



## Diode Module

### Features

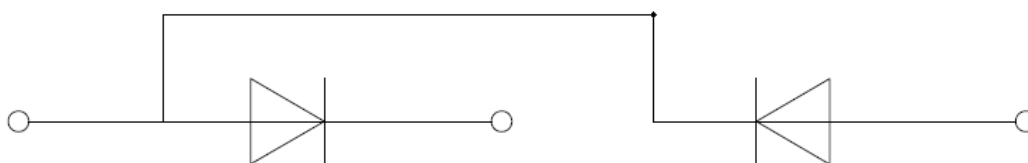
- A package of series of two diodes
- Heat transfer through alumina ceramic and metal substrate
- Welding by vacuum welding technology, which provide high reliability

### Product Summary

| Parameter                                | Value | Unit |
|------------------------------------------|-------|------|
| $V_{RRM}$                                | 2000  | V    |
| $I_{F(AV)}(@ T_C = 100^{\circ}\text{C})$ | 120   | A    |
| $I_{FSM}(@ t_p = 10\text{ms})$           | 3360  | A    |
| $V_F(\text{Max})$                        | 1.60  | V    |

### Applications

- AC converter
- Inverter
- DC motor



### Absolute Maximum Ratings (@ $T_C = 25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                           | Conditions                    | Symbol      | Values     | Unit                 |
|-------------------------------------|-------------------------------|-------------|------------|----------------------|
| Repetitive peak reverse voltage     | $T_{vj} = 25^{\circ}\text{C}$ | $V_{RRM}$   | 2000       | V                    |
| Non-repetitive peak reverse voltage | $T_{vj} = 25^{\circ}\text{C}$ | $V_{RSM}$   | 2100       | V                    |
| Average forward current             | $T_C = 100^{\circ}\text{C}$   | $I_{F(AV)}$ | 120        | A                    |
| Forward surge current               | 1/2 cycle, Sine wave, 50Hz    | $I_{FSM}$   | 3360       | A                    |
| $I^2t$ value for fusing             | $T_{vj} = 25^{\circ}\text{C}$ | $I^2t$      | 56400      | $\text{A}^2\text{s}$ |
| RMS isolation voltage               | A.C 50Hz(1s/1min)             | $V_{ISO}$   | 3600/3000  | V                    |
| Junction temperature range          |                               | $T_J$       | -40 ~ +150 | $^{\circ}\text{C}$   |
| Storage temperature range           |                               | $T_{stg}$   | -40 ~ +125 | $^{\circ}\text{C}$   |

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

| Parameter               | Conditions                                                        | Symbol    | Values |      |      | Unit             |
|-------------------------|-------------------------------------------------------------------|-----------|--------|------|------|------------------|
|                         |                                                                   |           | Min.   | Typ. | Max. |                  |
| Peak forward voltage    | $I_F=360\text{A}$ , $t_P=380\mu\text{s}$                          | $V_F$     |        |      | 1.60 | V                |
| Reverse leakage current | $V_R = V_{RRM}$ , $T_{vj} = 25^\circ\text{C}$                     | $I_{RRM}$ |        |      | 100  | $\mu\text{A}$    |
|                         | $V_R = V_{RRM}$ , $T_{vj} = 150^\circ\text{C}$                    |           |        |      | 40   | mA               |
| Threshold voltage       | $T_{vj} = 150^\circ\text{C}$ ,<br>for power loss calculation only | $V_{TO}$  |        |      | 0.85 | V                |
| Dynamic resistance      |                                                                   | $r_T$     |        |      | 1.5  | $\text{m}\Omega$ |

**Thermal Characteristics (@  $T_C = 25^\circ\text{C}$  unless otherwise specified)**

| Parameter                            | Conditions                       | Symbol        | Values |      |      | Unit                      |
|--------------------------------------|----------------------------------|---------------|--------|------|------|---------------------------|
|                                      |                                  |               | Min.   | Typ. | Max. |                           |
| Thermal resistance, junction to case | per diode                        | $R_{th(j-c)}$ |        | 0.20 |      | $^\circ\text{C}/\text{W}$ |
| Thermal resistance, case to heatsink | per diode                        | $R_{th(c-s)}$ |        | 0.12 |      | $^\circ\text{C}/\text{W}$ |
| Mounting torque                      | Module and heatsink fixed torque | M             | 4.25   |      | 5.75 | N·m                       |
|                                      | Electrode connection torque      |               | 2.55   |      | 3.45 | N·m                       |

**Ordering Information**

| Device        | Marking       | Package | Weight     | Inner Box | Per Carton |
|---------------|---------------|---------|------------|-----------|------------|
| JMD120KD20T1W | JMD120KD20T1W | T1      | 100±5g/PCS | 10 PCS    | 120 PCS    |

## Typical Electrical & Thermal Characteristics

**FIG.1:** Forward characteristics(per diode)

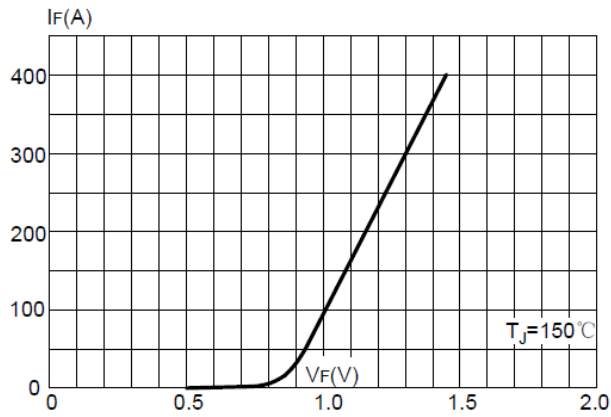


**FIG.2:** Peak on-state surge current

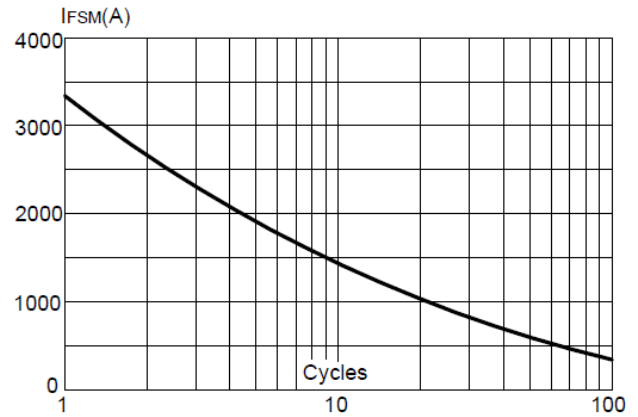


**FIG.3:** Forward current vs. case temperature

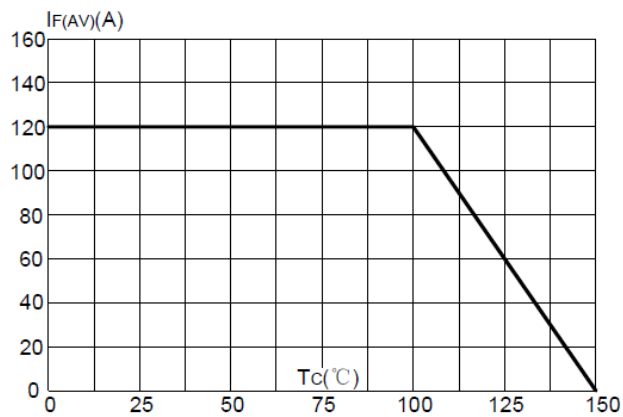
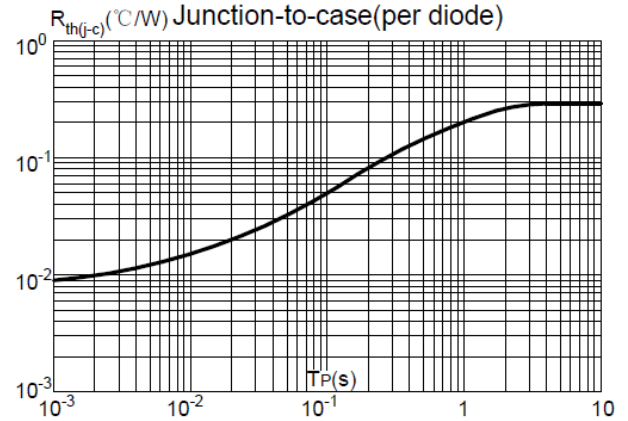
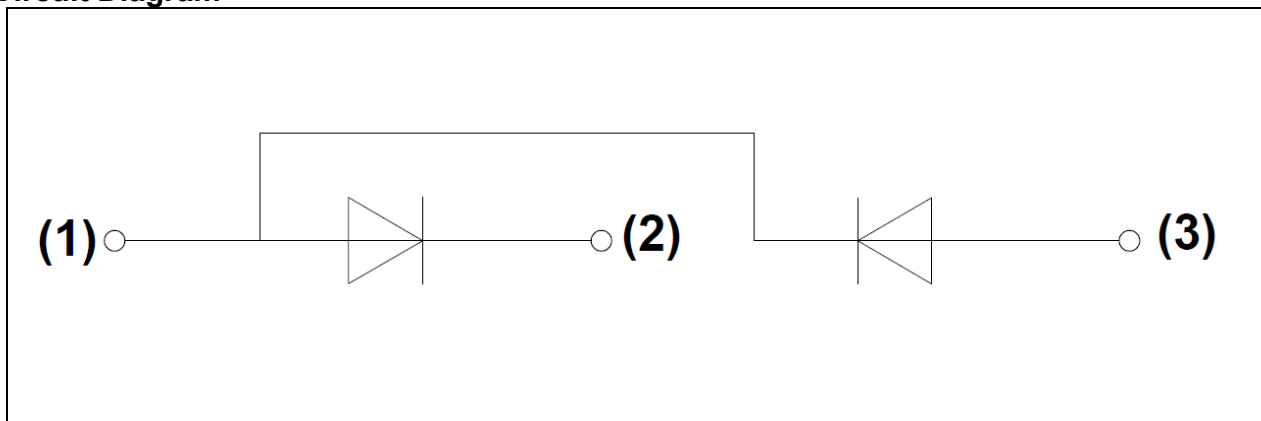
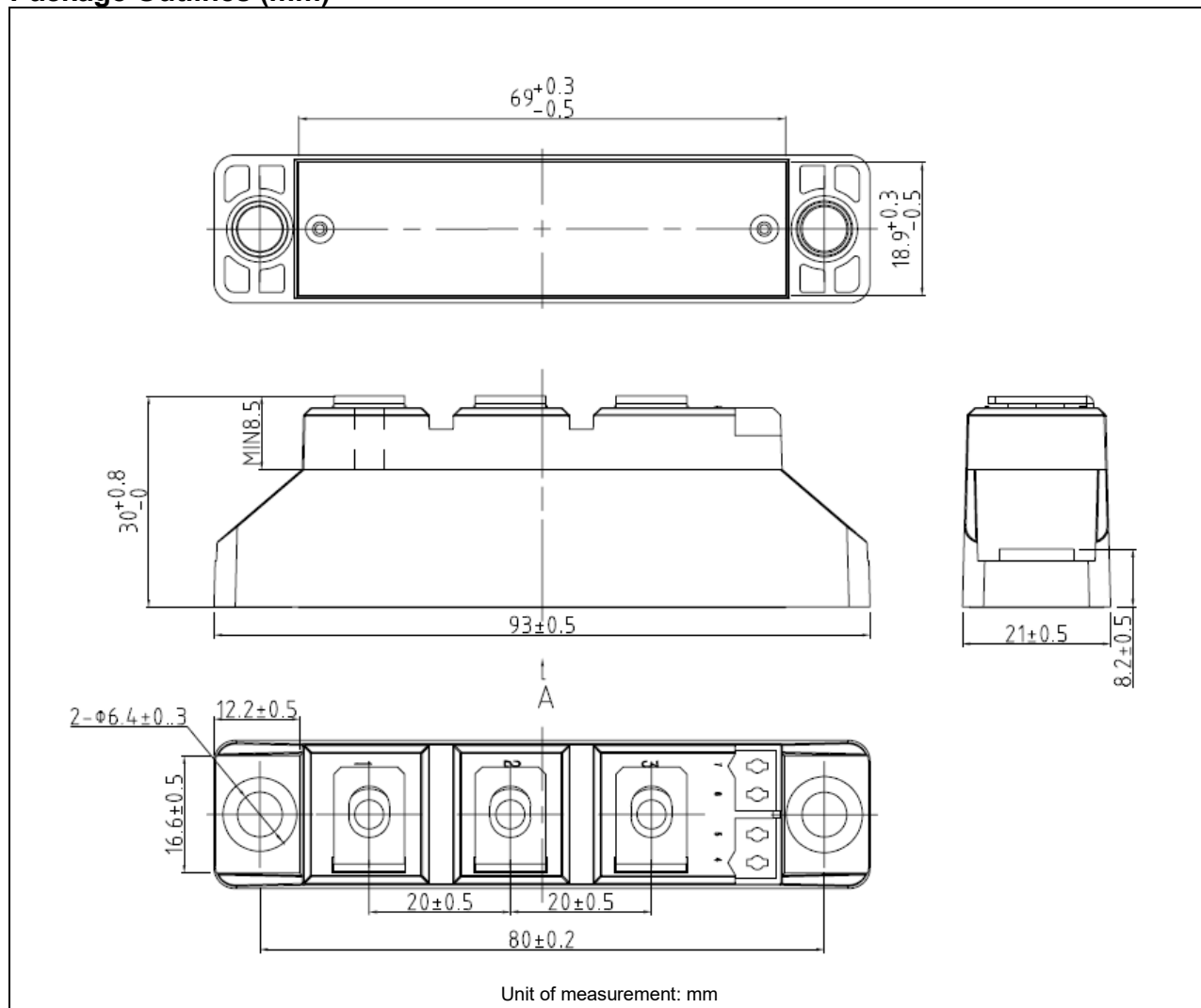


**FIG.4:** Maximum transient thermal impedance



## Circuit Diagram



**Package Outlines (mm)**




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