

THYRISTOR MODULE

PK(PD,PE,KK)90HB

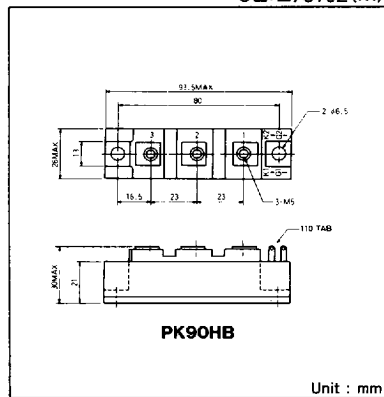
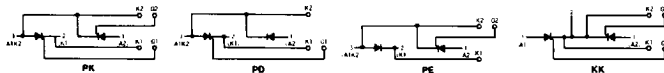
UL:E76102(M)

Power Thyristor/Diode Module PK90HB series are designed for various rectifier circuits and power controls. For your circuit application, following internal connections and wide voltage ratings up to 1,600 V are available. and electrically isolated mounting base make your mechanical design easy.

- $I_{T(AV)}$ 90A, $I_{T(RMS)}$ 140A, I_{TSM} 1800A
- di/dt 200 A/ μ s
- dv/dt 500 V/ μ s

(Applications)
 Various rectifiers
 AC/DC motor drives
 Heater controls
 Light dimmers
 Static switches

Internal Configuration



Maximum Ratings

Symbol	Item	PK90HB-120 KK90HB-120	PD90HB-120 PE90HB-120	PK90HB-160 KK90HB-160	PD90HB-160 PE90HB-160	Unit
V_{RRM}	* Repetitive Peak Reverse Voltage		1200		1600	V
V_{RSM}	* Non-Repetitive Peak Reverse Voltage		1350		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, $T_c : 88^\circ\text{C}$	90	A	
$I_{T(RMS)}$	* R.M.S On-State Current	Single phase, half wave, 180° conduction, $T_c : 88^\circ\text{C}$	140	A	
I_{TSM}	* Surge On-State Current	$1/2$ cycle, 50/60Hz, peak value, non-repetitive	1650/1800	A	
I^2t	* I^2t	Value for one cycle of surge current	15000	A ² 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	$I_G = 100\text{mA}$, $T_j = 25^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $di_G/dt = 0.1\text{A}/\mu\text{s}$	200	A/ μ s	
V_{ISO}	* Isolation Breakdown Voltage(R.M.S)	A.C. 1minute	2500	V	
T_j	* Operating Junction Temperature		-40~+125	$^\circ\text{C}$	
T_{stg}	* Storage Temperature		-40~+125	$^\circ\text{C}$	
	Mounting Torque	(M6)	Recommended Value 2.5~3.9 (25~40)	4.7 (48)	N·m
		Terminal (M5)	Recommended Value 1.5~2.5 (15~25)	2.7 (28)	(kgf·cm)
	Mass			170	g

Electrical Characteristics

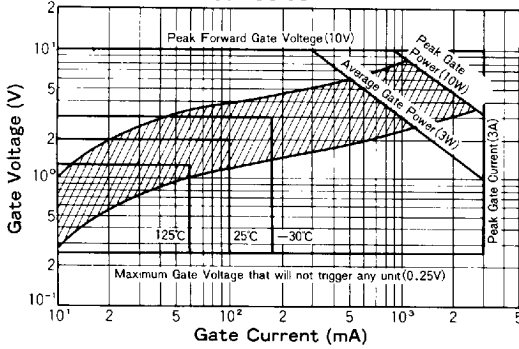
Symbol	Item	Conditions	Ratings	Unit
I_{DRM}	Repetitive Peak Off-State Current, max.	at V_{DRM} , single phase, half wave, $T_j = 125^\circ\text{C}$	15	mA
I_{RRM}	* Repetitive Peak Reverse Current, max.	at V_{DRM} , single phase, half wave, $T_j = 125^\circ\text{C}$	15	mA
V_{TM}	* Peak On-State Voltage, max.	On-State Current 270A, $T_j = 125^\circ\text{C}$ Inst. measurement	1.40	V
I_{GT}/V_{GT}	Gate Trigger Current/Voltage, max.	$T_j = 25^\circ\text{C}$, $I_T = 1\text{A}$, $V_D = 6\text{V}$	100/2	mA/V
V_{GD}	Non-Trigger Gate, Voltage, min.	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$	0.25	V
t_{gt}	Turn On Time, max	$I_T = 90\text{A}$, $I_G = 100\text{mA}$, $T_j = 25^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $di_G/dt = 0.1\text{A}/\mu\text{s}$	10	μs
dv/dt	Critical Rate of Rise of On-State Voltage, min.	$T_j = 125^\circ\text{C}$, $V_D = 2/3 V_{DRM}$, Exponential wave.	500	V/ μ s
I_H	Holding Current, typ.	$T_j = 25^\circ\text{C}$	50	mA
I_L	Latching Current, typ.	$T_j = 25^\circ\text{C}$	100	mA
$R_{th(j-c)}$	* Thermal Impedance, max.	Junction to case	0.30	$^\circ\text{C}/\text{W}$

* mark : Thyristor and Diode part. No mark : Thyristor part 799J243 0002357 3T0

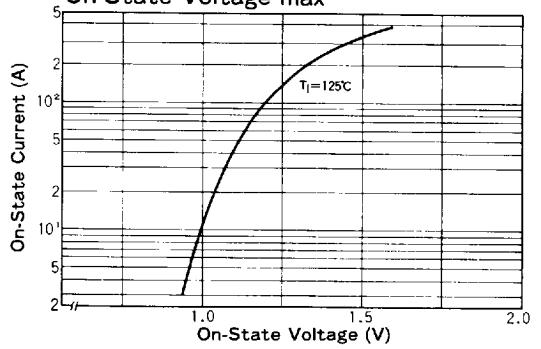
B-201

SanRex

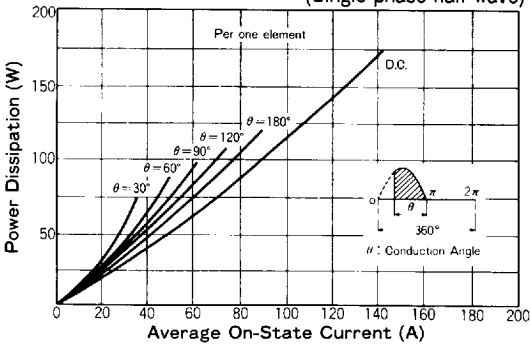
Gate Characteristics



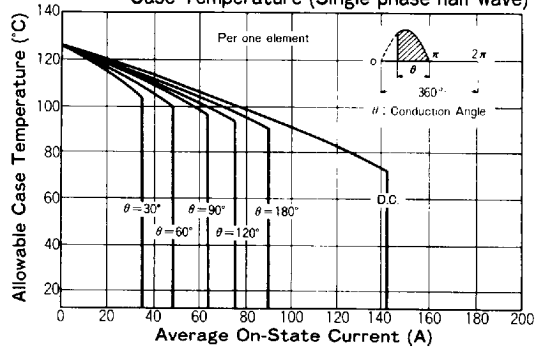
On-State Voltage max



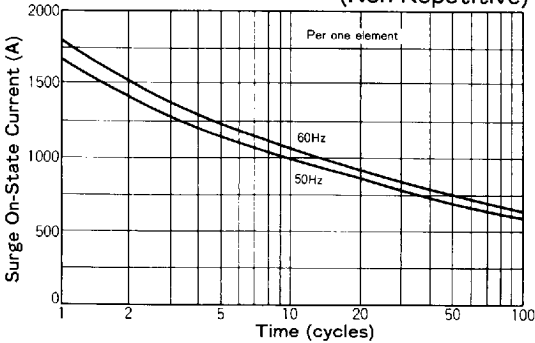
Average On-State Current Vs Power Dissipation (Single phase half wave)



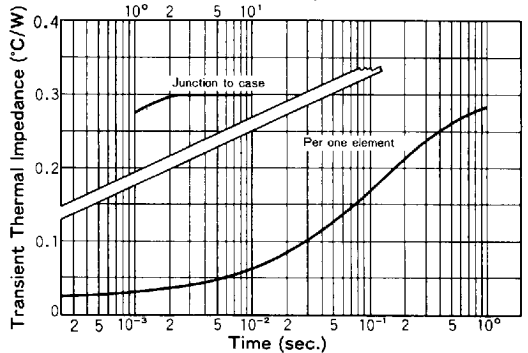
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



Surge On-State Current Rating (Non-Repetitive)

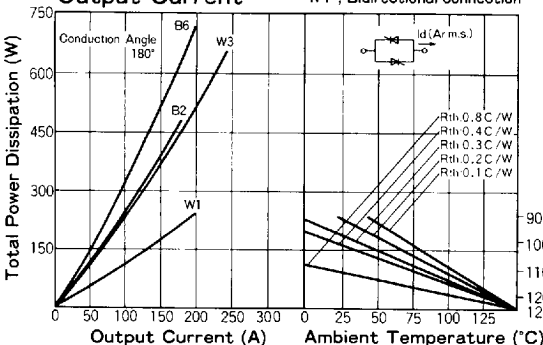


Transient Thermal Impedance



Output Current

W1: Bidirectional connection



B2 Two pulse bridge connection

B6: Six pulse bridge connection
 W3: Three phase bidirectional connection

