

## 产品规格书

### Specifcation of products

产品名称:快恢复二极管

产品型号:MFK300U4K2

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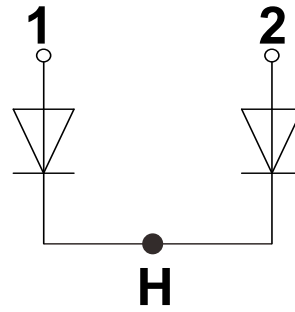
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| 蓝少波 | 陈一凡 | 曹剑龙 |

### PRODUCT FEATURES

- ☑ Ultrafast Reverse Recovery Time
- ☑ Soft Reverse Recovery Characteristics
- ☑ Low Reverse Recovery Loss
- ☑ Low Forward Voltage
- ☑ High Surge Current Capability
- ☑ Low Inductance Package

### APPLICATIONS

- ☑ Inversion Welder
- ☑ Uninterruptible Power Supply (UPS)
- ☑ Plating Power Supply
- ☑ Ultrasonic Cleaner and Welder
- ☑ Converter & Chopper
- ☑ Power Factor Correction (PFC) Circuit



### ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol         | Parameter                            | Test Conditions                                          | Values      | Unit                          |
|----------------|--------------------------------------|----------------------------------------------------------|-------------|-------------------------------|
| $V_R$          | Maximum D.C. Reverse Voltage         |                                                          | 400         | V                             |
| $V_{RRM}$      | Maximum Repetitive Reverse Voltage   |                                                          | 400         | V                             |
| $I_{F(AV)}$    | Average Forward Current              | $T_C=125^{\circ}\text{C}$ , Per Diode                    | 150         | A                             |
|                |                                      | $T_C=125^{\circ}\text{C}$ , Per Moudle                   | 300         | A                             |
| $I_{F(RMS)}$   | RMS Forward Current                  | $T_C=125^{\circ}\text{C}$ , Per Diode                    | 210         | A                             |
| $I_{FSM}$      | Non-Repetitive Surge Forward Current | 1/2 Cycle , 50Hz, Sine                                   | 2000        | A                             |
|                |                                      | 1/2 Cycle , 60Hz, Sine                                   | 2100        | A                             |
| $I^2t$         | $I^2t$ (For Fusing)                  | $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine  | 19000       | $\text{A}^2\text{s}$          |
|                |                                      | $T_J=45^{\circ}\text{C}$ , $t=8.3\text{ms}$ , 60Hz, Sine | 18900       | $\text{A}^2\text{s}$          |
| $P_D$          | Power Dissipation                    |                                                          | 1200        | W                             |
| $T_J$          | Junction Temperature                 |                                                          | -40 to +150 | $^{\circ}\text{C}$            |
| $T_{STG}$      | Storage Temperature Range            |                                                          | -40 to +125 | $^{\circ}\text{C}$            |
| Torque         | Module-to-Sink                       | Recommended (M6)                                         | 3~6         | N.m                           |
| Torque         | Module Electrodes                    | Recommended (M6)                                         | 3~5         | N.m                           |
| $R_{\theta C}$ | Thermal Resistance                   | Junction-to-Case, Per Diode                              | 0.25        | $^{\circ}\text{C} / \text{W}$ |
| Weight         |                                      |                                                          |             | g                             |

### ELECTRICAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$  unless otherwise specified

| Symbol    | Parameter                     | Test Conditions                                                   | Min. | Typ. | Max. | Unit |
|-----------|-------------------------------|-------------------------------------------------------------------|------|------|------|------|
| $I_{RM}$  | Reverse Leakage Current       | $V_R=400\text{V}$                                                 | --   | --   | 0.2  | mA   |
|           |                               | $V_R=400\text{V}, T_J=125^{\circ}\text{C}$                        | --   | --   | 1    | mA   |
| $V_F$     | Forward Voltage               | $I_F=150\text{A}$                                                 | --   | 1.2  | 1.4  | V    |
|           |                               | $I_F=150\text{A}, T_J=125^{\circ}\text{C}$                        | --   | 1.0  | --   | V    |
| $t_{rr}$  | Reverse Recovery Time         | $I_F=1\text{A}, V_R=30\text{V}, di_F/dt=-200\text{A}/\mu\text{s}$ | --   | 50   | --   | ns   |
| $t_{rr}$  | Reverse Recovery Time         | $V_R=200\text{V}, I_F=150\text{A}$                                | --   | 65   | --   | ns   |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}, T_J=25^{\circ}\text{C}$        | --   | 8    | --   | A    |
| $t_{rr}$  | Reverse Recovery Time         | $V_R=200\text{V}, I_F=150\text{A}$                                | --   | 120  | --   | ns   |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt=-200\text{A}/\mu\text{s}, T_J=125^{\circ}\text{C}$       | --   | 15   | --   | A    |

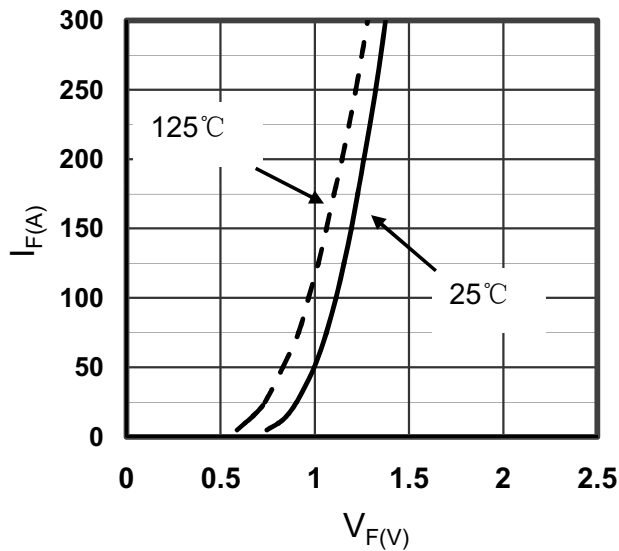


Figure1. Forward Voltage Drop vs Forward Current

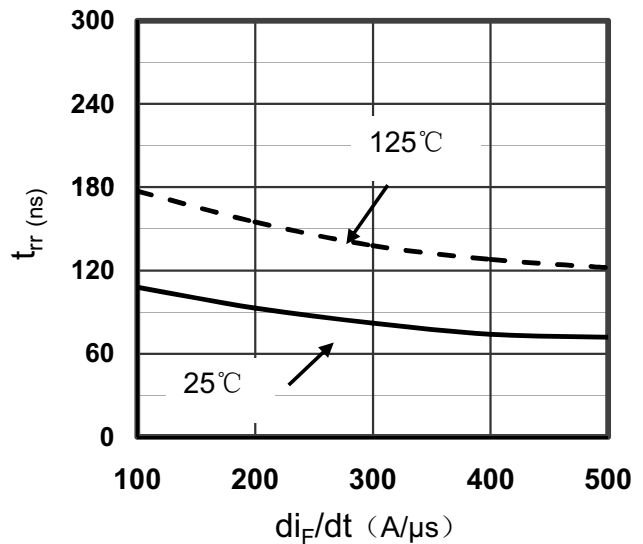


Figure2. Reverse Recovery Time vs  $di_F/dt$

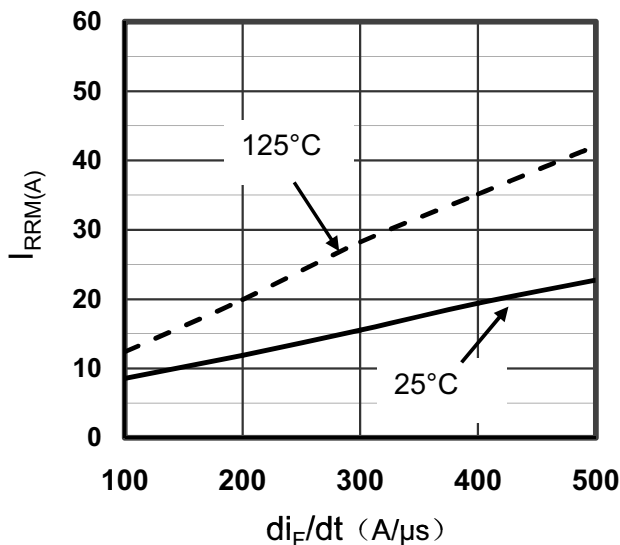


Figure3. Reverse Recovery Current vs  $di_F/dt$

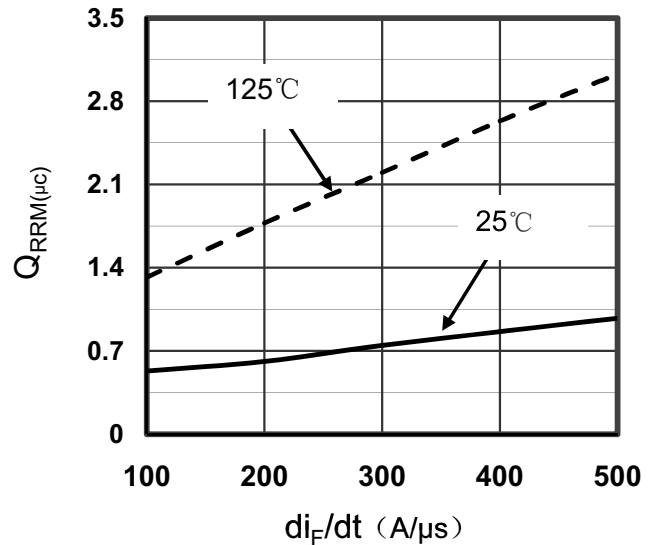


Figure4. Reverse Recovery Charge vs  $di_F/dt$

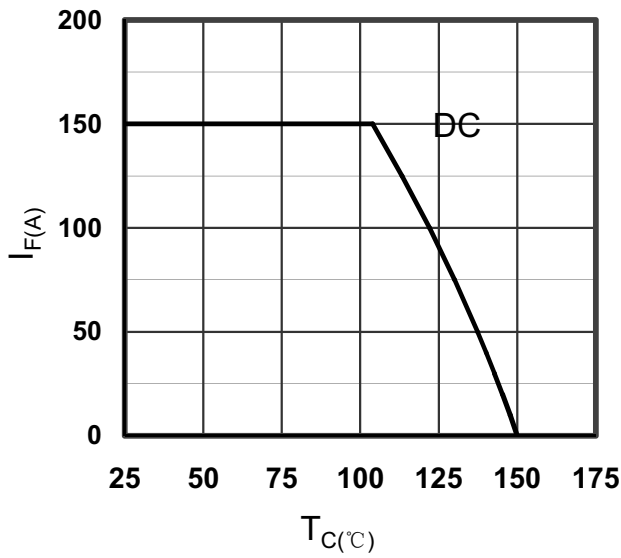
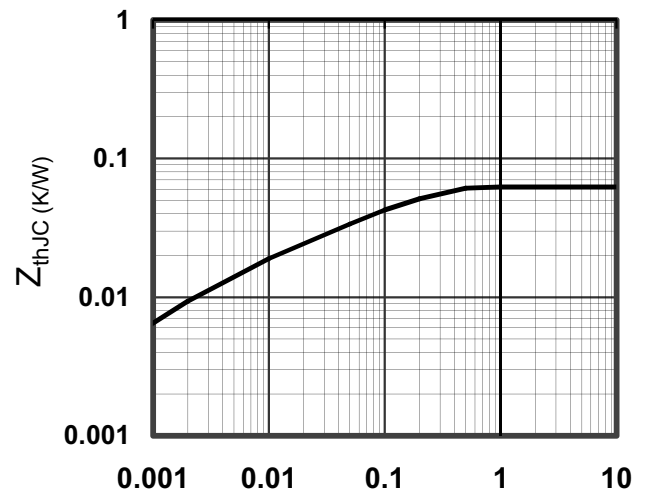


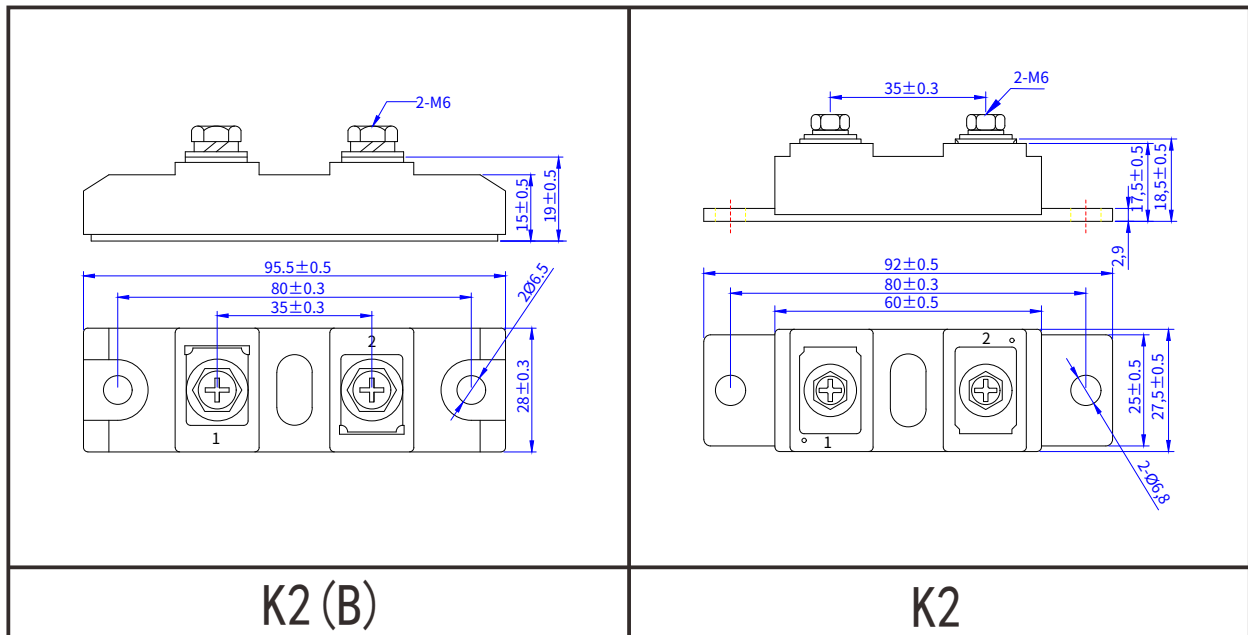
Figure5.Forward current vs.Case temperature



Rectangular Pulse Duration (seconds)

Figure6. Transient Thermal Impedance

## Package Outlines



Dimensions (mm)