

## Description

- 1) A package of series of two chips.
- 2) With high thermal conductivity DBC as the insulation.
- 3) Welding by vacuum welding technology, which provide high reliability.

## Typical Application

DC motor control, temperature control and light control system.



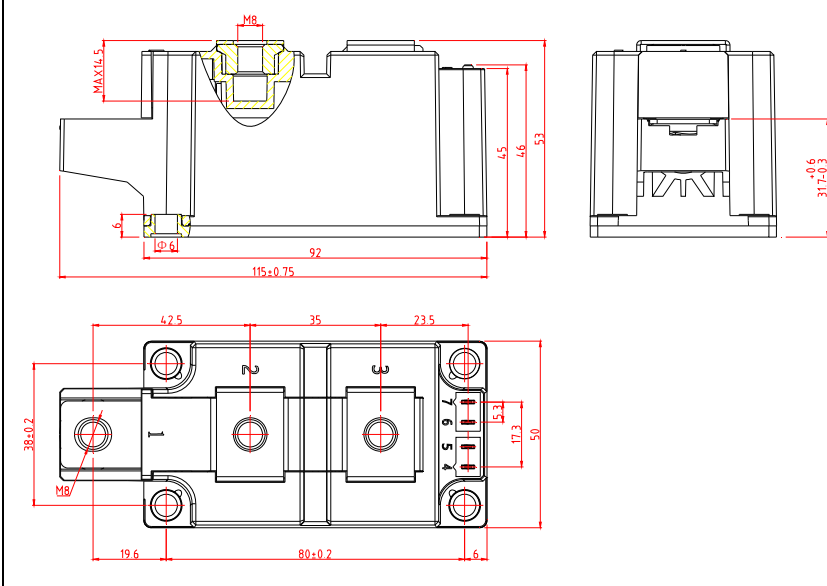
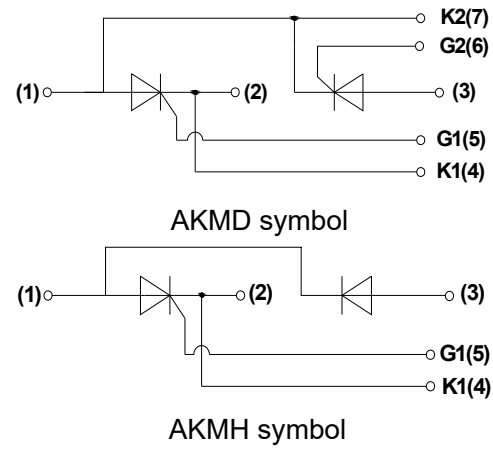
### Absolute Maximum Ratings (Packaged into modules, unless otherwise specified, $T_{CASE}=25^{\circ}\text{C}$ )

| Parameter                                 | Test Conditions                   | Symbol                | Values    |      |      | Unit                   |
|-------------------------------------------|-----------------------------------|-----------------------|-----------|------|------|------------------------|
|                                           |                                   |                       | 12        | 16   | 18   |                        |
| Operating junction temperature range      |                                   | $T_j$                 | -40~125   |      |      | $^{\circ}\text{C}$     |
| Storage temperature range                 |                                   | $T_{stg}$             | -40~125   |      |      | $^{\circ}\text{C}$     |
| Repetitive peak off-state voltage         | $T_j=25^{\circ}\text{C}$          | $V_{DRM}$             | 1200      | 1600 | 1800 | V                      |
| Repetitive peak reverse voltage           | $T_j=25^{\circ}\text{C}$          | $V_{RRM}$             | 1200      | 1600 | 1800 | V                      |
| Non-repetitive peak off-state voltage     | $T_j=25^{\circ}\text{C}$          | $V_{DSM}$             | 1300      | 1700 | 1900 | V                      |
| Non-repetitive peak reverse voltage       | $T_j=25^{\circ}\text{C}$          | $V_{RSM}$             | 1300      | 1700 | 1900 | V                      |
| Average on-state current                  | $T_C=85^{\circ}\text{C}$          | $I_{T(AV)}/I_{F(AV)}$ | 250       |      |      | A                      |
| Peak on-state surge current               | $t_p=10\text{ms } V_R=0.6V_{RRM}$ | $I_{TSM}/I_{FSM}$     | 8300      |      |      | A                      |
| $I^2t$ value for fusing                   | $t_p=10\text{ms } V_R=0.6V_{RRM}$ | $I^2t$                | 344450    |      |      | $\text{A}^2\text{s}$   |
| Critical rate of rise of on-state current | $I_G=2 \times I_{GT}$             | $di/dt$               | 150       |      |      | $\text{A}/\mu\text{s}$ |
| Insulation voltage                        | A.C 50Hz(1s/1min)                 | $V_{ISO}$             | 3600/3000 |      |      | V                      |

**Electrical Characteristics** (Packaged into modules, unless otherwise specified,  $T_{CASE}=25^{\circ}C$ )

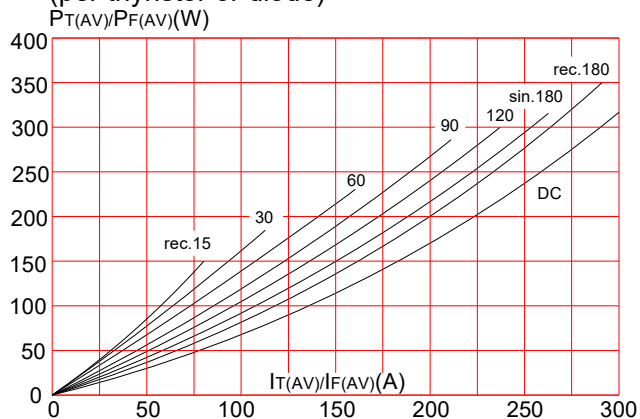
| Parameter                         | Test Conditions                                  | Symbol        | Values      | Unit          |
|-----------------------------------|--------------------------------------------------|---------------|-------------|---------------|
| Peak on-state voltage             | $I_T=750A$ $t_P=380\mu s$                        | $V_{TM}$      | $\leq 1.8$  | V             |
| Threshold voltage                 | $T_J=125^{\circ}C$                               | $V_{TO}$      | $\leq 0.85$ | V             |
| Dynamic resistance                | $T_J=125^{\circ}C$                               | $R_d$         | $\leq 0.75$ | m $\Omega$    |
| Repetitive peak off-state current | $V_D=V_{DRM}$<br>$T_C=25^{\circ}C$               | $I_{DRM1}$    | $\leq 100$  | $\mu A$       |
|                                   | $T_C=125^{\circ}C$                               | $I_{DRM2}$    | $\leq 100$  | mA            |
| Repetitive peak reverse current   | $V_R=V_{RRM}$<br>$T_C=25^{\circ}C$               | $I_{RRM1}$    | $\leq 100$  | $\mu A$       |
|                                   | $T_C=125^{\circ}C$                               | $I_{RRM2}$    | $\leq 100$  | mA            |
| Triggering gate current           | $V_D=12V$ $R_L=30\Omega$                         | $I_{GT}$      | 20-150      | mA            |
| Holding current                   | $I_T=1A$                                         | $I_H$         | $\leq 300$  | mA            |
| Latching current                  | $I_G=1.2I_{GT}$                                  | $I_L$         | $\leq 400$  | mA            |
| Triggering gate voltage           | $V_D=12V$ $R_L=30\Omega$                         | $V_{GT}$      | $\leq 1.8$  | V             |
| Non triggering gate voltage       | $V_D=0.5V_{DRM}$ $T_J=125^{\circ}C$              | $V_{GD}$      | $\leq 0.25$ | V             |
| Critical rate of rise of voltage  | $V_D=2/3V_{DRM}$ $T_J=125^{\circ}C$<br>Gate Open | $dv/dt$       | $\geq 1000$ | V/ $\mu s$    |
| Thermal resistance                | Junction to case                                 | $R_{th(j-c)}$ | 0.14        | $^{\circ}C/W$ |
|                                   | Case to heatsink                                 | $R_{th(c-s)}$ | 0.05        |               |

### Mechanical Characteristics

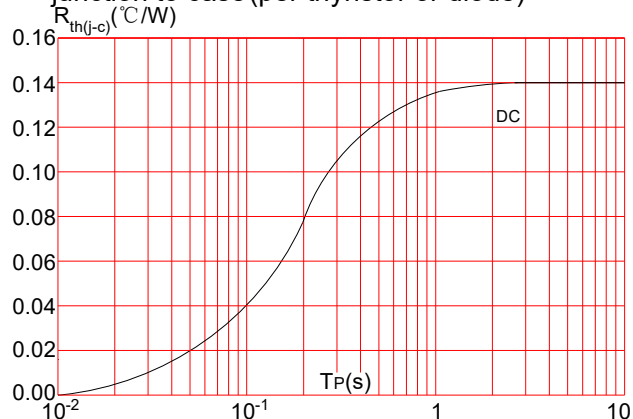
|                                                                                                                                                                                   |                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Module size                                                                                                                                                                       | 115mm×50mm         |
| Module height                                                                                                                                                                     | 53mm               |
| Terminal distance of (1) /(2) /(3)                                                                                                                                                | 42.5mm/35mm/23.5mm |
| Mounting torque(M5)                                                                                                                                                               | 5±15%Nm            |
| Terminal torque(M8)                                                                                                                                                               | 9±15%Nm            |
|  <p style="text-align: center;">T3</p>                                                          |                    |
|  <p style="text-align: center;">AKMD symbol</p> <p style="text-align: center;">AKMH symbol</p> |                    |

## Performance Curves

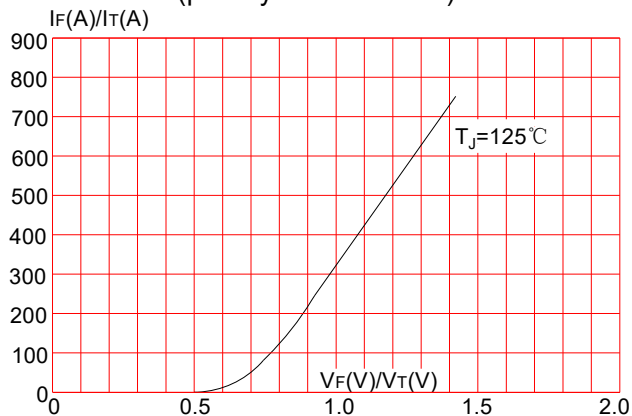
**FIG.1:** Power dissipation vs. on-state current  
(per thyristor or diode)



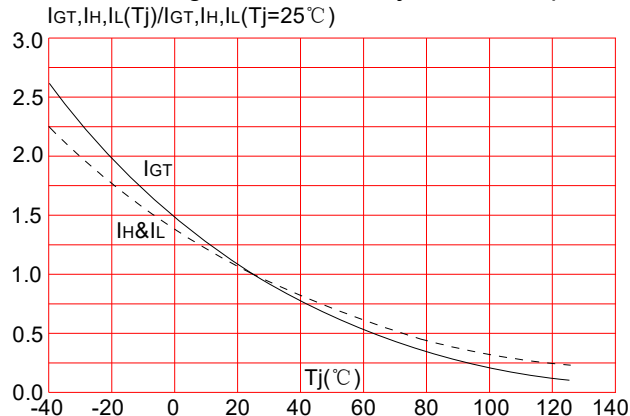
**FIG.2:** Maximum transient thermal impedance  
junction to case (per thyristor or diode)



**FIG.3:** Forward characteristics  
(per thyristor or diode)



**FIG.4:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



## Ordering Information

|                                                                                                             |           |                                           |                                                                                                          |
|-------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>AK</b><br>Aiko Electronics Technology Co., LTD<br>MD: Thyristor module<br>MH: Thyristor and diode module | <b>MD</b> | <b>251 / 16</b><br>$I_T(AV)/I_F(AV)=250A$ | 12: $V_{DSM}/V_{RSM} \geq 1300V$<br>16: $V_{DSM}/V_{RSM} \geq 1700V$<br>18: $V_{DSM}/V_{RSM} \geq 1900V$ |
|-------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------|----------------------------------------------------------------------------------------------------------|