Thyristor/Diode Modules

Features

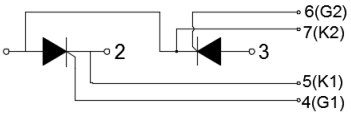
Blocking voltage：1600 to 2200V

- Heat transfer through ALN DBC Ceramic isolated metal baseplate
- Industrial standard package
- Thick copper baseplate
- 3000 V_{RMS} isolating voltage

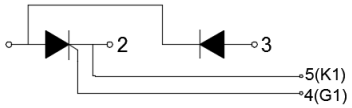


Typical Applications

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



JKT



JKH

Module Type		
Type	**V_{DRM}**	**V_{RSM}**
JKT/H230-16	1600V	1700V
JKT/H230-18	1800V	1900V
JKT/H230-20	2000V	2100V
JKT/H230-22	2200V	2300V

▲Diode

Maximum Ratings				
Parameters	**Symbol**	**Test Conditions**	**Values**	**Unit**
State the average current	$I_{F(AV)}$	Single phase ,half wave 180°conduction Tc=85˚C	230	A
Surge forward current	I_{FSM}	t=10mS T_J =45˚C	6800	A
Maximum I^2t for fusing	I^2t	t=10mS T_J =45˚C	231200	A^2s
Isolation Breakdown Voltage(R.M.S)	Visol	Ac.50Hz；R.M.S；1min	3000	V
		Ac.50Hz；R.M.S；1sec	3500	V
Operating Juntion Temperature	T_J		-40~+125	˚C
Storage Temperature	Tstg		-40~+125	˚C
Mounting Torque	Mt	To terminals(M6)	5±15%	Nm
	Ms	To heatsink(M6)	5±15%	
Module(Approximately)	Weight		160	g

Electrical Characteristics						
Parameters	Symbol	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
Maximum Forward voltage drop	V_{FM}	T=25℃ IF =230A	—	1.05	1.2	V
Maximum Repetitive Peak Reverse Current	I_{RRM}	T_J=25℃ V_{RD}=V_{RRM}	—	—	100	uA
		T_J=150℃ V_{RD}=V_{RRM}	—	—	5	mA

Thermal Characteristics				
Parameters	Symbol	Test Conditions	Values	Unit
Maximum internal thermal resistance, junction to case per leg	$Rth_{(J-C)}$	Per diode	0.10	℃/W
Typical thermal resistance, case to heatsink per module	$Rth_{(C-S)}$	Module	0.075	℃/W

▲Thyristor

Maximum Ratings				
Parameters	Symbol	Test Conditions	Values	Unit
Average On-State Current	I_{TAV}	Sine 180℃;T_C=85℃	230	A
Surge forward current	I_{TSM}	t=10ms T_J=45℃	6000	A
		t=10ms T_J=125℃	4800	
Maximum I^2t for fusing	I^2t	t=10ms T_J=45℃	180000	A^2s
		t=10ms T_J=125℃	115200	
Isolation Breakdown Voltage(R.M.S)	Visol	A_C 50Hz; R.M.S.; 1min	3000	V
		Ac.50Hz；R.M.S；1sec	3500	V
Operating Juntion Temperature	T_J		-40~+125	℃
Storage Temperature	Tstg		-40~+125	℃
Mounting Torque	Mt	To terminals(M6)	5±15%	Nm
	Ms	To heatsink(M6)	5±15%	
Maximum non-repetitive rate of rise of turned on current	di/dt	T_J=25℃ from 0.67V_{DRM} , I_{TM}= π × $I_{T(AV)}$,Ig=500mA tr<0.5us tp>6us	150	A/us
Maximum critical rate of rise of off-state voltage	dv/dt	T_J =125℃,V_D=2/3V_{DRM}	1000	V/us
Maximum allowable acceleration	a		50	m/s2

Electrical Characteristics

Parameters	Symbol	Test Conditions	Values			Unit
			Min.	Typ.	Max.	
Maximum Peak On-State Voltage	V_{TM}	$I_{TM} = \pi \times I_{T(AV)}$, T_J=25°C			1.65	V
Maximum Repetitive Peak Reverse Current/ Maximum Repetitive Off-state Current	I_{RRM}/ I_{DRM}	T_J=125°C V_{RD}=V_{RRM}			20	mA
On state threshold voltage	V_{TO}	For power-loss calculations only T_J=125°C			0.9	V
Maximum Value of on-state slope resistance	r_T	T_J=125°C			2.0	mΩ
Maximum gate voltage required to trigger	V_{GT}	T_J=25°C，V_D=6V			3	V
Maximum gate current required to trigger	I_{GT}	T_J=25°C，V_D=6V			150	mA
Maximum gate voltage that will not trigger	V_{GD}	T_J=125°C，V_D=2/3V_{DRM}			0.25	V
Maximum gate current that will not trigger	I_{GD}	T_J=125°C，V_D=2/3V_{DRM}			6	mA
Maximum Latching current	I_L	T_J=25°C，I_G=1.2I_{GT}		250	600	mA
Maximum Holding current	I_H	T_J=25°C，I_T=1A		200	300	mA
Gate controlled delay time	tgd	T_J=25°C,I_G=1A ,diG/dt=1A/us	1			us
Gircuit commutated turn-off time	tq	T_J=125°C	250			us

Thermal Characteristics

Parameters	Symbol	Test Conditions	Values	Unit
Maximum internal thermal resistance, junction to case per leg	$Rth_{(J-C)}$	Per thyristor	0.10	°C/W
Typical thermal resistance, case to heatsink per module	$Rth_{(C-S)}$	Module	0.075	°C/W

Performance Curves

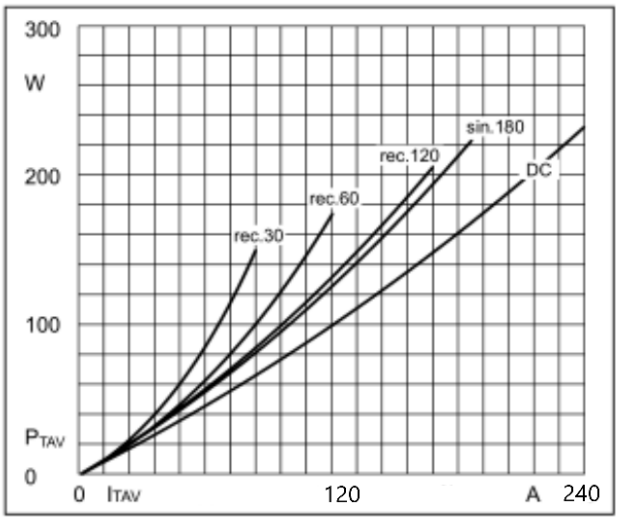


Fig1. Power dissipation

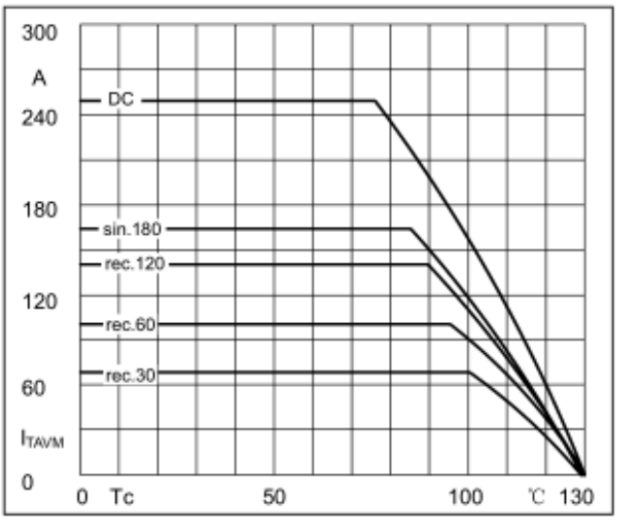


Fig2.Forward Current Derating Curve

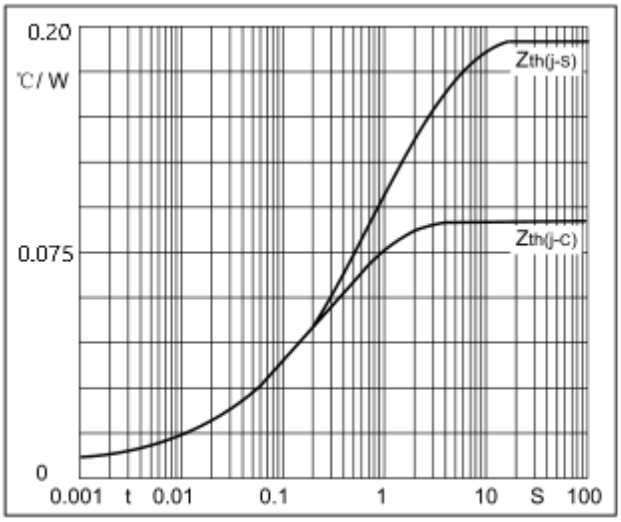


Fig3. Transient thermal impedance

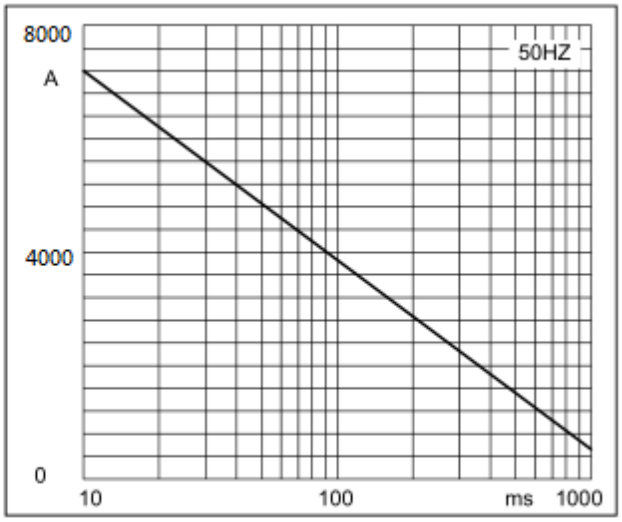


Fig4. Max Non-Repetitive Forward Surge Current

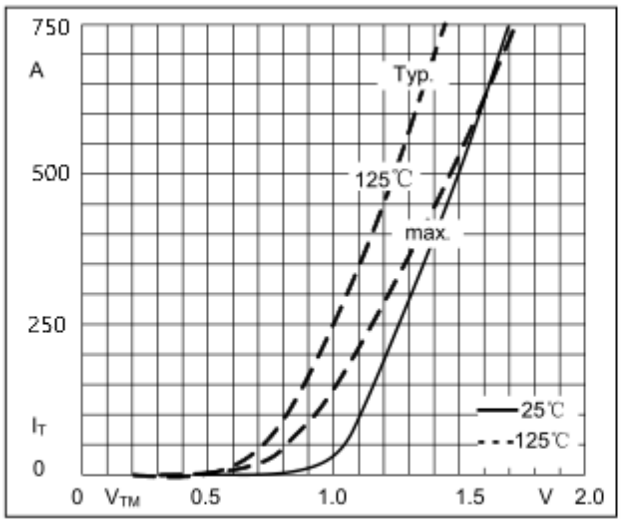


Fig5. Forward Characteristics

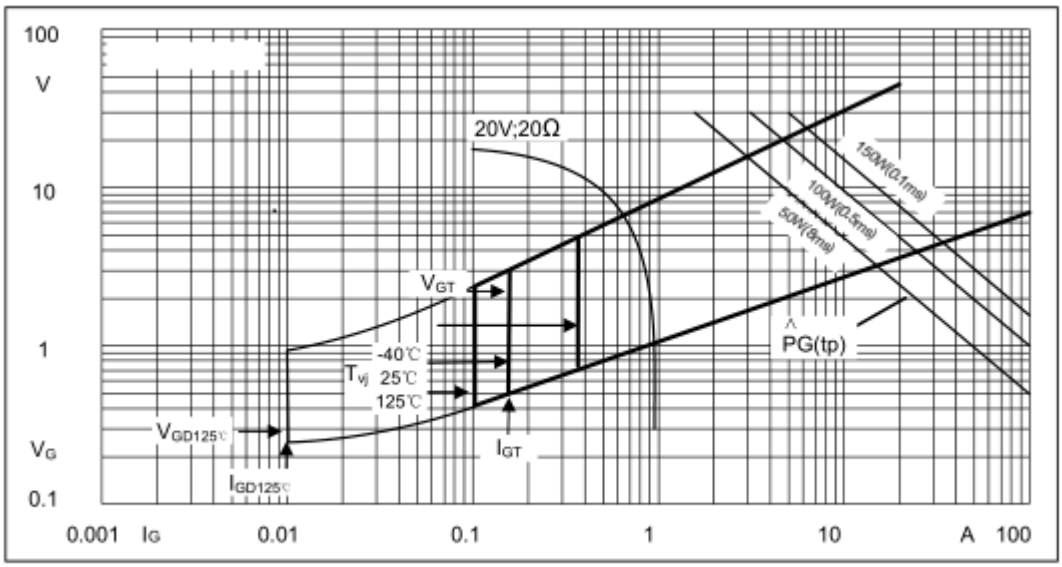


Fig6. Gate trigger Characteristics

Ordering Information Tabel

Device code

J	KH	230	-	16	N
①	②	③		④	⑤

① Power module
② Circuit configuration
③ Maximum average forward current, A
④ Voltage code 1600V
⑤ AlN-DBC

Package Outline Information

T2-B dimensions in mm

