

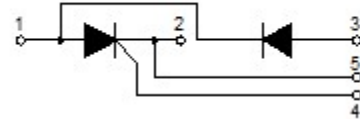
Thyristor/Diode Modules
Features

Blocking voltage: 1200 to 1800V

- Heat transfer through aluminum oxide DBC Ceramic isolated metal baseplate
- Industrial standard package
- Thick copper baseplate
- 2500 V_{RMS} isolating voltage


Typical Applications

- Power Converters
- DC motor Control and Drives
- Temperature control
- Lighting control



Module Type		
Type	V _{DRM}	V _{RSM}
JKH106-12	1200V	1300V
JKH106-16	1600V	1700V
JKH106-18	1800V	1900V

▲ Diode

Maximum Ratings				
Parameters	Symbol	Test Conditions	Values	Unit
State the average current	I _{F(AV)}	Single phase ,half wave 180°conduction T _c =85°C	110	A
Surge forward current	I _{FSM}	t=10mS T _J =45°C	2250	A
Maximum I ² t for fusing	I ² t	t=10mS T _J =45°C	25000	A ² s
Isolation Breakdown Voltage(R.M.S)	V _{isol}	Ac.50Hz; R.M.S; 1min	2500	V
		Ac.50Hz; R.M.S; 1sec	3500	V
Operating Junction Temperature	T _J		-40~+125	°C
Storage Temperature	T _{stg}		-40~+125	°C
Mounting Torque	Mt	To terminals(M5)	3± 15%	Nm

	Ms	To heatsink(M6)	5 ± 15%	
Module(Approximately)	Weight		100	g

Electrical Characteristics						
Parameters	Symbol	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
Maximum Forward voltage drop	V_{FM}	$T=25^{\circ}C$ $I_F=110A$	—	1.05	1.2	V
Maximum Repetitive Peak Reverse Current	I_{RRM}	$T_J=25^{\circ}C$ $V_{RD}=V_{RRM}$	—	—	100	μA
		$T_J=150^{\circ}C$ $V_{RD}=V_{RRM}$	—	—	5	mA

Thermal Characteristics				
Parameters	Symbol	Test Conditions	Values	Unit
Maximum internal thermal resistance, junction to case per leg	$R_{th(J-C)}$	Per diode	0.26	$^{\circ}C/W$
Typical thermal resistance, case to heatsink per module	$R_{th(C-S)}$	Module	0.10	$^{\circ}C/W$

▲ Thyristor

Maximum Ratings				
Parameters	Symbol	Test Conditions	Values	Unit
Average On-State Current	I_{TAV}	Sine $180^{\circ}C$; $T_C=85^{\circ}C$	110	A
Surge forward current	I_{TSM}	$t=10ms$ $T_J=45^{\circ}C$	2250	A
		$t=10ms$ $T_J=125^{\circ}C$	1900	
Maximum I^2t for fusing	I^2t	$t=10ms$ $T_J=45^{\circ}C$	25000	A^2s
		$t=10ms$ $T_J=125^{\circ}C$	18000	
Isolation Breakdown Voltage(R.M.S)	Visol	A_C 50Hz; R.M.S.; 1min	2500	V
		A_C .50Hz; R.M.S; 1sec	3500	V
Operating Junction Temperature	T_J		-40~+125	$^{\circ}C$
Storage Temperature	T_{stg}		-40~+125	$^{\circ}C$
Mounting Torque	Mt	To terminals(M5)	3 ± 15%	Nm
	Ms	To heatsink(M6)	5 ± 15%	
Maximum non-repetitive rate of rise of turned on current	di/dt	$T_J=25^{\circ}C$ from $0.67V_{DRM}$, $I_{TM}=\pi \times I_{T(AV)}$, $I_g=500mA$ $t_r<0.5\mu s$ $t_p>6\mu s$	150	A/ μs

Maximum critical rate of rise of off-state voltage	dv/dt	$T_J = 125^\circ\text{C}, V_D = 2/3V_{\text{DRM}}$	1000	V/us
Maximum allowable acceleration	a		50	m/s ²

Electrical Characteristics						
Parameters	Symbol	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
Maximum Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = \pi \times I_{\text{T(AV)}}, T_J = 25^\circ\text{C}$			1.65	V
Maximum Repetitive Peak Reverse Current/ Maximum Repetitive Off-state Current	$I_{\text{RRM}}/ I_{\text{DRM}}$	$T_J = 125^\circ\text{C}, V_{\text{RD}} = V_{\text{RRM}}$			20	mA
On state threshold voltage	V_{TO}	For power-loss calculations only $T_J = 125^\circ\text{C}$			0.9	V
Maximum Value of on-state slope resistance	r_{T}	$T_J = 125^\circ\text{C}$			2.0	m Ω
Maximum gate voltage required to trigger	V_{GT}	$T_J = 25^\circ\text{C}, V_D = 6\text{V}$			3	V
Maximum gate current required to trigger	I_{GT}	$T_J = 25^\circ\text{C}, V_D = 6\text{V}$			150	mA
Maximum gate voltage that will not trigger	V_{GD}	$T_J = 125^\circ\text{C}, V_D = 2/3V_{\text{DRM}}$			0.25	V
Maximum gate current that will not trigger	I_{GD}	$T_J = 125^\circ\text{C}, V_D = 2/3V_{\text{DRM}}$			6	mA
Maximum Latching current	I_{L}	$T_J = 25^\circ\text{C}, I_{\text{G}} = 1.2I_{\text{GT}}$		250	600	mA
Maximum Holding current	I_{H}	$T_J = 25^\circ\text{C}, I_{\text{T}} = 1\text{A}$		200	250	mA
Gate controlled delay time	tgd	$T_J = 25^\circ\text{C}, I_{\text{G}} = 1\text{A}, di_{\text{G}}/dt = 1\text{A}/\mu\text{s}$		1		μs
Circuit commutated turn-off time	tq	$T_J = 125^\circ\text{C}$		100		μs

Thermal Characteristics				
Parameters	Symbol	Test Conditions	Values	Unit
Maximum internal thermal resistance, junction to case per leg	$R_{\text{th}(J-C)}$	Per thyristor	0.28	$^\circ\text{C}/\text{W}$
Typical thermal resistance, case to heatsink per module	$R_{\text{th}(C-S)}$	Module	0.1	$^\circ\text{C}/\text{W}$

Performance Curves

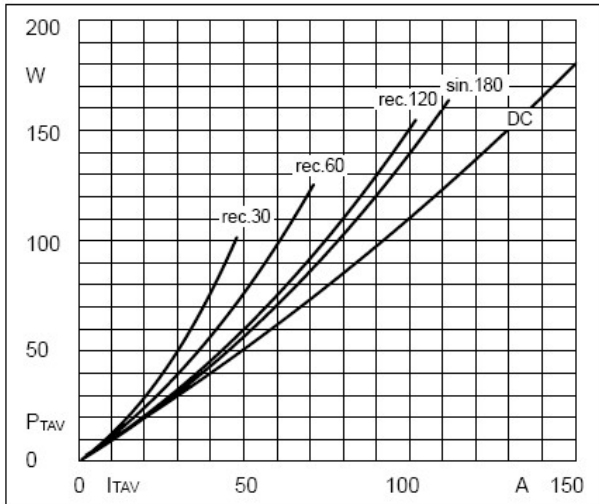


Fig1. Power dissipation

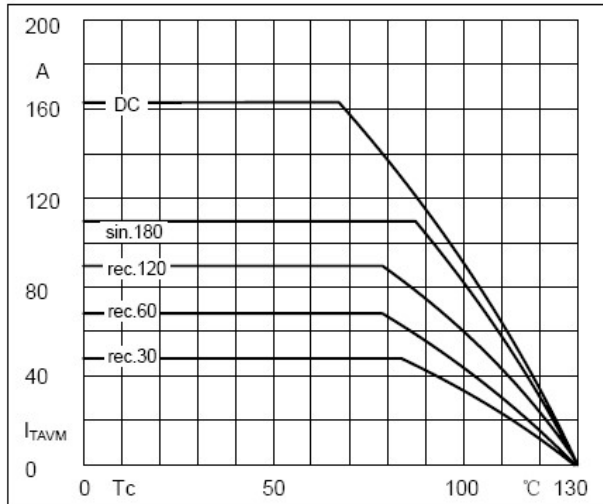


Fig2. Forward Current Derating Curve

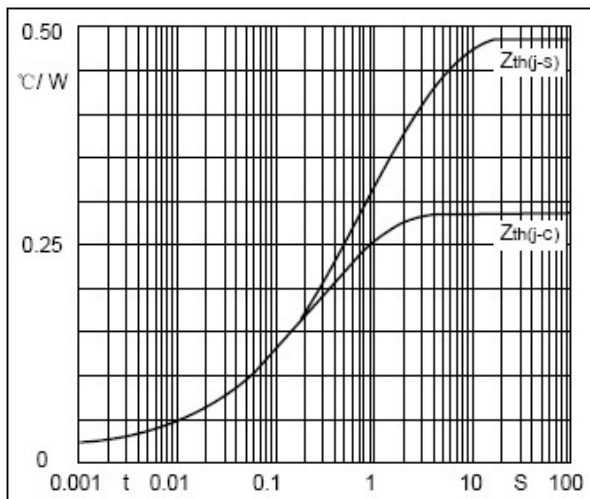


Fig3. Transient thermal impedance

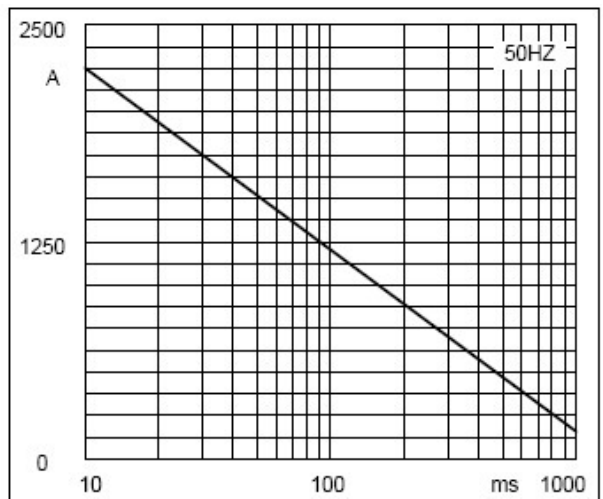


Fig4. Max Non-Repetitive Forward Surge Current

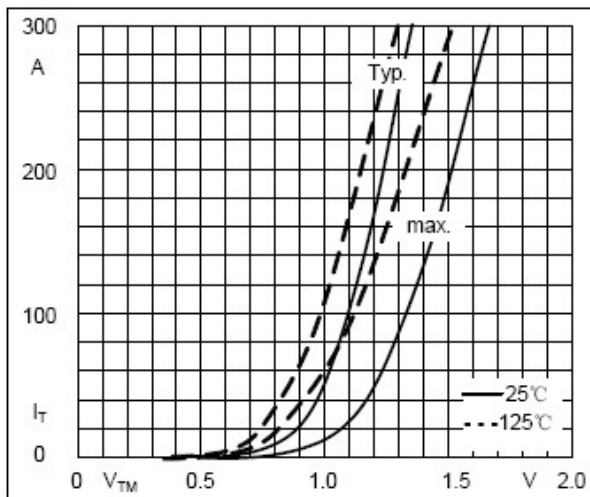


Fig5. Forward Characteristics

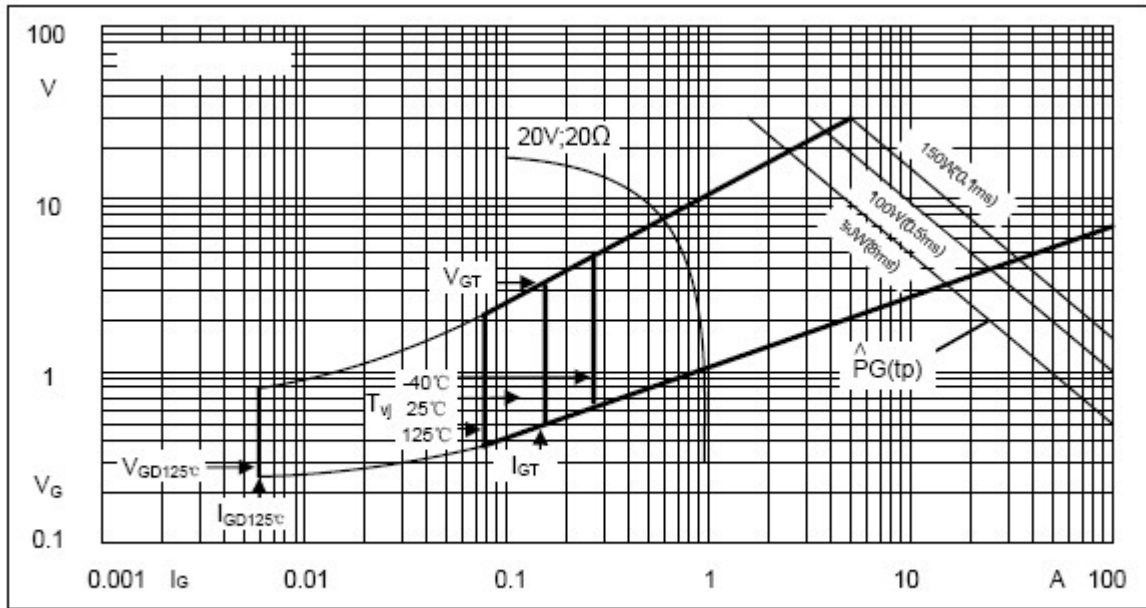
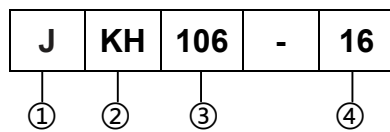


Fig6. Gate trigger Characteristics

Ordering Information Tabel

Device code



- ① JBY's power module
- ② Circuit configuration
- ③ Maximum average forward current, A
- ④ Voltage code 1600V

Package Outline Information

T1 dimensions in mm

