

# THYRISTOR MODULE

# PK(PD,PE)250HB

UL:E76102(M)

Power Thyristor/Diode Module PK250HB 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.

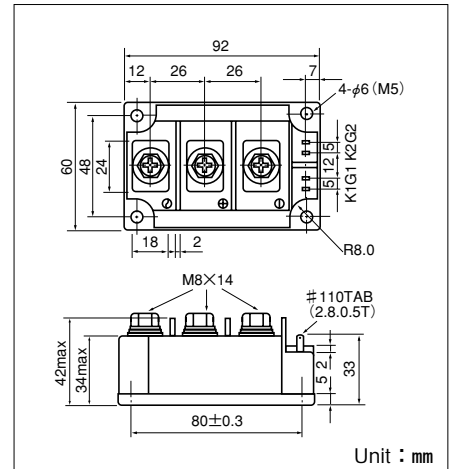
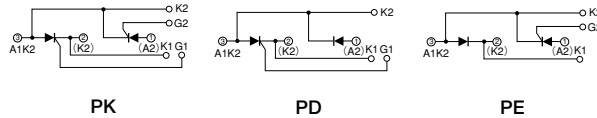
Isolated mounting base

- $I_{T(AV)}$  250A,  $I_{T(RMS)}$  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
		PK250HB120 PE250HB120	PD250HB120 PE250HB160	
$V_{RRM}$	* 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, $T_c : 72^\circ\text{C}$	250	A	
$I_{T(RMS)}$	* R.M.S. On-State Current	Single phase, half wave, 180° conduction, $T_c : 72^\circ\text{C}$	390	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	$I_G=100\text{mA}$ , $T_j=25^\circ\text{C}$ , $V_D=1/2V_{DRM}$ , $dI_G/dt=0.1\text{A}/\mu\text{s}$	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, $T_j=125^\circ\text{C}$	50	mA
$I_{RRM}$	* Repetitive Peak Reverse Current, max.	at $V_{DRM}$ , Single phase, half wave, $T_j=125^\circ\text{C}$	50	mA
$V_{TM}$	* Peak On-State Voltage, max.	On-State Current 750A, $T_j=125^\circ\text{C}$ Inst. measurement	1.60	V
$I_{GT}/V_{GT}$	Gate Trigger Current/Voltage, max.	$T_j=25^\circ\text{C}$ , $I_T=1\text{A}$ , $V_D=6\text{V}$	100/3	mA/V
$V_{GD}$	Non-Trigger Gate, Voltage, min.	$T_j=125^\circ\text{C}$ , $V_D=1/2V_{DRM}$	0.25	V
$t_{gt}$	Turn On Time, max.	$I_T=250\text{A}$ , $I_G=100\text{mA}$ , $T_j=25^\circ\text{C}$ , $V_D=1/2V_{DRM}$ , $dI_G/dt=0.1\text{A}/\mu\text{s}$	10	$\mu$ s
$dv/dt$	Critical Rate of Rise of Off-State Voltage, min.	$T_j=125^\circ\text{C}$ , $V_D=2/3V_{DRM}$ , Exponential wave.	500	V/ $\mu$ 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	0.14	°C/W

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

