V_F (max)	Tj = 100°C		300	ns
V_{FP}	Peak forward voltage				10	V

To evaluate the maximum conduction losses use the following equations :

$P = 1.15 \times I_{F(AV)} + 0.07 \times I_F{}^2{}_{(RMS)}$

Pulse test : * tp = 5 ms, δ < 2%
** tp = 380 µs, δ < 2%

THERMAL RESISTANCES

Symbol	Parameter	Max.	Unit
$R_{th(j-c)}$	Damper junction to case	2	°C/W
$R_{th(j-c)}$	Modulation junction to case	3.5	
$R_{th(c)}$	Coupling	0.2	
$R_{th(j-c)}$	Total as per full $I_{F(AV)}$ maximum ratings	2.2	

ORDERING INFORMATION

DMV56 / F5

LEAD BENDING (OPTION)

DAMPER AND MODULATION DIODES FOR VIDEO

Fig. 1-1: Power dissipation versus peak forward current (triangular waveform, δ=0.45) (damper diode.)

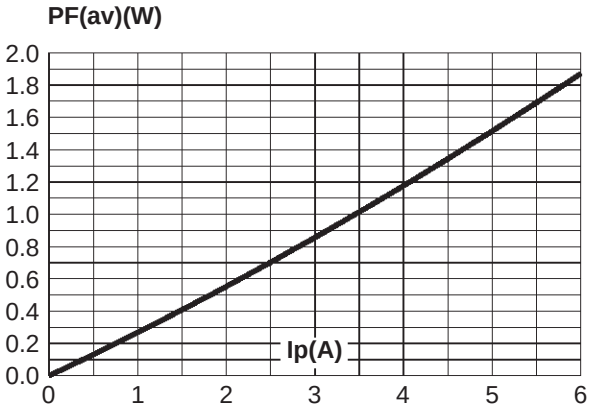


Fig. 1-2: Power dissipation versus peak forward current (triangular waveform, δ=0.45) (modulation diode)

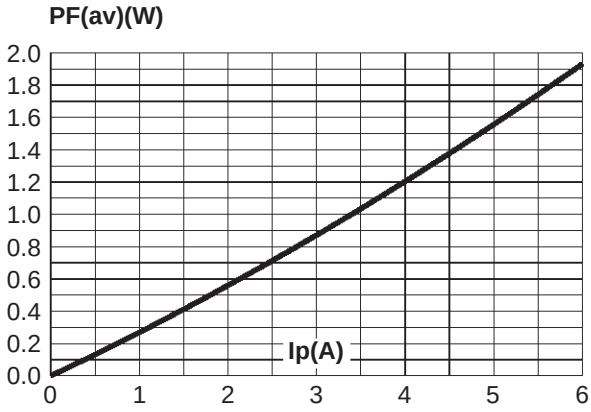


Fig. 2: Average forward current versus ambient temperature.

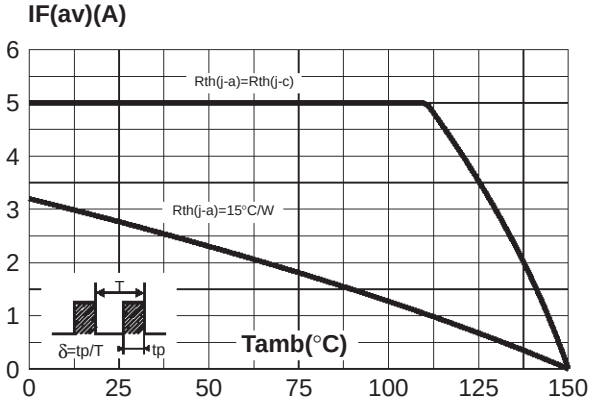


Fig. 3-1: Forward voltage drop versus forward current (damper diode).

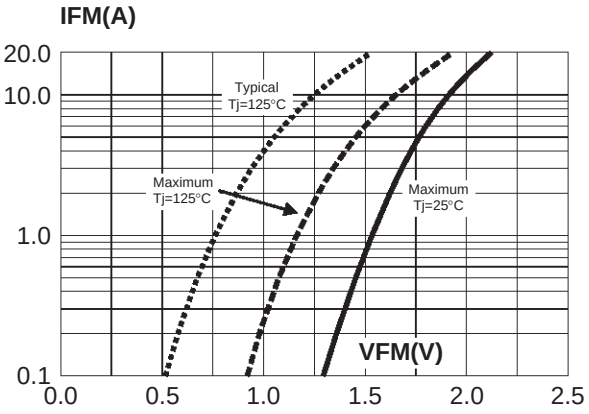


Fig. 3-2: Forward voltage drop versus forward current (modulation diode).

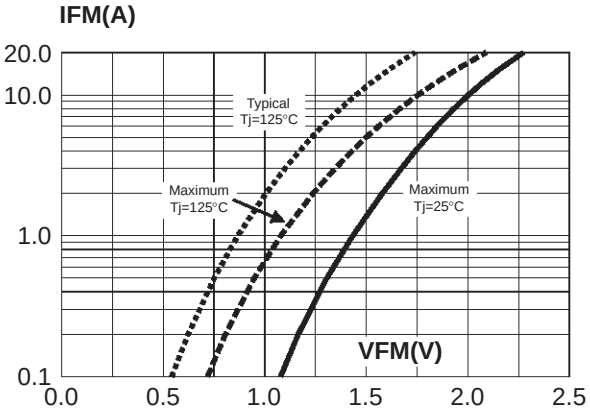


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

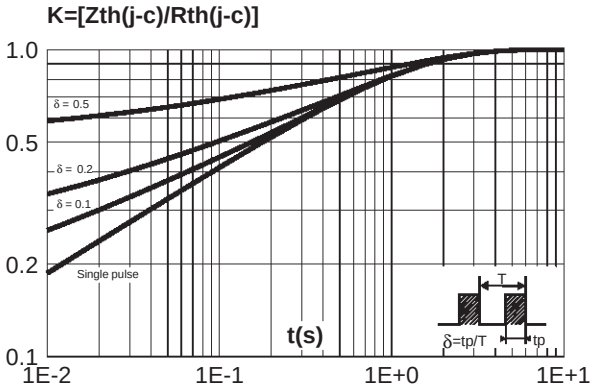


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (modulation diode).

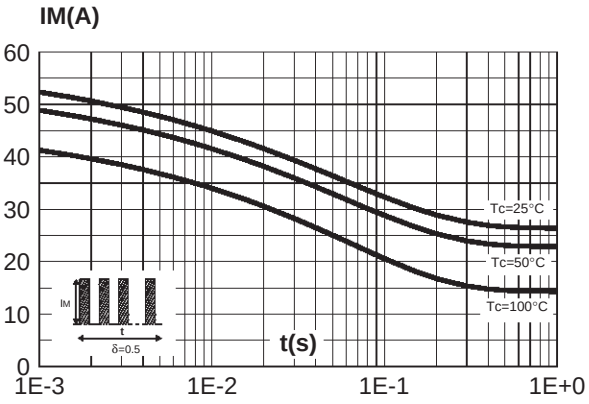


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (damper diode).

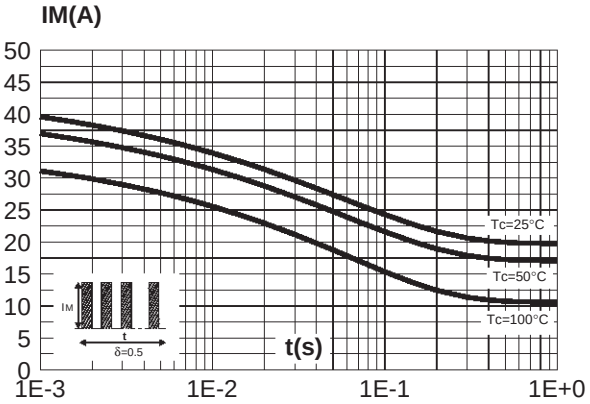


Fig. 6-1: Reverse recovery charges versus d_{IF}/dt (damper diode).

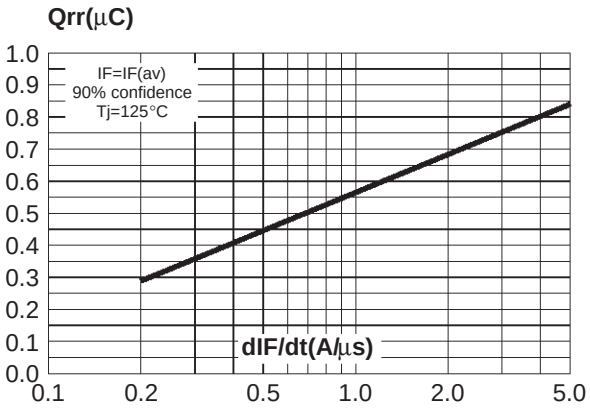


Fig. 6-2: Reverse recovery charges versus d_{IF}/dt (modulation diode).

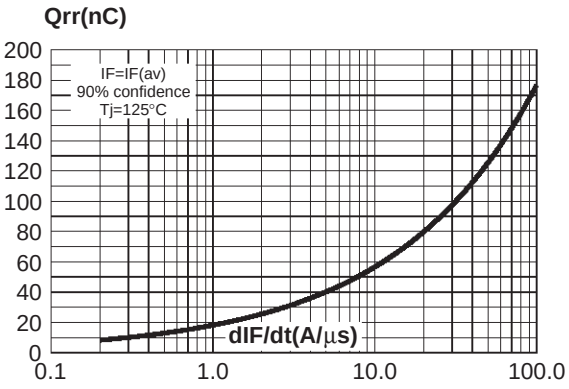


Fig. 7-1: Reverse recovery current versus d_{IF}/dt (damper diode).

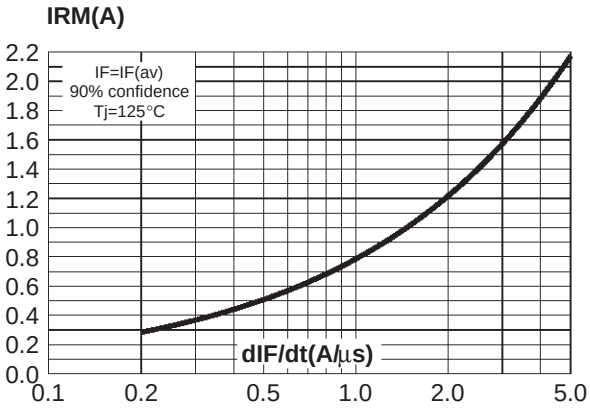


Fig. 7-2: Reverse recovery current versus d_{IF}/dt (modulation diode).

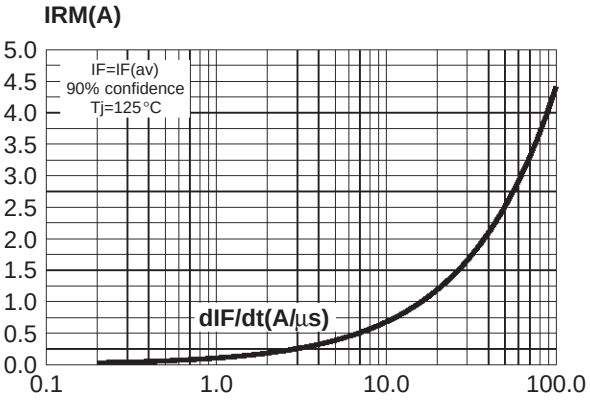


Fig. 8-1: Transient peak forward voltage versus d_{IF}/dt (damper diode).

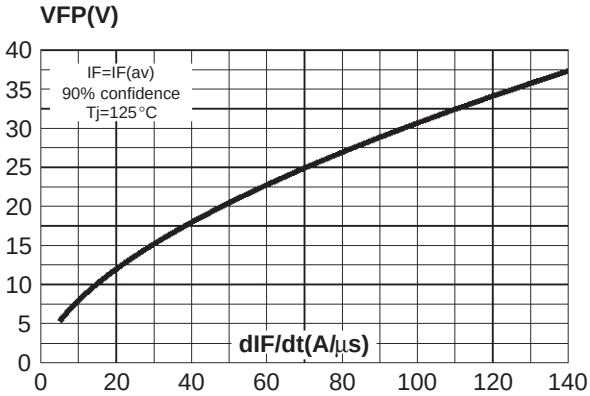


Fig. 8-2: Transient peak forward voltage versus d_{IF}/dt (modulation diode).

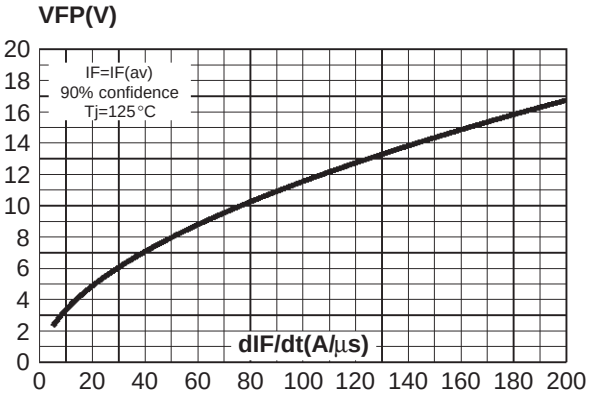


Fig. 9-1: Forward recovery time versus d_{IF}/dt (damper diode).

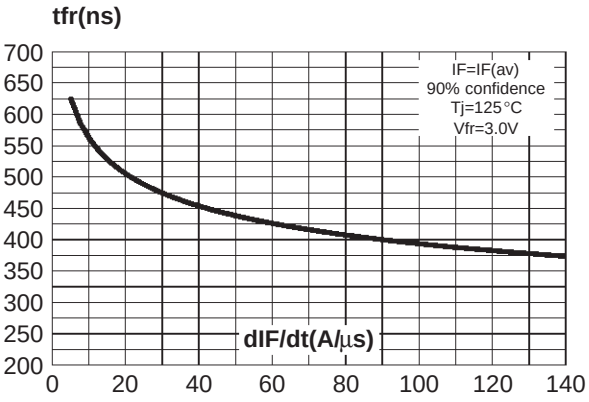


Fig. 9-2: Forward recovery time versus d_{IF}/dt (modulation diode).

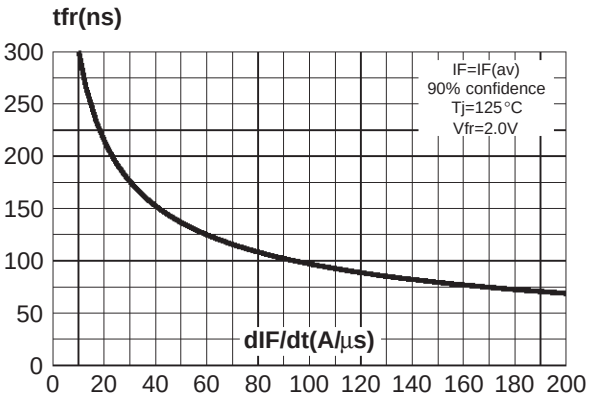


Fig. 10: Dynamic parameters versus junction temperature.

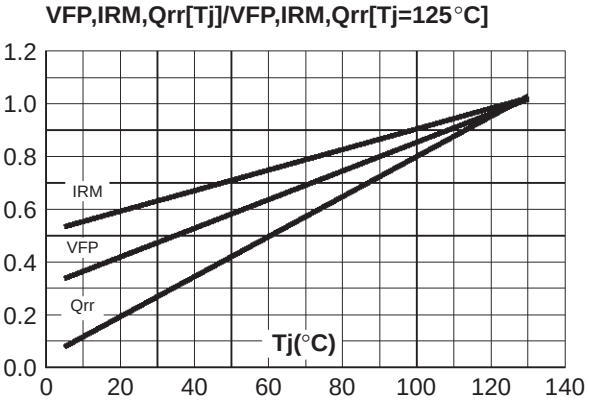
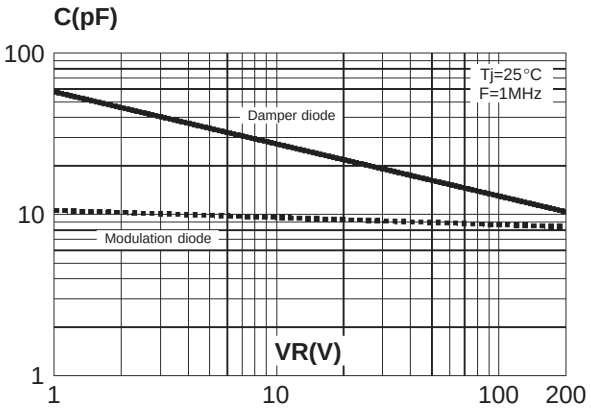
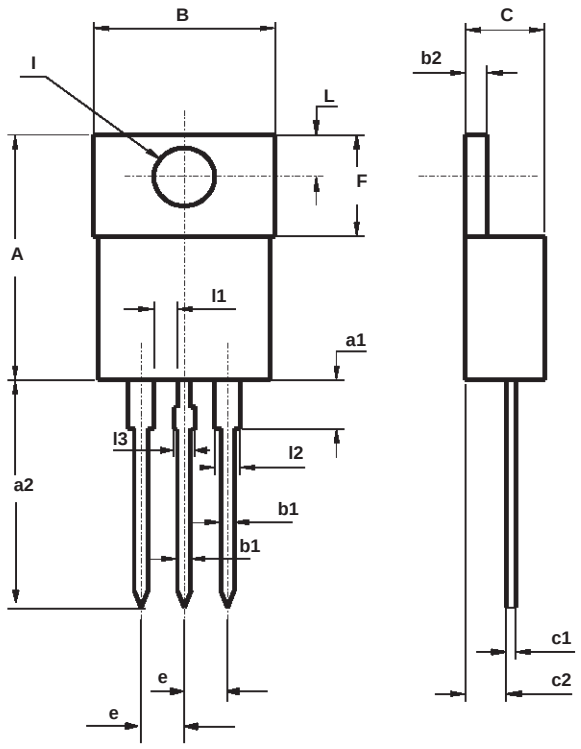


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



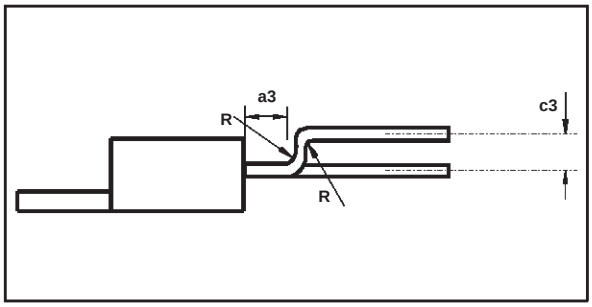
PACKAGE MECHANICAL DATA

TO-220I



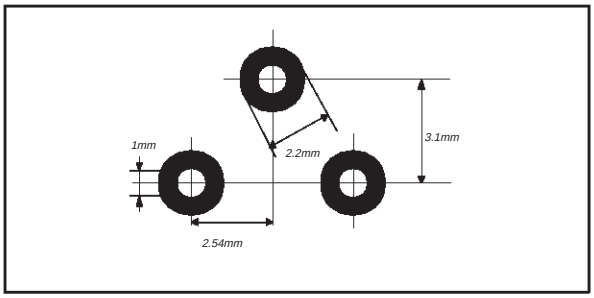
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	15.07	15.32	0.593	0.603
a1		4.50		0.177
a2	12.70	14.70	0.500	0.579
B	10.20	10.45	0.402	0.411
b1	0.64	0.96	0.025	0.038
b2	1.15	1.39	0.045	0.055
C	4.48	4.82	0.176	0.190
c1	0.35	0.65	0.020	0.026
c2	2.10	2.70	0.083	0.106
e	2.29	2.79	0.090	0.110
F	5.85	6.85	0.230	0.270
I	3.55	4.00	0.140	0.157
L	2.56	2.67	0.100	0.101
l1	1.30		0.051	
l2	1.45	1.75	0.057	0.069
l3	0.80	1.20	0.031	0.047

BENDING OPTION "F5"
Recommended for high voltage layout clearance



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a3	1.65	2.41	0.065	0.095
c3	2.92	3.30	0.115	0.130
R	1.00 typ.		1.00 typ.	

PRINTED CIRCUIT LAYOUT FOR F5 LAYOUT



- **Marking:** Type number
- Cooling method: C
- Weight: 2.3 g
- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1 m.N.
- Epoxy meets UL94,V0
- Capacitance: 7 pF
- Shipped: 50 units per tube