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THYRISTOR MODULE

PK(PD,PE,KK)90HB

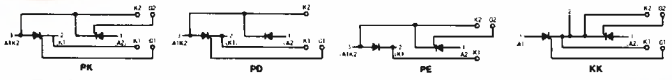
UL:E76102(M)

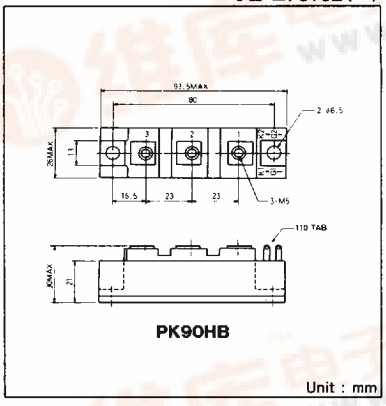
Power Thyristor/Diode Module **PK90HB** series are designed for various rectifier circuits and power controls. For your circuit application, following internal connections and wide voltage ratings up to 1,600 V are available. and electrically isolated mounting base make your mechanical design easy.

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

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

Internal Configuration





■Maximum Ratings

Symbol	Item	PK90HB-120 PD90HB-120 KK90HB-120 PE90HB-120	PK90HB-160 PD90HB-160 KK90HB-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, Tc : 88°C	90	A
$I_{T(RMS)}$	* R.M.S On-State Current		Single phase, half wave, 180° conduction, Tc : 88°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^2S
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(Forwad)			10	V
V_{RGM}	Peak Gate Voltage(Reverse)			5	V
di/dt	Critical Rate of Rise of On-State Current		I_G=100mA, Tj=25°C, V_D=1/2 V_{DRM}, dI_G/dt=0.1A/μs	200	A/μs
V_{ISO}	* Isolation Breakdown Voltage(R.M.S)		A.C. 1minute	2500	V
Tj	* Operating Junction Temperature			−40～+125	°C
Tstg	* Storage Temperature			−40～+125	°C
	Mounting Torque	(M6)	Recommended Value 2.5～3.9 (25～40)	4.7 (48)	N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5～2.5 (15～25)	2.7 (28)	
	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, Tj=125°C	15	mA
I_{RRM}	* Repetitive Peak Reverse Current, max.	at V_{DRM}, single phase, half wave, Tj=125°C	15	mA
V_{TM}	* Peak On-State Voltage, max.	On-State Current 270A, Tj=125°C Inst. measurement	1.40	V
I_{GT}/V_{GT}	Gate Trigger Current/Voltage, max.	Tj=25°C, I_T=1A, V_D=6V	100/2	mA/V
V_{GD}	Non-Trigger Gate, Voltage, min.	Tj=125°C, V_D=1/2 V_{DRM}	0.25	V
tgt	Turn On Time, max	I_T=90A, I_G=100mA, Tj=25°C, V_D=1/2 V_{DRM}, dI_G/dt=0.1A/μs	10	μs
dv/dt	Critical Rate of Rise of On-State Voltage, min.	Tj=125°C, V_D=2/3 V_{DRM}, Exponential wave.	500	V/μs
I_H	Holding Current, typ.	Tj=25°C	50	mA
I_L	Lutching Current, typ.	Tj=25°C	100	mA
$R_{th(j-c)}$	* Thermal Impedance, max.	Junction to case	0.30	°C/W

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

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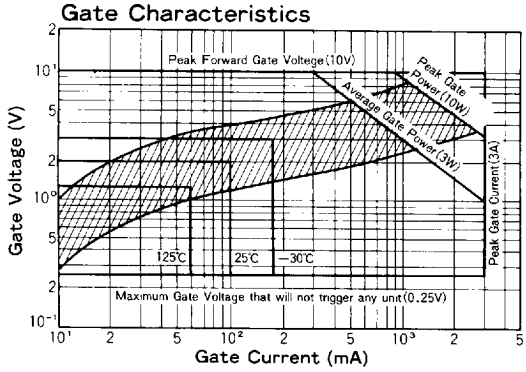
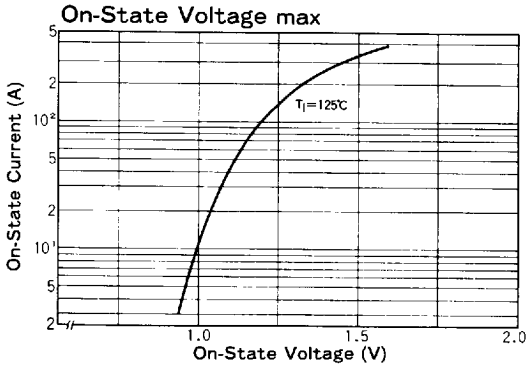
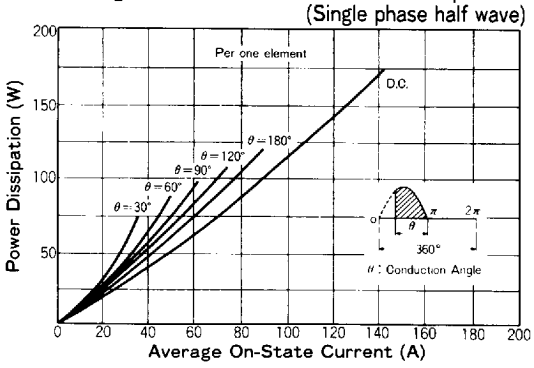
Gate Characteristics



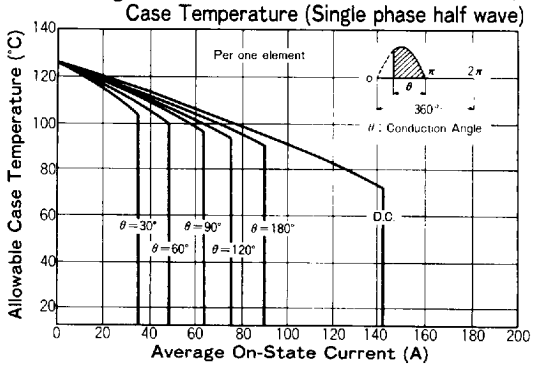
On-State Voltage max



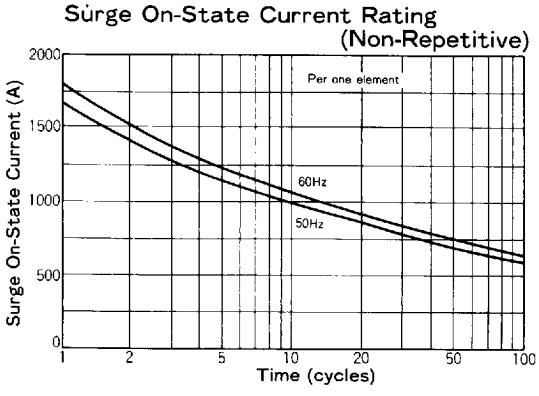
Average On-State Current Vs Power Dissipation (Single phase half wave)



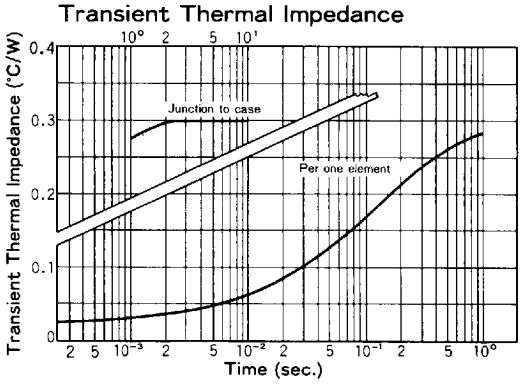
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



Surge On-State Current Rating (Non-Repetitive)



Transient Thermal Impedance

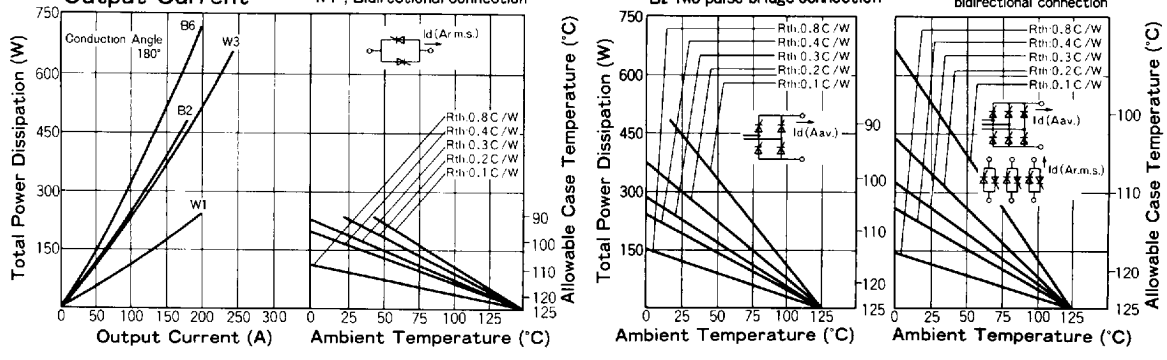


Output Current

W1 ; Bidirectional connection

B2 Two pulse bridge connection

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



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