

## DAMPER + MODULATION DIODE FOR VIDEO

PRELIMINARY DATASHEET

### MAJOR PRODUCTS CHARACTERISTICS

|             | MODUL | DAMPER |
|-------------|-------|--------|
| $I_{F(AV)}$ | 5 A   | 6 A    |
| $V_{RRM}$   | 600 V | 1500 V |
| $t_{rr}$    | 80 ns | 175 ns |
| $V_F$       | 1.2 V | 1.3 V  |

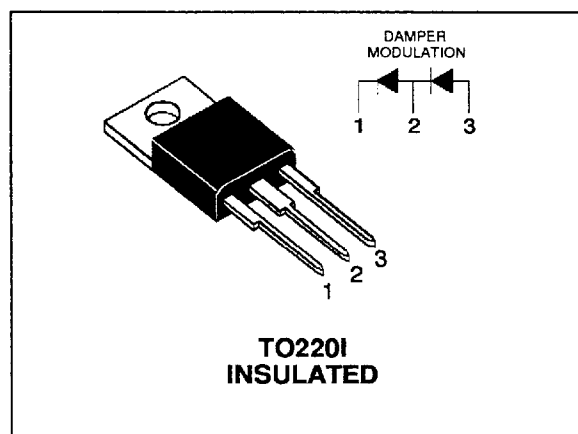
### FEATURES AND BENEFITS

- FULL KIT IN ONE PACKAGE
- DMV32A AND DMV32B ARE SUITED FOR RESPECTIVELY 38kHz AND 56kHz DEFLECTION
- OUTSTANDING PERFORMANCE OF WELL PROVEN DTV32 AS DAMPER AND TURBOSWITCH™ "B" AS MODULATION
- LEAD BENDING OPTION AVAILABLE
- INSULATED PACKAGE (2500 V)

### DESCRIPTION

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

The T0220I isolated 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 MAXIMUM RATINGS

| Symbol      | Parameter                            | VALUE                                   |        | Unit |
|-------------|--------------------------------------|-----------------------------------------|--------|------|
|             |                                      | MODUL                                   | DAMPER |      |
| $V_{RRM}$   | Repetitive Peak Reverse Voltage      | 600                                     | 1500   | V    |
| $V_{RWM}$   | Reverse Working Voltage              | 600                                     | 1350   |      |
| $I_{F(AV)}$ | Forward Average Current              | $T_c = 120^\circ\text{C}, \delta = 0.5$ |        | A    |
| $I_{FSM}$   | Surge Non Repetitive Forward Current | 10 ms half sine                         |        |      |
| $T_{stg}$   | Storage Temperature Range            | - 40 to + 150                           |        | °C   |
| $T_j$       | Max Operating Junction Temperature   | 150                                     |        |      |

**ELECTRICAL CHARACTERISTICS OF THE DAMPER DIODES IN "A" VERSION  
DMV32A**

| Symbol   | Parameter               | Test Conditions                                                                                                          |                                                       | Typ. | Max.       | Unit          |
|----------|-------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------|------------|---------------|
| $I_R$ *  | Reverse Leakage Current | $V_R = V_{RWM}$                                                                                                          | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 60   | 60<br>500  | $\mu\text{A}$ |
| $V_F$ ** | Forward Voltage Drop    | $I_F = 6\text{ A}$                                                                                                       | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 1    | 1.3<br>1.2 | V             |
| $t_{rr}$ | Reverse Recovery Time   | $I_F = 1\text{ A}$ $dI_F/dt = -50\text{ A}/\mu\text{s}$<br>$V_R = 30\text{ V}$                                           |                                                       | 170  | 300        | ns            |
|          |                         | $I_F = 100\text{ mA}$ $I_R = 100\text{ mA}$                                                                              |                                                       |      | 4          | $\mu\text{s}$ |
| $t_{fr}$ | Forward Recovery Time   | $I_F = 6\text{ A}$ $dI_F/dt = 80\text{ A}/\mu\text{s}$<br>Measured at $V_{FR} = 2\text{ V}$<br>$T_J = 100^\circ\text{C}$ |                                                       | 0.5  |            |               |
| $V_{FP}$ | Peak Forward Voltage    |                                                                                                                          |                                                       | 30   |            | V             |

To evaluate the maximum conduction losses use the following equations :

$$P = 1.0 \times I_{F(AV)} + 0.025 \times I_F^2(RMS)$$

FOR ELECTRICAL CHARACTERISTICS CURVES, PLEASE REFER TO :  
The DTV32(F)-1500A datasheet  
(page 631 of the "SCHOTTKY and RECTIFIERS DIODES" databook 2<sup>nd</sup> issue)

**ELECTRICAL CHARACTERISTICS OF THE DAMPER DIODES IN "B" VERSION  
DMV32B**

| Symbol   | Parameter               | Test Conditions                                                                                                          |                                                       | Typ. | Max.       | Unit          |
|----------|-------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------|------------|---------------|
| $I_R$ *  | Reverse Leakage Current | $V_R = V_{RWM}$                                                                                                          | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 80   | 75<br>750  | $\mu\text{A}$ |
| $V_F$ ** | Forward Voltage Drop    | $I_F = 6\text{ A}$                                                                                                       | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 1.1  | 1.4<br>1.3 | V             |
| $t_{rr}$ | Reverse Recovery Time   | $I_F = 1\text{ A}$ $dI_F/dt = -50\text{ A}/\mu\text{s}$<br>$V_R = 30\text{ V}$                                           |                                                       | 135  | 175        | ns            |
|          |                         | $I_F = 100\text{ mA}$ $I_R = 100\text{ mA}$                                                                              |                                                       |      | 1.5        | $\mu\text{s}$ |
| $t_{fr}$ | Forward Recovery Time   | $I_F = 6\text{ A}$ $dI_F/dt = 80\text{ A}/\mu\text{s}$<br>Measured at $V_{FR} = 2\text{ V}$<br>$T_J = 100^\circ\text{C}$ |                                                       | 0.6  |            |               |
| $V_{FP}$ | Peak Forward Voltage    |                                                                                                                          |                                                       | 39   |            | V             |

To evaluate the maximum conduction losses use the following equations :

$$P = 1.2 \times I_{F(AV)} + 0.034 \times I_F^2(RMS)$$

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

FOR ELECTRICAL CHARACTERISTICS CURVES, PLEASE REFER TO :  
The DTV32(F)-1500B datasheet  
(page 637 of the "SCHOTTKY and RECTIFIERS DIODES" databook 2<sup>nd</sup> issue)

**ELECTRICAL CHARACTERISTICS OF THE MODULATION DIODE**  
**STATIC ELECTRICAL CHARACTERISTICS**

| Symbol   | Parameter               | Test Conditions      |                                                       | Typ. | Max.       | Unit          |
|----------|-------------------------|----------------------|-------------------------------------------------------|------|------------|---------------|
| $I_R$ *  | Reverse Leakage Current | $V_R = 480\text{ V}$ | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 60   | 50<br>500  | $\mu\text{A}$ |
| $V_F$ ** | Forward Voltage Drop    | $I_F = 5\text{ A}$   | $T_J = 25^\circ\text{C}$<br>$T_J = 100^\circ\text{C}$ | 1.2  | 1.3<br>1.2 | V             |

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

**DYNAMIC ELECTRICAL CHARACTERISTICS**  
**TURN-OFF SWITCHING**  $T_J = 25^\circ\text{C}$ 

| Symbol   | Parameter             | Test Conditions                                                             | Max. | Unit |
|----------|-----------------------|-----------------------------------------------------------------------------|------|------|
| $t_{rr}$ | Reverse Recovery Time | $I_F = 1\text{ A}$ $dI_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$ | 95   | ns   |
|          |                       | $I_F = 100\text{ mA}$ $I_R = 100\text{ mA}$                                 | 350  |      |

**DYNAMIC ELECTRICAL CHARACTERISTICS**  
**TURN-ON SWITCHING**

| Symbol   | Parameter             | Test Conditions                                                                             | Max. | Unit          |
|----------|-----------------------|---------------------------------------------------------------------------------------------|------|---------------|
| $t_{fr}$ | Forward Recovery Time | $I_F = 5\text{ A}$ $dI_F/dt = 50\text{ A}/\mu\text{s}$<br>Measured at $1.1 \times V_F$ max. | 0.5  | $\mu\text{s}$ |
| $V_{FP}$ | Peak Forward Voltage  | $T_J = 25^\circ\text{C}$                                                                    | 8    | V             |

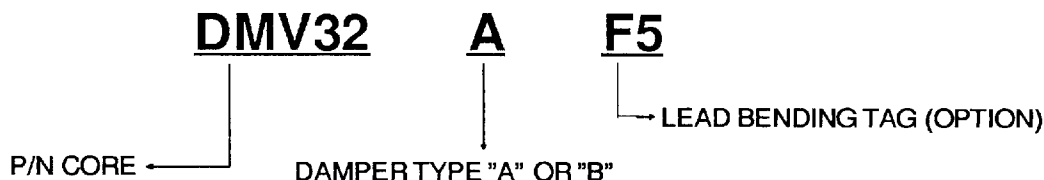
To evaluate the maximum conduction losses use the following equations :

$$P = 1.05 \times I_{F(AV)} + 0.06 \times I_F^2(RMS)$$

FOR ELECTRICAL CHARACTERISTICS CURVES, PLEASE REFER TO :  
 The STTB506D datasheet  
 (page 257 of the "SCHOTTKY and RECTIFIERS DIODES" databook 2<sup>nd</sup> issue)

**THERMAL DATA**

| Symbol        | Parameter                                      | Max. | Unit                      |
|---------------|------------------------------------------------|------|---------------------------|
| $R_{th(j-c)}$ | Damper junction to case thermal resistance     | 3.5  | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)}$ | Modulation junction to case thermal resistance | 5    |                           |
| $R_{th(c)}$   | Coupling thermal resistance                    | 0.2  |                           |
| $R_{th(j-c)}$ | Total as per full $I_{F(AV)}$ max. ratings     | 2.2  |                           |

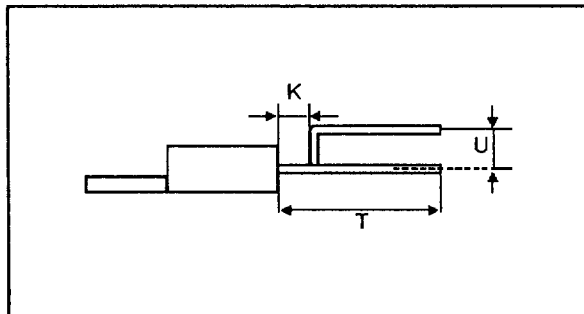
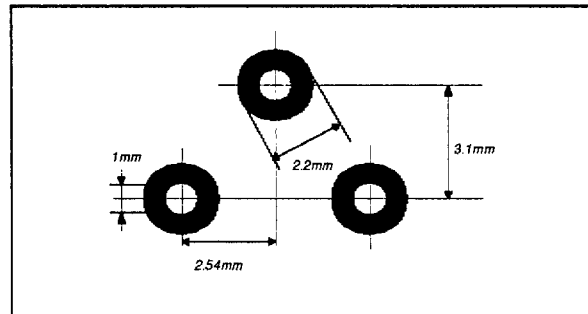
**ORDERING INFORMATION**


**PACKAGE MECHANICAL DATA**  
**TO220I (Insulated)**

| REF. | DIMENSIONS  |       |        |       |
|------|-------------|-------|--------|-------|
|      | Millimeters |       | Inches |       |
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 10.20       | 10.50 | 0.401  | 0.413 |
| B    | 14.23       | 15.87 | 0.560  | 0.625 |
| C    | 12.70       | 14.70 | 0.500  | 0.579 |
| D    | 5.85        | 6.85  | 0.230  | 0.270 |
| F    |             | 4.50  |        | 0.178 |
| G    | 2.54        | 3.00  | 0.100  | 0.119 |
| H    | 4.48        | 4.82  | 0.176  | 0.190 |
| I    | 3.55        | 4.00  | 0.140  | 0.158 |
| J    | 1.15        | 1.39  | 0.045  | 0.055 |
| L    | 0.35        | 0.65  | 0.013  | 0.026 |
| M    | 2.10        | 2.70  | 0.082  | 0.107 |
| N    | 4.58        | 5.58  | 0.18   | 0.22  |
| O    | 0.80        | 1.20  | 0.031  | 0.048 |

**BENDING OPTION "F5"**

Recommended for high voltage layout clearance


**PRINTED CIRCUIT LAYOUT FOR F5 VERSION**


| REF. | Millimeters |       |
|------|-------------|-------|
|      | Min.        | Max.  |
| K    | 1.65        | 2.41  |
| U    | 2.92        | 3.30  |
| T    | 8.96        | 11.00 |

Cooling method : C  
 Marking : Type number  
 Weight : 2.3 g  
 Recommended torque value : 0.8 m.N.  
 Maximum torque value : 1 m.N.  
 Electrical isolation : 2500 V<sub>RMS</sub>  
 Capacitance : 7 pF

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