



浙江芯芯电子有限公司  
ZHEJIANG XINXIN ELECTRICAL CO., LTD.

# 产品规格书

## Specification of Products

产品名称：快恢复二极管模块

产品型号：MFDK100/1200N

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版本号：04 更新日期：2022.6.28

## Ultra-Fast Soft Recovery Diode Module

MFDK/MFDA

### 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

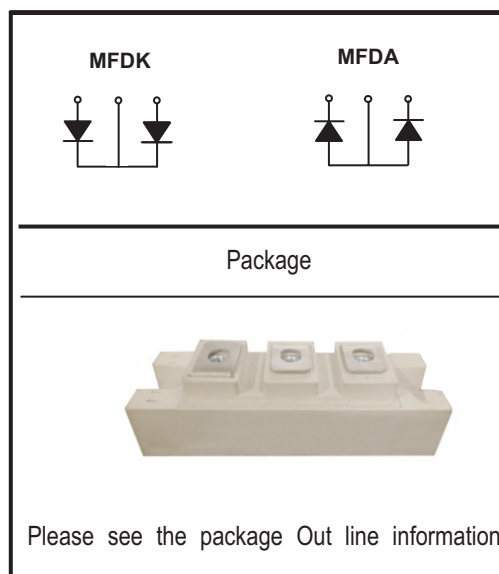
- ☞ Repetitive Reverse Voltage :  $V_{RRM} = 1200V$
- ☞ Low Forward Voltage Drop :  $V_F (typ.) = 1.2V$
- ☞ Average Forward Current :  $I_F (AV.) = 100A$  @  $T_c = 100^\circ C$
- ☞ Ultra-Fast Reverse Recovery Time :  $t_{rr} (typ.) = 100 ns$
- ☞ Extensive Characterization of Recovery Parameters
- ☞ Reduced EMI and RFI
- ☞ Non Isolation Type Package

### Applications

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

### Equivalent Circuit and Package

Equivalent Circuit



### 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                                                    |                                                                       | 700                | V          |
| $I_F (AV)$ | Average Forward Current @ $T_c = 25^\circ C$<br>@ $T_c = 100^\circ C$ | Resistive Load                                                        | 200<br>100         | A<br>A     |
| $I_{FSM}$  | Surge (non-repetitive) Forward Current                                | One Half Cycle at 60Hz, Peak Value                                    | 3300               | A          |
| $I_t^2$    | $I^2 t$ for Fusing                                                    | Value for One Cycle Current, $t_w = 8.3ms$ , $T_j = 25^\circ C$ Start | $45.0 \times 10^3$ | $A^2 s$    |
| $T_j$      | Junction Temperature                                                  |                                                                       | $-40 \sim 125$     | $^\circ C$ |
| $T_{sta}$  | Storage Temperature                                                   |                                                                       | $-40 \sim 125$     | $^\circ C$ |
| $P_d$      | Maximum Power Dissipation                                             |                                                                       | 700                | W          |
| —          | Mounting Torque                                                       |                                                                       | 4.0                | N.m        |
| —          | Terminal Torque                                                       |                                                                       | 3.0                | N.m        |



### Thermal Characteristics

| Symbol        | Parameter          | Conditions       | Values |      |      | Unit |
|---------------|--------------------|------------------|--------|------|------|------|
|               |                    |                  | Min.   | Typ. | Max. |      |
| $R_{th(j-c)}$ | Thermal Resistance | Junction to Case | -      | -    | 0.15 | °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 | $I_R = 100\mu\text{A}$                                                          |                             | 1200   | -    | -    | V    |
| $V_{FM}$  | Maximum Forward Voltage         | $I_{FM} = 300\text{A}, T_c = 25^{\circ}\text{C}$                                |                             | -      | 1.2  | 1.4  | V    |
|           |                                 | $I_{FM} = 300\text{A}, T_c = 100^{\circ}\text{C}$                               |                             | -      | 1.0  | 1.2  | V    |
| $I_{RRM}$ | Repetitive Peak Reverse Current | $T_C = 100^{\circ}\text{C}, V_{RRM}$ applied                                    |                             | -      | -    | 8.5  | mA   |
| $T_{rr}$  | Reverse Recovery Time           | $I_{FM} = 100\text{A}, V_R = 300\text{V}$<br>$di/dt = -100\text{A}/\mu\text{s}$ | $T_C = 25^{\circ}\text{C}$  | -      | 100  | 120  | ns   |
|           |                                 |                                                                                 | $T_C = 100^{\circ}\text{C}$ | -      | 180  | -    | ns   |

#### Performance Curves

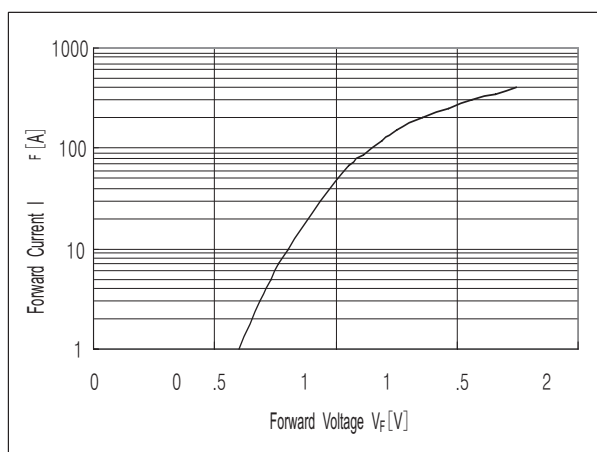


Fig. 1 : Typical Forward Voltage Drop vs. Instantaneous Forward Current

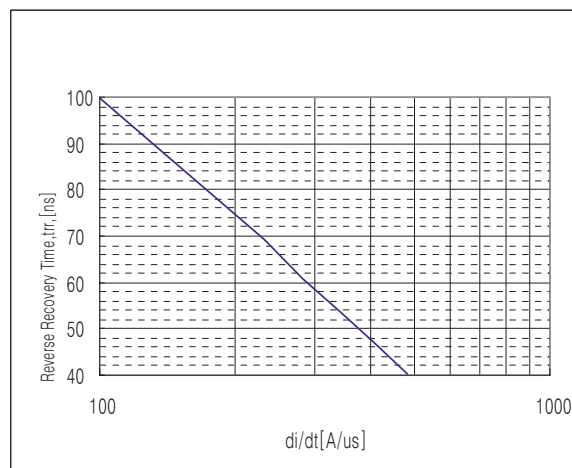


Fig. 2 : Typical Reverse Recovery Time vs.  $-di/dt$

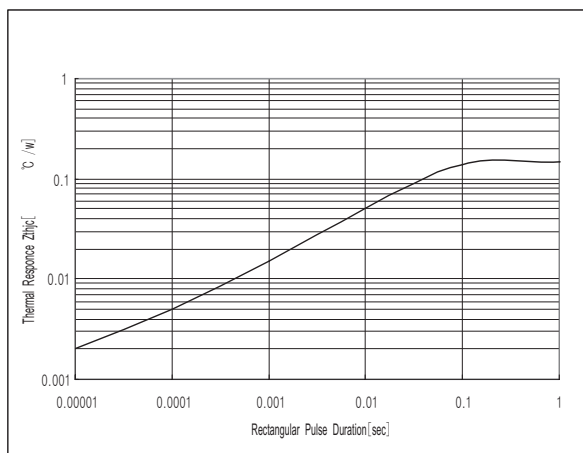


Fig. 3 : Transient Thermal Impedance ( $Z_{thjc}$ ) Characteristics

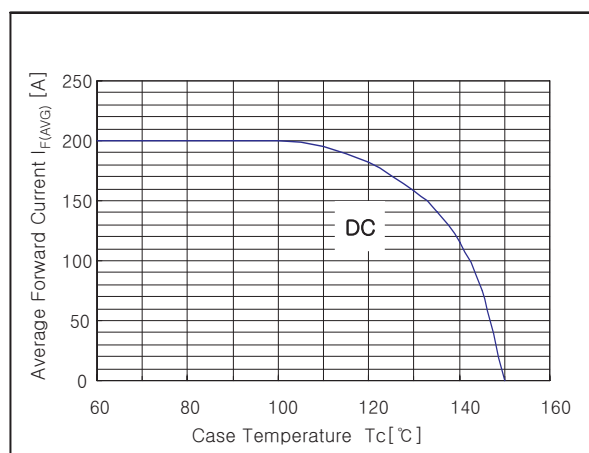


Fig. 4 : Forward Current Derating Curve

## Outside Dimension

