

## 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   |      |      | °C                     |
| Storage temperature range                 |                                   | $T_{stg}$             | -40-125   |      |      | °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                  | $T_C=85^\circ\text{C}$            | $I_{T(AV)}/I_{F(AV)}$ | 70        |      |      | A                      |
| Peak on-state surge current               | $t_P=10\text{ms } V_R=0.6V_{RRM}$ | $I_{TSM}/I_{FSM}$     | 1400      |      |      | A                      |
| $I^2t$ value for fusing                   | $t_P=10\text{ms } V_R=0.6V_{RRM}$ | $I^2t$                | 9800      |      |      | $\text{A}^2\text{s}$   |
| 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,  $T_{CASE}=25^{\circ}\text{C}$ )

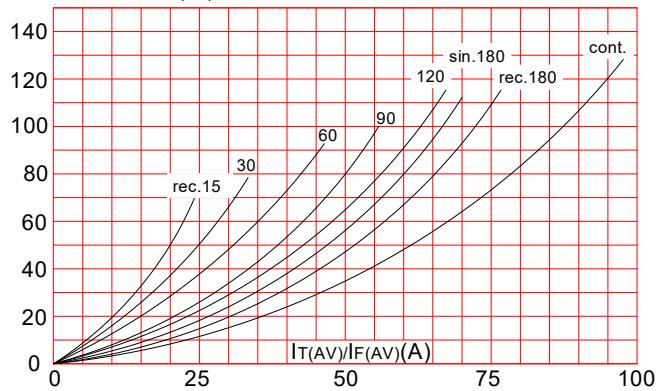
| Parameter                         | Test Conditions  | Symbol                         | Values                  | Unit                         |
|-----------------------------------|--|--------------------------------|-------------------------|------------------------------|
| Peak on-state voltage             | $I_T=210\text{A}$ $t_P=380\mu\text{s}$                                 | $V_{TM}$                       | $\leq 1.8$              | V                            |
| Threshold voltage                 | $T_j=125^{\circ}\text{C}$  | $V_{TO}$                       | $\leq 0.95$             | V                            |
| Dynamic resistance                | $T_j=125^{\circ}\text{C}$  | $R_d$                          | $\leq 3.7$              | $\text{m}\Omega$             |
| Repetitive peak off-state current | $V_D=V_{DRM}$<br>$T_C=25^{\circ}\text{C}$<br>$T_C=125^{\circ}\text{C}$ | $I_{DRM1}$<br>$I_{DRM2}$       | $\leq 100$<br>$\leq 30$ | $\mu\text{A}$<br>$\text{mA}$ |
| Repetitive peak reverse current   | $V_R=V_{RRM}$<br>$T_C=25^{\circ}\text{C}$<br>$T_C=125^{\circ}\text{C}$ | $I_{RRM1}$<br>$I_{RRM2}$       | $\leq 100$<br>$\leq 30$ | $\mu\text{A}$<br>$\text{mA}$ |
| Triggering gate current           | $V_D=12\text{V}$ $R_L=30\Omega$  | $I_{GT}$                       | 20-120                  | mA                           |
| Holding current                   | $I_T=1\text{A}$  | $I_H$                          | $\leq 250$              | mA                           |
| Latching current                  | $I_G=1.2I_{GT}$  | $I_L$                          | $\leq 300$              | mA                           |
| Triggering gate voltage           | $V_D=12\text{V}$ $R_L=30\Omega$  | $V_{GT}$                       | $\leq 1.8$              | V                            |
| Non triggering gate voltage       | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$                                | $V_{GD}$                       | $\geq 0.25$             | V                            |
| Critical rate of rise of voltage  | $V_D=2/3V_{DRM}$ $T_j=125^{\circ}\text{C}$<br>Gate Open                | $dv/dt$                        | $\geq 1000$             | $\text{V}/\mu\text{s}$       |
| Thermal resistance                | Junction to case<br>Case to heatsink                                   | $R_{th(j-c)}$<br>$R_{th(c-s)}$ | 0.37<br>0.22            | $^{\circ}\text{C}/\text{W}$  |

## Mechanical Characteristics

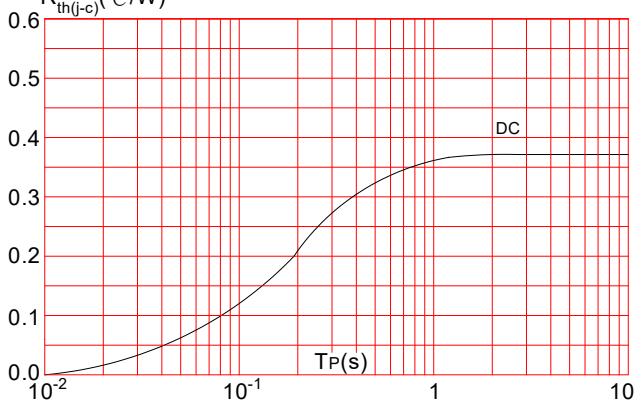
|                                    |                                    |
|------------------------------------|------------------------------------|
| Module size                        | 95.2mm×22.7mm                      |
| Module height                      | 30.3mm                             |
| Terminal distance of (1) /(2) /(3) | 20mm                               |
| Mounting torque(M5)                | 5±15%Nm                            |
| Terminal torque(M5)                | 3±15%Nm                            |
| <br>T1                             | <br>AKMD symbol<br><br>AKMH symbol |

## Performance Curves

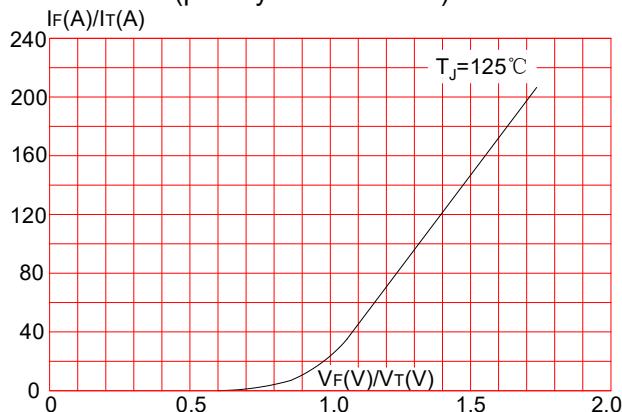
**FIG.1:**Power dissipation vs. on-state current (per thyristor or diode)  
 $P_{T(AV)}/P_{F(AV)}(W)$



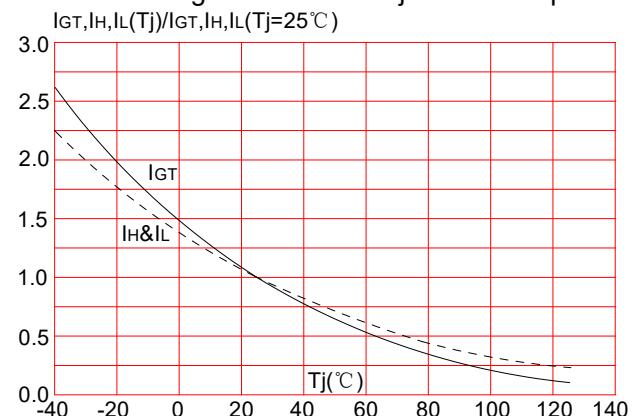
**FIG.2:** Maximum transient thermal impedance junction to case(per thyristor or diode)  
 $R_{th(j-c)}(^\circ C/W)$



**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

AK      MD  
 Aiko Electronics Technology Co., LTD  
 MD: Thyristor module  
 MH: Thyristor and diode module

071    /    16  
 12:  $V_{DSM}/V_{RSM} \geq 1300V$   
 16:  $V_{DSM}/V_{RSM} \geq 1700V$   
 18:  $V_{DSM}/V_{RSM} \geq 1900V$   
 $I_{T(AV)}/I_{F(AV)} = 70A$