

## 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, $T_{CASE}=25^{\circ}C$ )

Parameter	Test Conditions	Symbol	Values			Unit
			12	16	18	
Operating junction temperature range		$T_j$	-40~125			$^{\circ}C$
Storage temperature range		$T_{stg}$	-40~125			$^{\circ}C$
Repetitive peak off-state voltage	$T_j=25^{\circ}C$	$V_{DRM}$	1200	1600	1800	V
Repetitive peak reverse voltage	$T_j=25^{\circ}C$	$V_{RRM}$	1200	1600	1800	V
Non-repetitive peak off-state voltage	$T_j=25^{\circ}C$	$V_{DSM}$	1300	1700	1900	V
Non-repetitive peak reverse voltage	$T_j=25^{\circ}C$	$V_{RSM}$	1300	1700	1900	V
Average on-state current	$T_C=85^{\circ}C$	$I_{T(AV)}/I_{F(AV)}$	280			A
Peak on-state surge current	$t_p=10ms$ $V_R=0.6V_{RRM}$	$I_{TSM}/I_{FSM}$	9000			A
$I^2t$ value for fusing	$t_p=10ms$ $V_R=0.6V_{RRM}$	$I^2t$	405000			$A^2s$
Critical rate of rise of on-state current	$I_G=2 \times I_{GT}$	$di/dt$	150			$A/\mu s$
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	$I_T=840A$ $t_P=380\mu s$	$V_{TM}$	$\leq 1.8$	V
Threshold voltage	$T_J=125^{\circ}C$	$V_{TO}$	$\leq 0.8$	V
Dynamic resistance	$T_J=125^{\circ}C$	$R_d$	$\leq 0.7$	m $\Omega$
Repetitive peak off-state current	$V_D=V_{DRM}$ $T_C=25^{\circ}C$	$I_{DRM1}$	$\leq 100$	$\mu A$
	$T_C=125^{\circ}C$	$I_{DRM2}$	$\leq 100$	mA
Repetitive peak reverse current	$V_R=V_{RRM}$ $T_C=25^{\circ}C$	$I_{RRM1}$	$\leq 100$	$\mu A$
	$T_C=125^{\circ}C$	$I_{RRM2}$	$\leq 100$	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	$I_G=1.2 I_{GT}$	$I_L$	$\leq 400$	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	$V_D=2/3V_{DRM}$ $T_J=125^{\circ}C$ Gate Open	dv/dt	$\geq 1000$	V/ $\mu s$
Thermal resistance	Junction to case	$R_{th(j-c)}$	0.13	$^{\circ}C/W$
	Case to heatsink	$R_{th(c-s)}$	0.05	

**Mechanical Characteristics**

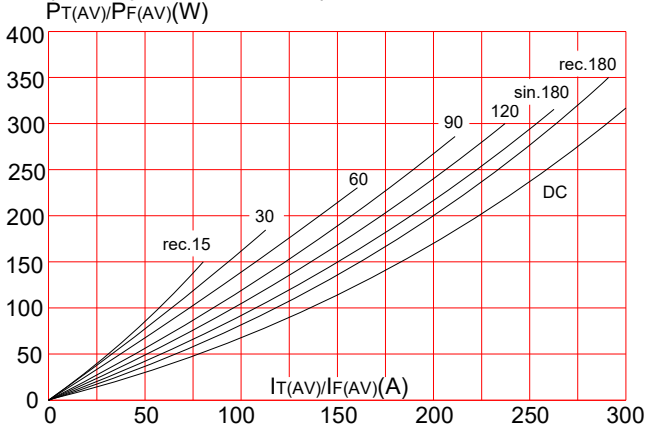
Module size	115mm×50mm
Module height	53mm
Terminal distance of (1)/(2)/(3)	42.5mm/35mm/23.5mm
Mounting torque(M5)	5±15%Nm
Terminal torque(M8)	9±15%Nm

The image contains several technical drawings and circuit symbols:

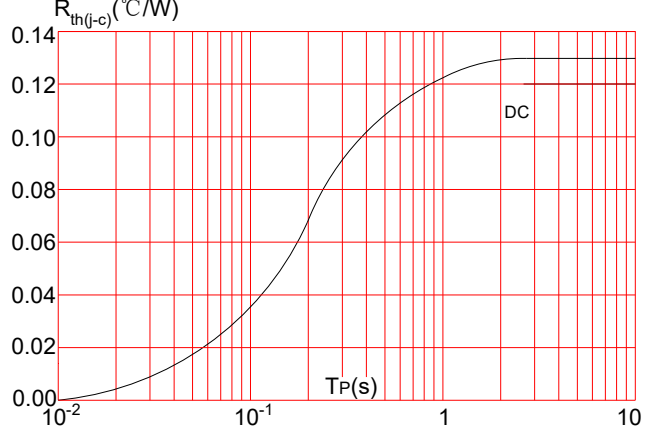
- Top Left:** A perspective view of the module showing an M8 terminal screw. Dimensions include a maximum height of 11.5mm, a base diameter of φ6, a total length of 115±0.75mm, and a mounting hole diameter of φ6.1. The main body height is 53mm, with a 4.5mm gap between the base and the main body, and a 4.6mm gap between the main body and the terminal block.
- Top Right:** A side view of the module showing a height of 31.7±0.3mm and a small offset of +0.06mm.
- Bottom Left:** A top-down view of the module showing terminal positions 1, 2, 3, 4, 5, and 9. Dimensions include a total width of 80±0.2mm, a terminal pitch of 19.6mm, and individual terminal spacings of 42.5mm, 35mm, and 23.5mm. The terminal block height is 17.3mm, and the overall module height is 50mm. A 38±0.2mm dimension is shown for the terminal block width.
- Bottom Center:** The label "T3" is centered below the top-down view.
- Right Side:** Two circuit symbols are shown. The top one is labeled "AKMD symbol" and shows a bridge-like circuit with terminals (1), (2), (3), G1(5), and K1(4). The bottom one is labeled "AKMH symbol" and shows a similar circuit with terminals (1), (2), (3), G1(5), and K1(4).

**Performance Curves**

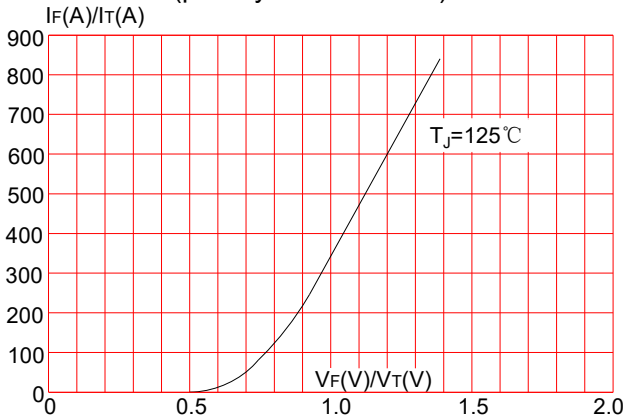
**FIG.1: Power dissipation vs. on-state current (per thyristor or diode)**



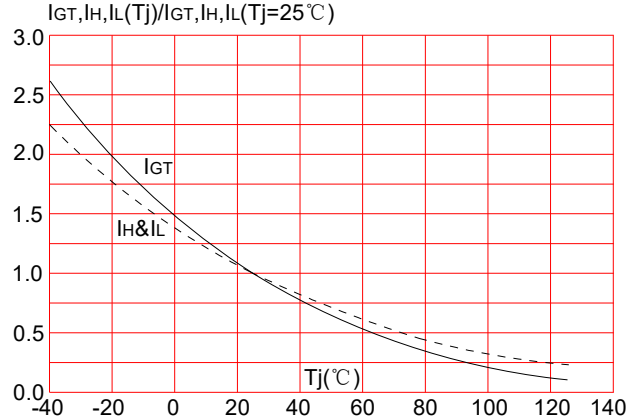
**FIG.2: Maximum transient thermal impedance junction to case(per thyristor or diode)**



**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**

<p style="text-align: center; font-size: 2em; font-weight: bold; margin: 0;">AK</p> <p style="text-align: center; border-top: 1px solid black; margin: 0;">Aiko Electronics Technology Co., LTD</p> <p style="text-align: center; margin: 0;">MD: Thyristor module MH: Thyristor and diode module</p>	<p style="font-size: 2em; font-weight: bold; margin: 0;">MD</p>	<p style="font-size: 2em; font-weight: bold; margin: 0;">280</p>	<p style="font-size: 2em; font-weight: bold; margin: 0;">/</p>	<p style="font-size: 2em; font-weight: bold; margin: 0;">16</p>	<p style="margin: 0;">12: <math>V_{DSM}/V_{RSM} \geq 1300V</math> 16: <math>V_{DSM}/V_{RSM} \geq 1700V</math> 18: <math>V_{DSM}/V_{RSM} \geq 1900V</math></p>
<p style="margin: 0;"><math>I_T(AV)/I_F(AV)=280A</math></p>					