

Ultra-Fast Soft Recovery Diode Module

Description

Ultra-FRD module devices are optimized to reduce losses and EMI/RFI in high frequency power conditioning electrical systems. These diode modules are ideally suited for power converters, motors drives and other applications where switching losses are significant portion of the total losses.

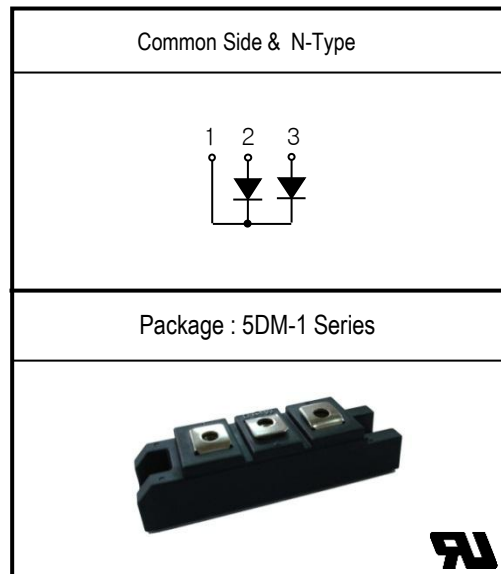
Features

- ☞ Repetitive Reverse Voltage : $V_{RRM} = 1200V$
- ☞ Low Forward Voltage Drop : $V_F(\text{typ.}) = 1.7V$
- ☞ Average Forward Current : $I_F(\text{AV.}) = 75A @ T_c = 100^\circ C$
- ☞ Ultra-Fast Reverse Recovery Time : $t_{rr}(\text{typ.}) = 100 \text{ ns}$
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI and RFI
- ☞ Isolation Type Package

Applications

Motor Drives, Free wheel use, High Power Converters, Welders, Various Switching and Telecommunication Power Supply.

Equivalent Circuit and Package



Please see the package Out line information

Absolute Maximum Ratings @ $T_j=25^\circ C$ (Per Leg)

| Symbol | Parameter | Conditions | Ratings | Unit |
|-------------|---------------------------------------|--|---------------|------------|
| V_{RRM} | Repetitive Peak Reverse Voltage | | 1200 | V |
| $V_{R(DC)}$ | Reverse DC Voltage | | 960 | V |
| $I_{F(AV)}$ | Average Forward Current | Resistive Load | 150 75 | A A |
| | | | | |
| I_{FSM} | Surge(non-repetitive) Forward Current | One Half Cycle at 60Hz, Peak Value | 1500 | A |
| I^2t | I^2t for Fusing | Value for One Cycle Current, $t_w = 8.3ms, T_j = 25^\circ C$ Start | $12.5 * 10^3$ | A^2s |
| T_j | Junction Temperature | | -40 ~ 150 | $^\circ C$ |
| T_{stg} | Storage Temperature | | -40 ~ 125 | $^\circ C$ |
| V_{isol} | Isolation Voltage | @ AC 1 minutes | 2500 | V |
| P_d | Maximum Power Dissipation | | 200 | W |
| - | Mounting Torque | | 4.0 | N.m |
| - | Terminal Torque | | 2.0 | N.m |
| - | Weight | Typical Including Screws | 140 | g |

Thermal Characteristics

| Symbol | Parameter | Conditions | Values | | | Unit |
|---------------|--------------------|------------------|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| $R_{th(j-c)}$ | Thermal Resistance | Junction to Case | - | - | 0.58 | °C/W |

Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise specified)

| Symbol | Parameter | Conditions | Values | | | Unit | |
|-----------|---------------------------------|--|---------------------------|------|------|------|----|
| | | | Min. | Typ. | Max. | | |
| V_R | Cathode Anode Breakdown Voltage | $I_R = 500\mu\text{A}$ | 1200 | - | - | V | |
| V_{FM} | Maximum Forward Voltage | $I_{FM} = 75\text{A}, T_c = 25^\circ\text{C}$ | - | 1.7 | 2.2 | V | |
| | | $I_{FM} = 75\text{A}, T_c = 100^\circ\text{C}$ | - | 1.9 | 2.5 | V | |
| I_{RRM} | Repetitive Peak Reverse Current | $T_c = 100^\circ\text{C}, V_{RRM}$ applied | - | - | 3.0 | mA | |
| T_{rr} | Reverse Recovery Time | $I_{FM} = 75\text{A}, V_R = 600\text{V}, di/dt = -100\text{A}/\mu\text{s}$ | $T_c = 25^\circ\text{C}$ | - | 100 | 130 | ns |
| | | | $T_c = 100^\circ\text{C}$ | - | 150 | - | ns |

Performance Curves

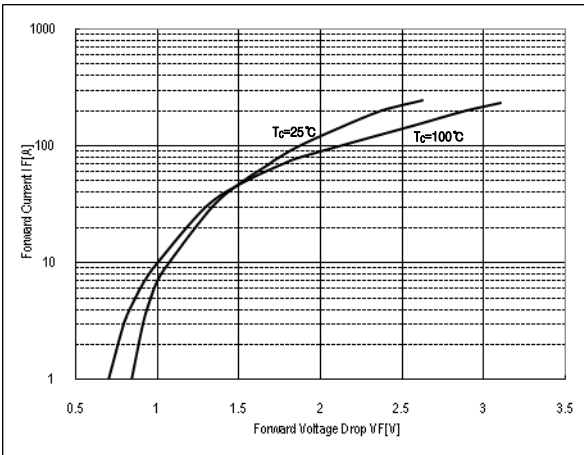


Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current

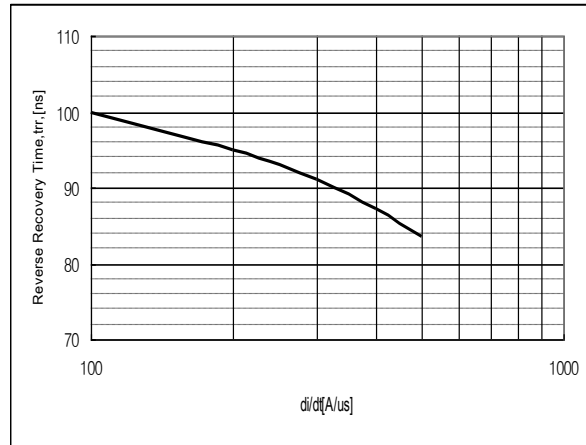


Fig. 2 : Typical Reverse Recovery Time vs. -di/dt

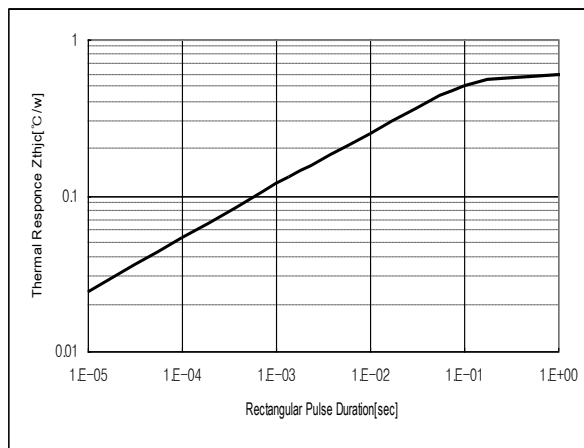


Fig. 3 : Transient Thermal Impedance(Z_{th(jc)}) Characteristics

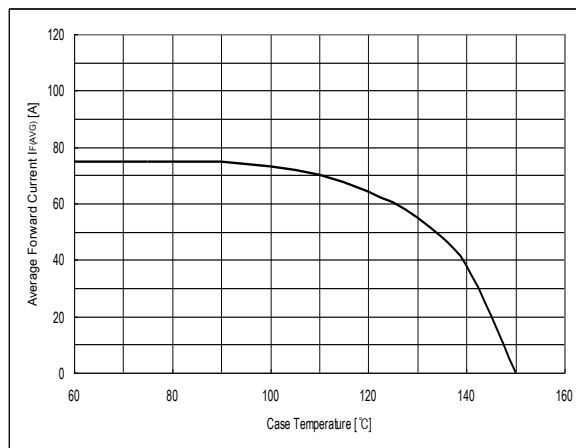


Fig. 4 : Forward Current Derating Curve

Package Out Line Information

5DM-1 Series



UNIT : mm

