



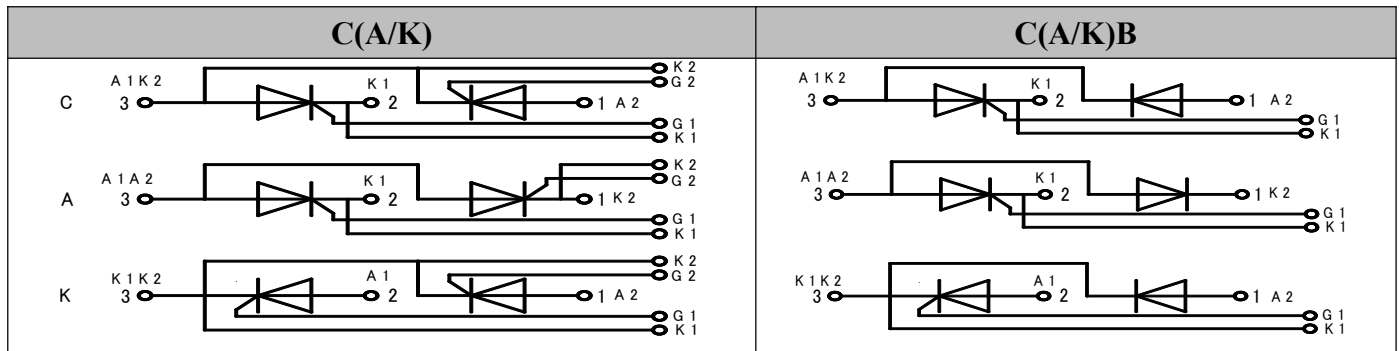
## Applications

- Power Converters
- Lighting Control
- DC Motor Control and Drives
- Heat and temperature control

## Features

- International standard package
- High Surge Capability
- Simple Mounting

## Internal Circuit



## Blocking - Off State

| TYPE             |                   | V <sub>DRM</sub> /V <sub>RRM</sub> | V <sub>DSM</sub> /V <sub>RSM</sub> | Units |
|------------------|-------------------|------------------------------------|------------------------------------|-------|
| MT1000C(A/K)20T9 | MT1000C(A/K)B20T9 | 2000                               | 2200                               | V     |
| MT1000C(A/K)22T9 | MT1000C(A/K)B22T9 | 2200                               | 2400                               | V     |
| MT1000C(A/K)25T9 | MT1000C(A/K)B25T9 | 2500                               | 2700                               | V     |

## Maximum Ratings

| Symbol           | Conditions                                                                                                              | Values     | Units            |
|------------------|-------------------------------------------------------------------------------------------------------------------------|------------|------------------|
| I <sub>TAV</sub> | Sine 180°;T <sub>c</sub> =55℃                                                                                           | 1000       | A                |
|                  | Sine 180°;T <sub>c</sub> =95℃                                                                                           | 500        | A                |
| I <sub>TSM</sub> | T <sub>VJ</sub> =125℃ t=10ms, sine                                                                                      | 18000      | A                |
| I <sup>2</sup> t | T <sub>VJ</sub> =125℃ t=10ms, sine                                                                                      | 1620000    | A <sup>2</sup> s |
| Visol            | a.c.50HZ;r.m.s.;1min,I <sub>iso</sub> :2mA(MAX)                                                                         | 3000       | V                |
| T <sub>vj</sub>  |                                                                                                                         | -40 to 125 | ℃                |
| T <sub>stg</sub> |                                                                                                                         | -40 to 125 | ℃                |
| M <sub>t</sub>   | To terminals(M12)                                                                                                       | 12±15%     | Nm               |
| M <sub>s</sub>   | To heatsink(M8)                                                                                                         | 6±15%      | Nm               |
| di/dt            | T <sub>VJ</sub> = T <sub>VJM</sub> , V <sub>DM</sub> ≤2/3V <sub>DRM</sub> , I <sub>GM</sub> =1.5A t <sub>r</sub> ≤1.5μs | 100        | A/μs             |
| dv/dt            | T <sub>VJ</sub> = T <sub>VJM</sub> , 2/3V <sub>DRM</sub> , linear voltage rise                                          | 1000       | V/μs             |
| Weight           | Module(Approximately)                                                                                                   | 4050       | g                |

## Thermal Characteristics

| Symbol               | Conditions | Values | Units |
|----------------------|------------|--------|-------|
| R <sub>th(j-c)</sub> | per chip   | 0.048  | ℃/W   |
| R <sub>th(c-h)</sub> | per chip   | 0.02   | ℃/W   |



## Electrical Characteristics

| Symbol            | Conditions                                                       | Values |      |      | Units      |
|-------------------|------------------------------------------------------------------|--------|------|------|------------|
|                   |                                                                  | Min.   | Typ. | Max. |            |
| $V_{TM}$          | $T=25^{\circ}\text{C}$ $I_{TM}=3000\text{A}$                     |        |      | 1.6  | V          |
| $I_{RRM}/I_{DRM}$ | $T_{VJ}=T_{VJM}$ , $V=V_{RRM}$ , $V=V_{DRM}$                     |        |      | 70   | mA         |
| $V_{TO}$          | $T_{VJ}=T_{VJM}$                                                 |        |      | 0.85 | V          |
| $r_T$             | $T_{VJ}=T_{VJM}$                                                 |        |      | 0.24 | m $\Omega$ |
| $V_{GT}$          | $T_{VJ}=25^{\circ}\text{C}$ , $V_D=12\text{V}$ , $R_L=3\ \Omega$ | 0.8    |      | 2.5  | V          |
| $I_{GT}$          | $T_{VJ}=25^{\circ}\text{C}$ , $V_D=12\text{V}$ , $R_L=3\ \Omega$ | 30     |      | 150  | mA         |
| $I_L$             | $T_{VJ}=25^{\circ}\text{C}$ , $V_D=12\text{V}$ , $R_L=3\ \Omega$ |        |      | 1000 | mA         |
| $I_H$             | $T_{VJ}=25^{\circ}\text{C}$ , $V_D=12\text{V}$ , $R_L=3\ \Omega$ | 20     |      | 150  | mA         |
| $V_{GD}$          | $T_{VJ}=T_{VJM}$ , $V_{DM}=67\%V_{DRM}$                          | 0.2    |      |      | V          |

## Performance Curves

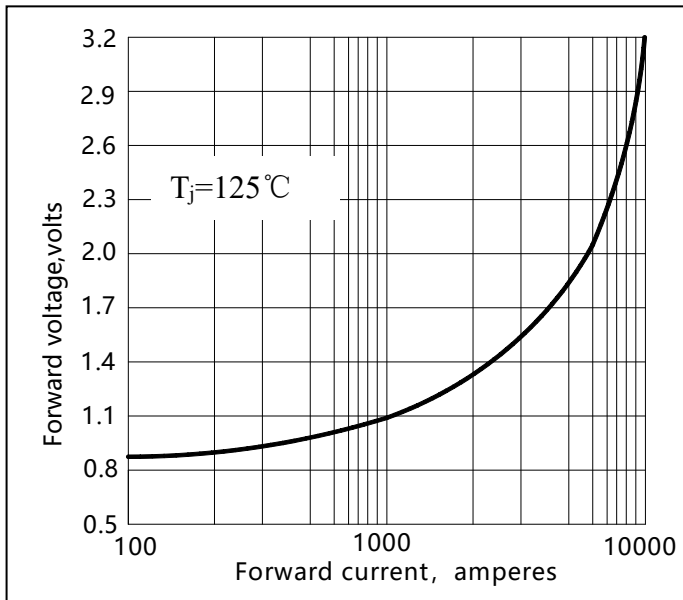


Fig1. Peak On-state Voltage Vs Peak On-state

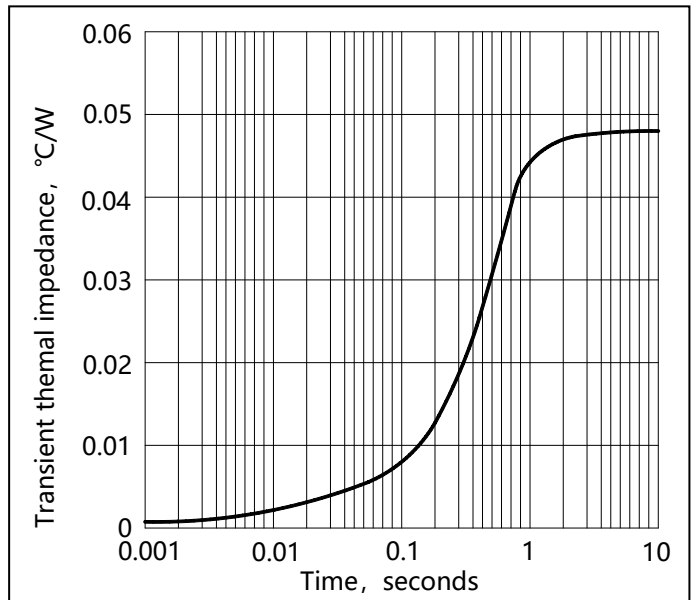


Fig2. Max. junction To case Thermal Impedance Vs Time

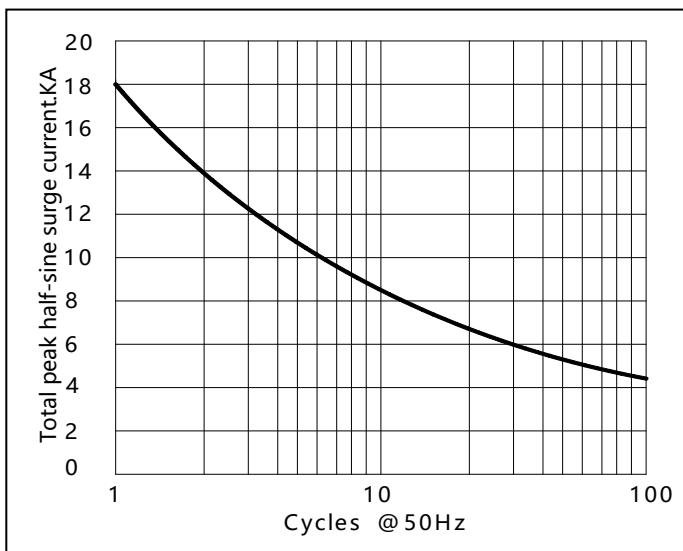


Fig3. Surge Current Vs Cycles

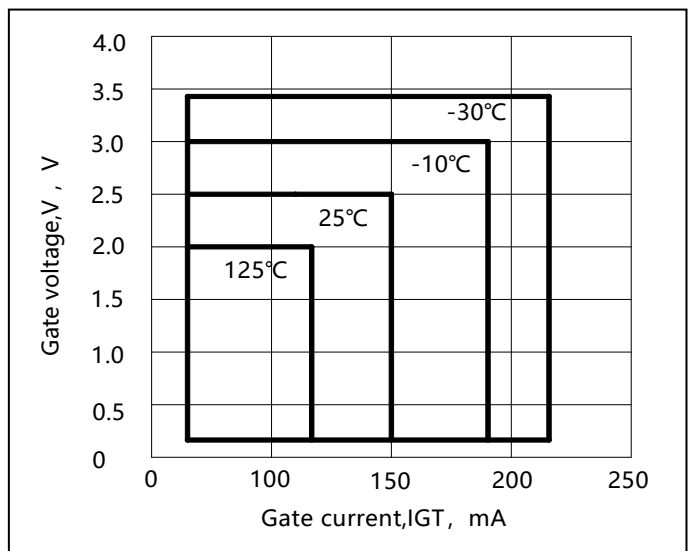


Fig4. Gate Trigger Zone Vs temperature

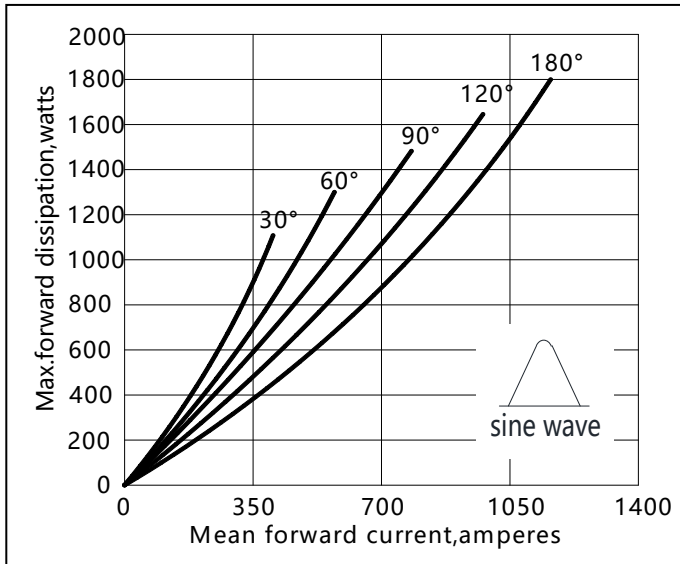


Fig5. Max. Power Dissipation Vs Mean On-state Current

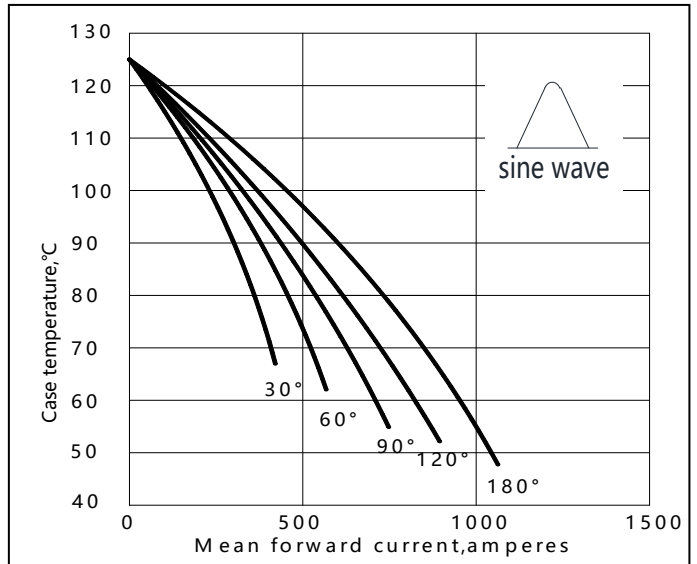
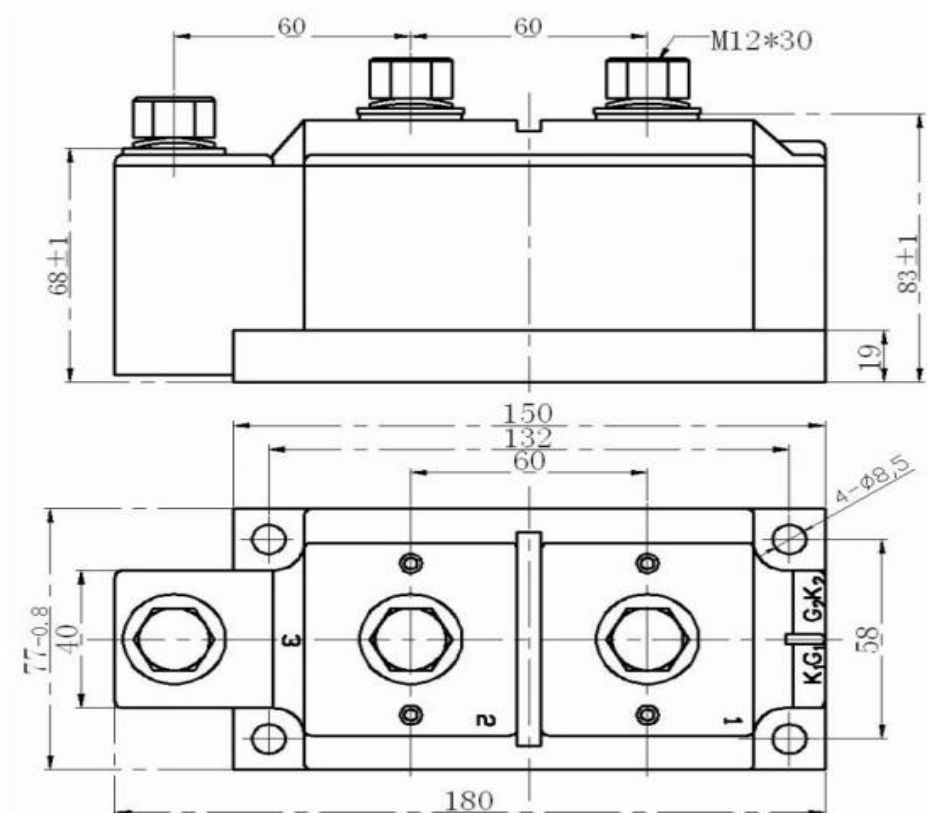


Fig6. Max case Temperature Vs Mean On-state Current

## Package Outline Information

### CASE:T9



Dimensions in mm

Unmarked dimensional tolerance:  $\pm 0.5\text{mm}$