



## JMD120ND20T1A

### Diode Module

#### Features

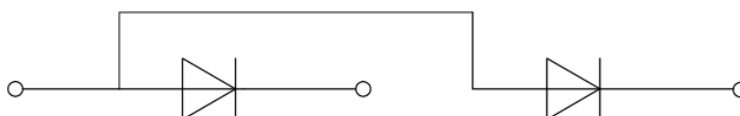
- A package of series of two diodes
- Heat transfer through alumina ceramic and metal substrate
- Welding by vacuum welding technology, which provide high reliability

#### Product Summary

| Parameter                                | Value | Unit |
|------------------------------------------|-------|------|
| $V_{RRM}$                                | 2000  | V    |
| $I_{F(AV)}(@ T_C = 100^{\circ}\text{C})$ | 120   | A    |
| $I_{FSM}(@ t_p = 10\text{ms})$           | 3300  | 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    | $I_{FSM}$   | 3300       | A                    |
| $I^2t$ value for fusing             | $T_{vj} = 25^{\circ}\text{C}$ | $I^2t$      | 54450      | $\text{A}^2\text{s}$ |
| 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 | $V_{TO}$  |        |      | 0.81 | V                |
| Dynamic resistance      |                                                                   | $r_T$     |        |      | 1.4  | $\text{m}\Omega$ |

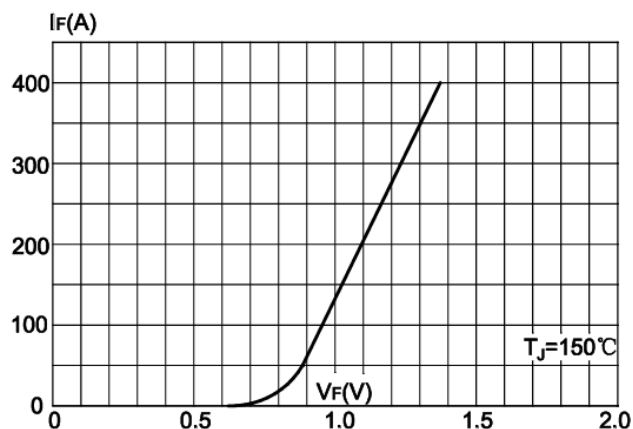
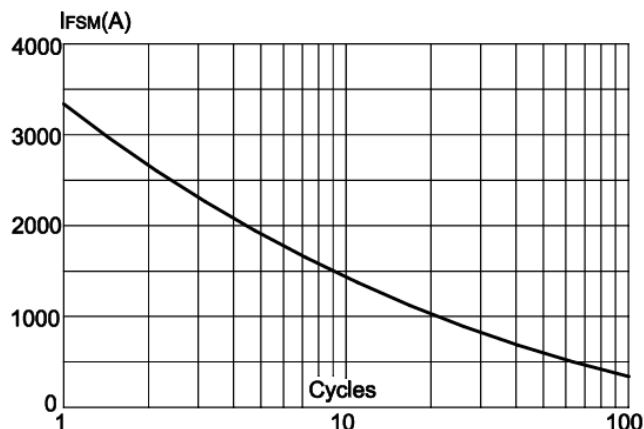
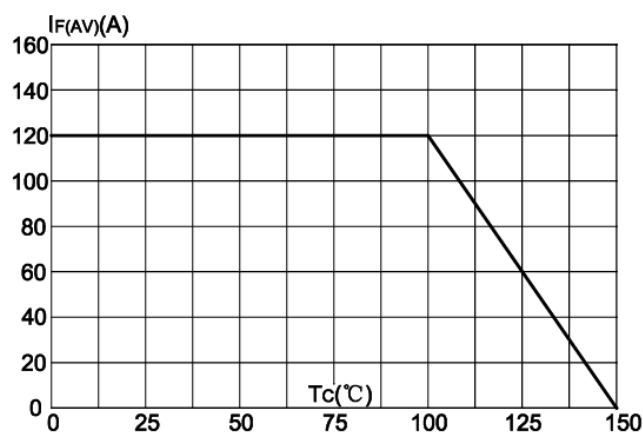
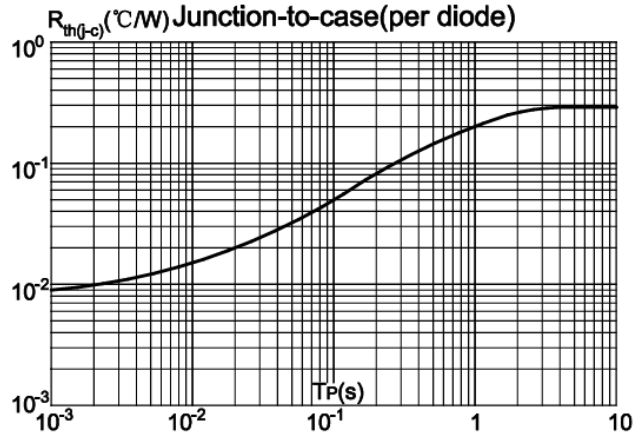
**Thermal Characteristics (@  $T_C = 25^\circ\text{C}$  unless otherwise specified)**

| Parameter                            | Conditions                          | Symbol        | Values |      |      | Unit |
|--------------------------------------|-------------------------------------|---------------|--------|------|------|------|
|                                      |                                     |               | Min.   | Typ. | Max. |      |
| Thermal resistance, junction to case | per diode                           | $R_{th(j-c)}$ |        | 0.20 |      | K/W  |
| Thermal resistance, case to heatsink | per module                          | $R_{th(c-s)}$ |        | 0.12 |      | K/W  |
| Mounting torque                      | Module and heatsink fixed torque M5 | M             | 4.25   |      | 5.75 | N·m  |
|                                      | Electrode connection torque M5      |               | 2.55   |      | 3.45 | N·m  |

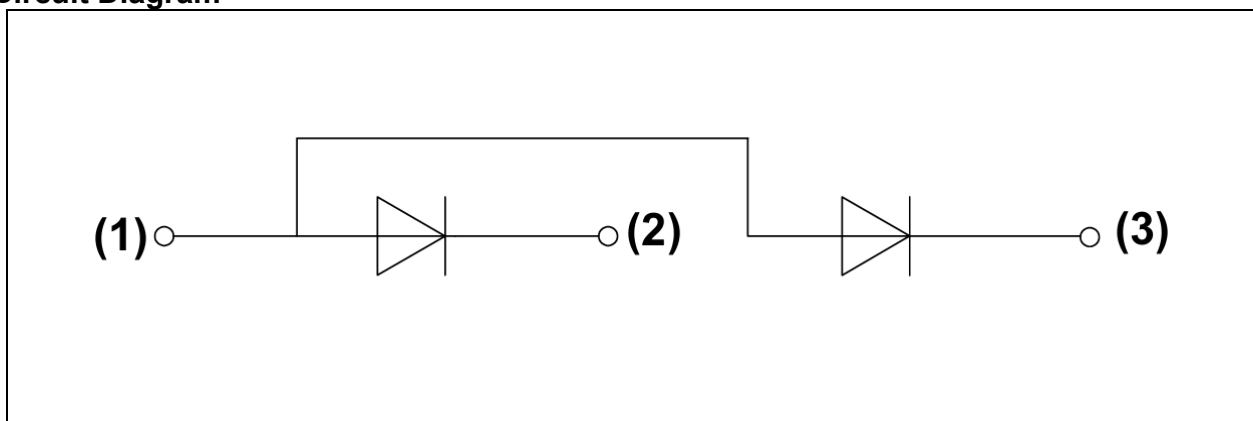
**Ordering Information**

| Device        | Marking       | Package | Weight     | Inner Box | Per Carton |
|---------------|---------------|---------|------------|-----------|------------|
| JMD120ND20T1A | JMD120ND20T1A | T1A     | 100±5g/PCS | 10 PCS    | 120 PCS    |

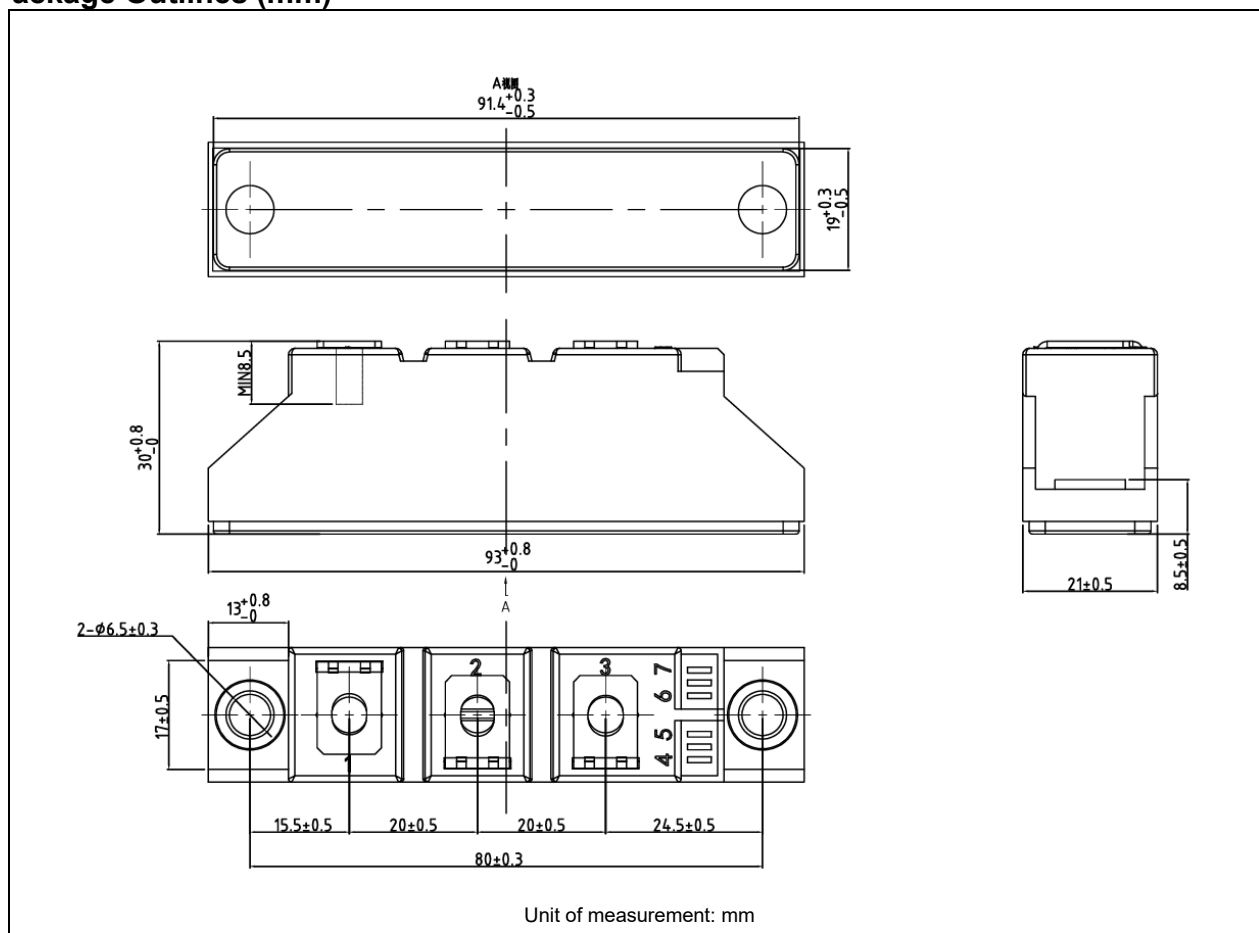
## Typical Electrical & Thermal Characteristics

**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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