

# THYRISTOR MODULE

## PK(PD,PE)200HB

UL;E76102 (M)

Power Thyristor/Diode Module **PK200HB** series are designed for various rectifier circuits and power controls. For your circuit application, following internal connections and wide voltage ratings up to 1,600V are available.

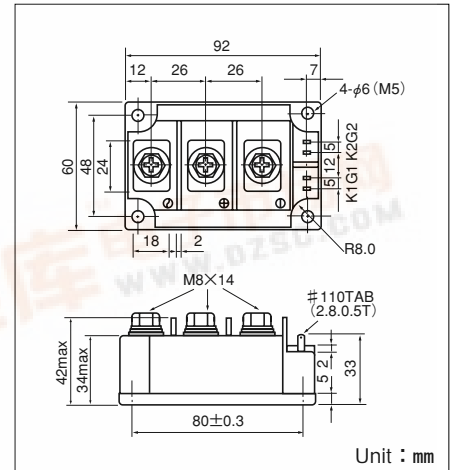
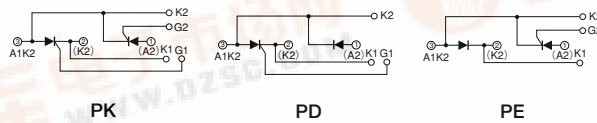
Isolated mounting base

- $I_{T(AV)}$  200A,  $I_{T(RMS)}$  310A,  $I_{TSM}$  5500A
- $di/dt$  200 A/ $\mu$ s
- $dv/dt$  500V/ $\mu$ s

(Applications)

- Various rectifiers
- AC/DC motor drives
- Heater controls
- Light dimmers
- Static switches

Internal Configurations



### Maximum Ratings

Symbol	Item	Ratings				Unit
		PK200HB120 PE200HB120	PD200HB120	PK200HB160 PE200HB160	PD200HB160	
$V_{RRM}$	* Repetitive Peak Reverse Voltage		1200		1600	V
$V_{RSM}$	* Non-Repetitive Peak Reverse Voltage		1300		1700	V
$V_{DRM}$	Repetitive Peak Off-State Voltage		1200		1600	V

Symbol	Item	Conditions	Ratings	Unit	
$I_{T(AV)}$	* Average On-State Current	Single phase, half wave, 180° conduction, $T_c : 74^\circ C$	200	A	
$I_{T(RMS)}$	* R.M.S. On-State Current	Single phase, half wave, 180° conduction, $T_c : 74^\circ C$	310	A	
$I_{TSM}$	* Surge On-State Current	1/2 cycle, 50Hz/60Hz, peak Value, non-repetitive	5000/5500	A	
$I^2t$	* $I^2t$	Value for one cycle of surge current	125000	A <sup>2</sup> S	
$P_{GM}$	Peak Gate Power Dissipation		10	W	
$P_{G(AV)}$	Average Gate Power Dissipation		3	W	
$I_{FGM}$	Peak Gate Current		3	A	
$V_{FGM}$	Peak Gate Voltage (Forward)		10	V	
$V_{RGM}$	Peak Gate Voltage (Reverse)		5	V	
$di/dt$	Critical Rate of Rise of On-State Current	$I_G=100mA, T_J=25^\circ C, V_D=1/2 V_{DRM}, dI_G/dt=0.1A/\mu s$	200	A/ $\mu$ s	
$V_{ISO}$	* Isolation Breakdown Voltage (R.M.S.)	A.C. 1 minute	2500	V	
$T_J$	* Operating Junction Temperature		-40 to +125	°C	
$T_{stg}$	* Storage Temperature		-40 to +125	°C	
	Mounting Torque	Mounting (M5)	Recommended Value 1.5-2.5 (15-25)	2.7 (28)	N·m (kgf·cm)
		Terminal (M8)	Recommended Value 8.8-10 (90-105)	11 (115)	
	Mass	Typical Value		510	g

### Electrical Characteristics

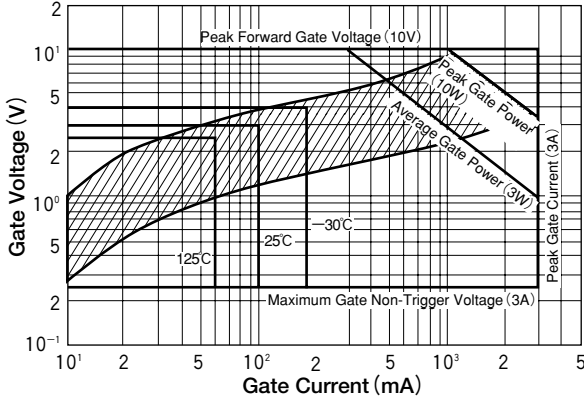
Symbol	Item	Conditions	Ratings	Unit
$I_{DRM}$	Repetitive Peak Off-State Current, max.	at $V_{DRM}$ , Single phase, half wave, $T_J=125^\circ C$	50	mA
$I_{RRM}$	* Repetitive Peak Reverse Current, max.	at $V_{DRM}$ , Single phase, half wave, $T_J=125^\circ C$	50	mA
$V_{TM}$	* Peak On-State Voltage, max.	On-State Current 750A, $T_J=125^\circ C$ Inst. measurement	1.50	V
$I_{GT}/V_{GT}$	Gate Trigger Current/Voltage, max.	$T_J=25^\circ C, I_T=1A, V_D=6V$	100/3	mA/V
$V_{GD}$	Non-Trigger Gate, Voltage. min.	$T_J=125^\circ C, V_D=1/2 V_{DRM}$	0.25	V
$t_{gt}$	Turn On Time, max.	$I_T=250A, I_G=100mA, T_J=25^\circ C, V_D=1/2 V_{DRM}, dI_G/dt=0.1A/\mu s$	10	$\mu$ s
$dv/dt$	Critical Rate of Rise of Off-State Voltage, min.	$T_J=125^\circ C, V_D=2/3 V_{DRM}$ , Exponential wave.	500	V/ $\mu$ s
	Holding Current, typ.	$T_J=25^\circ C$	50	mA
	Latching Current, typ.	$T_J=25^\circ C$	100	mA
	* Thermal Impedance, max.	Junction to case	0.18	°C/W

\* mark : Thyristor and Diode part. No mark : Thyristor part

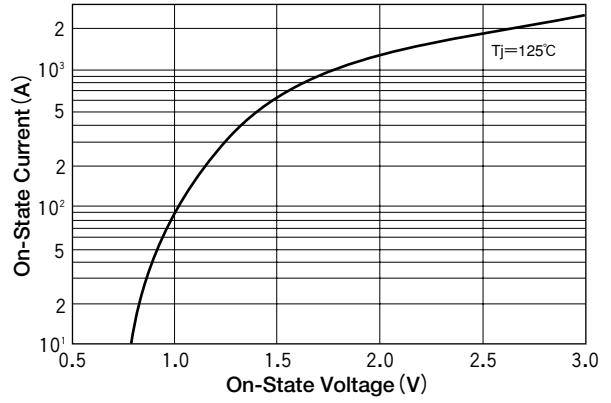


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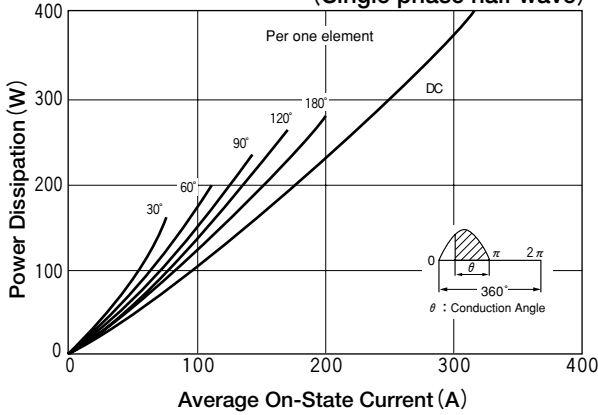
**Gate Characteristics**



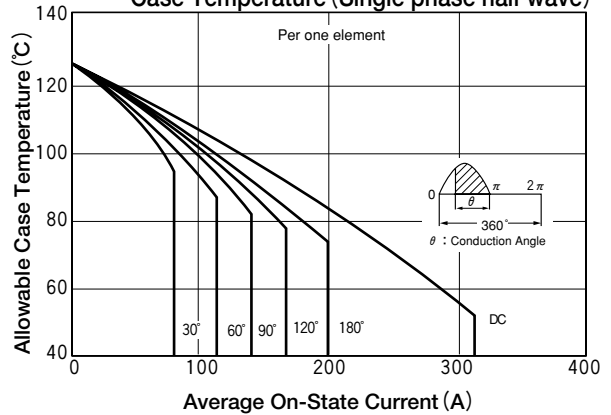
**On-State Characteristics**



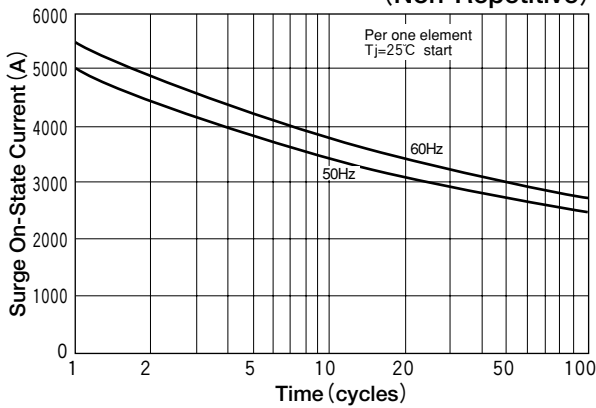
**Average On-State Current Vs Power Dissipation (Single phase half wave)**



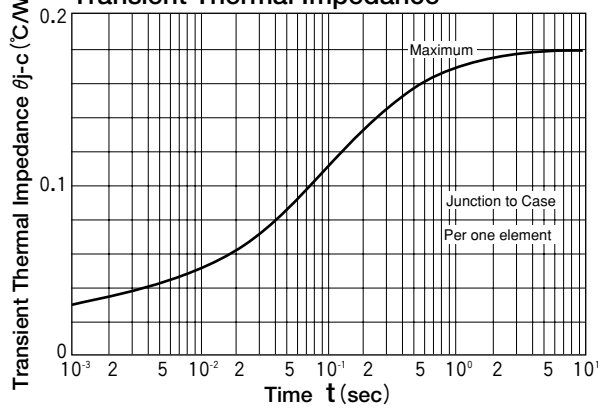
**Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)**



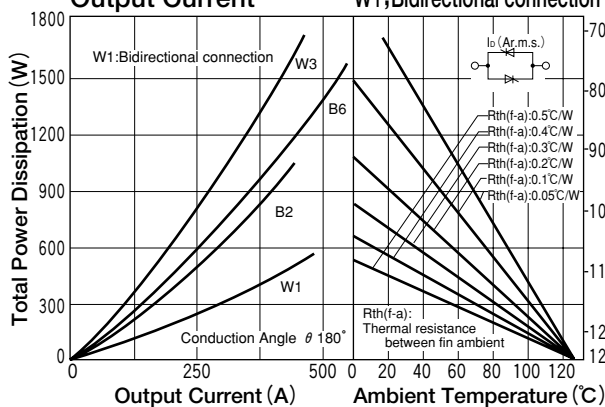
**Surge On-State Current Rating (Non-Repetitive)**



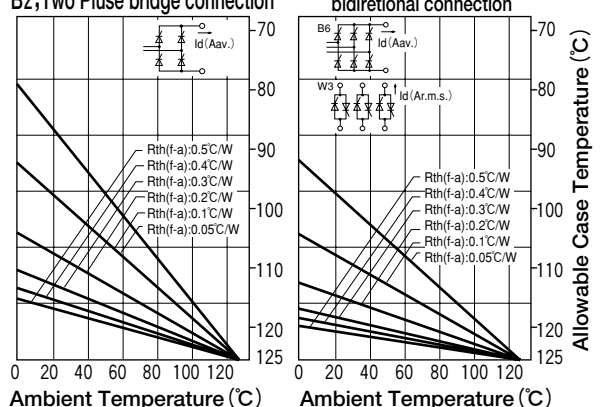
**Transient Thermal Impedance**



**Output Current**



**B2; Two Pulse bridge connection**



**B6; Six pulse bridge connection  
W3; Three phase**

