# 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℃)

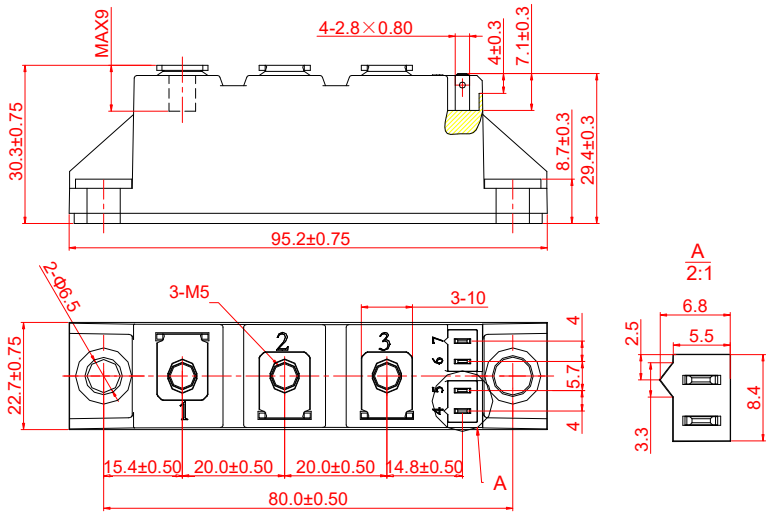
| Parameter | Test Conditions | Symbol | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | 12 | 16 | 18 | |
| Operating junction temperature range | | $T_j$ | -40-125 | | | ℃ |
| Storage temperature range | | $T_{stg}$ | -40-125 | | | ℃ |
| Repetitive peak off-state voltage | $T_j$=25℃ | $V_{DRM}$ | 1200 | 1600 | 1800 | V |
| Repetitive peak reverse voltage | $T_j$=25℃ | $V_{RRM}$ | 1200 | 1600 | 1800 | V |
| Non-repetitive peak off-state voltage | $T_j$=25℃ | $V_{DSM}$ | 1300 | 1700 | 1900 | V |
| Non-repetitive peak reverse voltage | $T_j$=25℃ | $V_{RSM}$ | 1300 | 1700 | 1900 | V |
| Average on-state current | $T_C$=85℃ | $I_{T(AV)}/I_{F(AV)}$ | 90 | | | A |
| Peak on-state surge current | $t_P$=10ms $V_R$=0.6$V_{RRM}$ | $I_{TSM}/I_{FSM}$ | 1800 | | | A |
| $I^2t$ value for fusing | $t_P$=10ms $V_R$=0.6$V_{RRM}$ | $I^2t$ | 16200 | | | $A^2s$ |
| Critical rate of rise of on-state current | $I_G$=2×$I_{GT}$ | dI/dt | 150 | | | A/μs |
| Insulation voltage | A.C 50Hz(1s/1min) | $V_{ISO}$ | 3600/3000 | | | V |

**Electrical Characteristics** (Packaged into modules, unless otherwise specified, $T_{CASE}$=25℃)

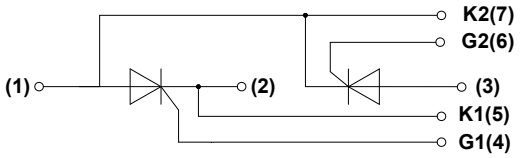
| Parameter | Test Conditions | Symbol | Values | Unit |
|---|---|---|---|---|
| Peak on-state voltage | $I_T$=270A $t_P$=380μs | $V_{TM}$ | ≤1.8 | V |
| Threshold voltage | $T_j$=125℃ | $V_{TO}$ | ≤0.95 | V |
| Dynamic resistance | $T_j$=125℃ | $R_d$ | ≤2.1 | mΩ |
| Repetitive peak off-state current | $V_D$=$V_{DRM}$<br>$T_C$=25℃<br>$T_C$=125℃ | <br>$I_{DRM1}$<br>$I_{DRM2}$ | <br>≤100<br>≤30 | <br>μA<br>mA |
| Repetitive peak reverse current | $V_R$=$V_{RRM}$<br>$T_C$=25℃<br>$T_C$=125℃ | <br>$I_{RRM1}$<br>$I_{RRM2}$ | <br>≤100<br>≤30 | <br>μA<br>mA |
| Triggering gate current | $V_D$=12V $R_L$=30Ω | $I_{GT}$ | 20-120 | mA |
| Holding current | $I_T$=1A | $I_H$ | ≤250 | mA |
| Latching current | $I_G$=1.2$I_{GT}$ | $I_L$ | ≤300 | mA |
| Triggering gate voltage | $V_D$=12V $R_L$=30Ω | $V_{GT}$ | ≤1.8 | V |
| Non triggering gate voltage | $V_D$=$V_{DRM}$ $T_j$=125℃ | $V_{GD}$ | ≥0.25 | V |
| Critical rate of rise of voltage | $V_D$=2/3$V_{DRM}$ $T_j$=125℃<br>Gate Open | dV/dt | ≥1000 | V/μs |
| Thermal resistance | Junction to base plate<br>Case to heatsink<br>Junction to case | $R_{th(j-b)}$<br>$R_{th(c-s)}$<br>$R_{th(j-c)}$ | 0.34<br>0.22<br>0.3 | ℃/W |

## Mechanical Characteristics

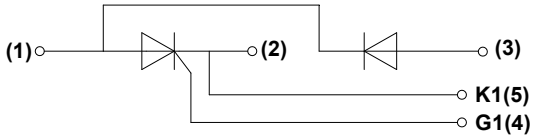
| | |
|---|---|
| Module size | 95.2mm×22.7mm |
| Module height | 30.3mm |
| Terminal distance of (1) /(2) /(3) | 20mm |
| Mounting torque(M5) | 5±15%Nm |
| Terminal torque(M5) | 3±15%Nm |




T1




AKMD symbol




AKMH symbol

## Performance Curves

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

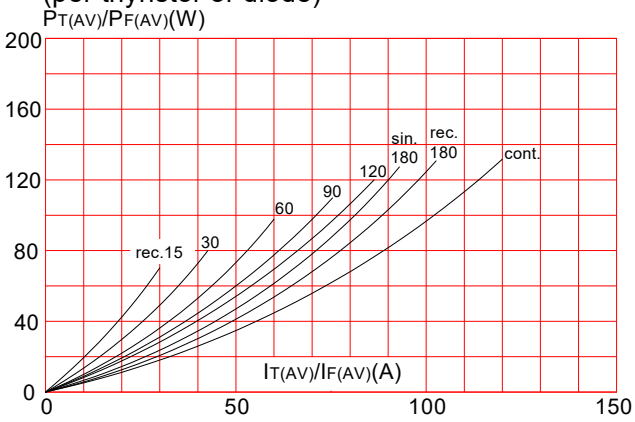



**FIG.2:** Maximum transient thermal impedance junction to case(per thyristor or diode)

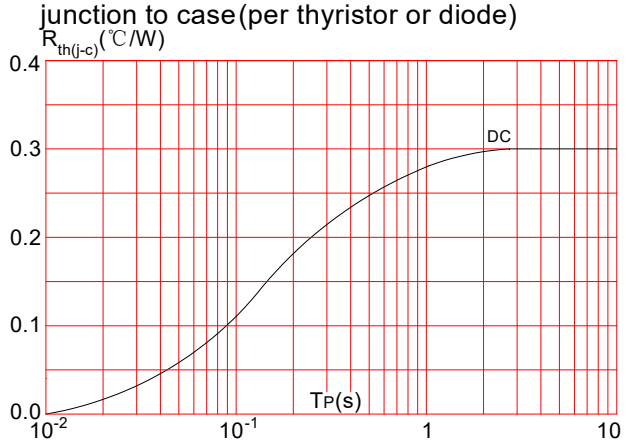



**FIG.3:**Forward characteristics (per thyristor or diode)

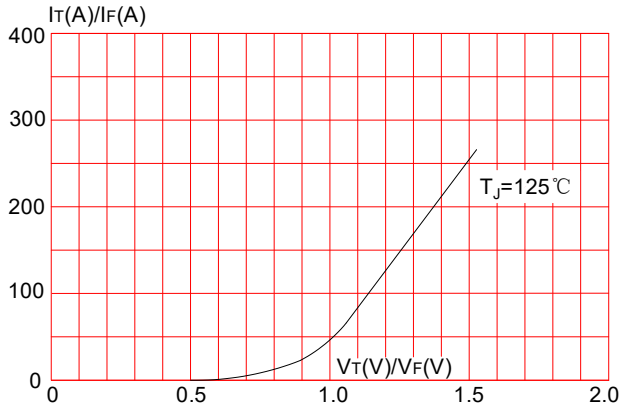
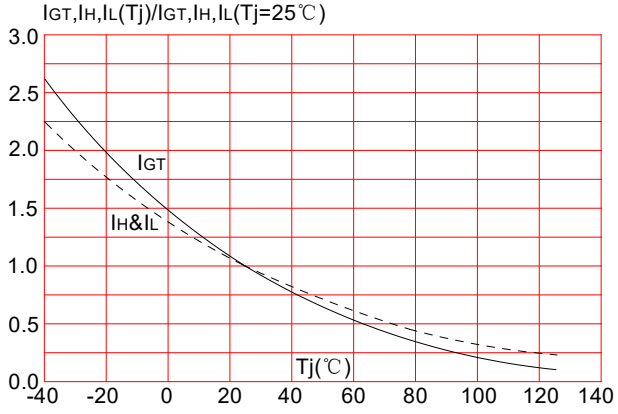



**FIG.4:** Relative variations of gate trigger current, holding current and latching current versus junction temperature




## Ordering Information

AK MD 090 / 16

- AK: Aiko Electronics Technology Co., LTD
- MD: Thyristor module; MH: Thyristor and diode module
- 090: $I_{T(AV)}/I_{F(AV)}$=90A
- 16: 12:$V_{DSM}/V_{RSM}$≥1300V; 16:$V_{DSM}/V_{RSM}$≥1700V; 18:$V_{DSM}/V_{RSM}$≥1900V