

THYRISTOR MODULE

PK(PD,PE,KK)160F

TOP



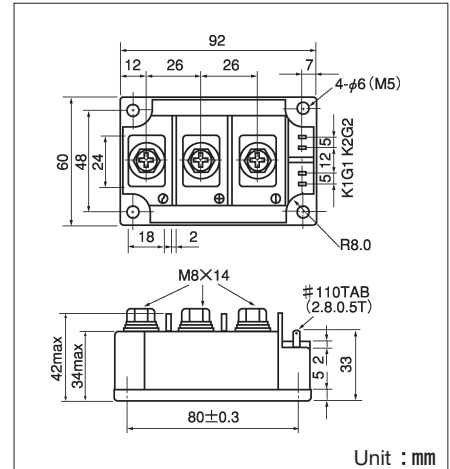
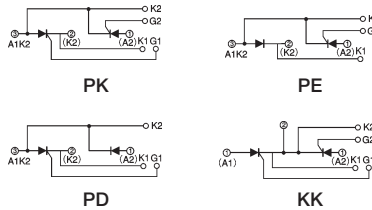
UL:E76102 (M)

Power Thyristor/Diode Module **PK160F** 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. Two elements in a package and electrically isolated mounting base make your mechanical design easy.

- $I_{T(AV)}$ 160A, $I_{T(RMS)}$ 250A, I_{TSM} 5500A
- di/dt 200 A/ μ s
- dv/dt 500V/ μ s

(Applications)

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



Unit : mm

Maximum Ratings

Symbol	Item	Ratings				Unit
		PK160F40 PD160F40 PE160F40 KK160F40	PK160F80 PD160F80 PE160F80 KK160F80	PK160F120 PD160F120 PE160F120 KK160F120	PK160F160 PD160F160 PE160F160 KK160F160	
VRRM	* Repetitive Peak Reverse Voltage	400	800	1200	1600	V
VRSM	* Non-Repetitive Peak Reverse Voltage	480	960	1300	1700	V
VDRM	Repetitive Peak Off-State Voltage	400	800	1200	1600	V

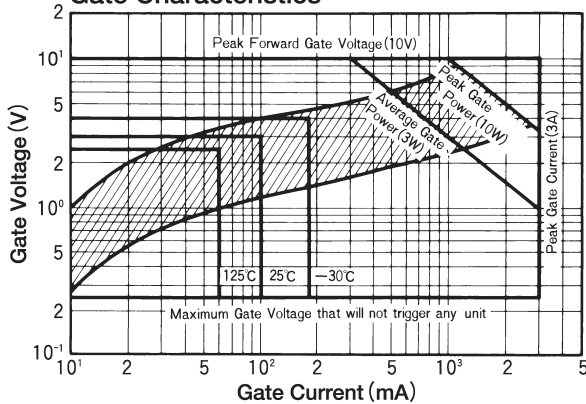
Symbol	Item		Conditions	Ratings	Unit
$I_{T(AV)}, I_{F(AV)}$	*Average On-State Current		Single phase, half wave, 180° conduction, $T_c : 87^{\circ}\text{C}$	160	A
$I_{T(RMS)}, I_{F(RMS)}$	*R.M.S. On-State Current		Single phase, half wave, 180° conduction, $T_c : 87^{\circ}\text{C}$	250	A
I_{TSM}, I_{FSM}	*Surge On-State Current		$\frac{1}{2}$ cycle, 50Hz/60Hz, peak Value, non-repetitive	5000/5500	A
I^2t	* I^2t		Value for one cycle of surge current	1.25×10^5	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		$I_G = 100\text{mA}, T_j = 25^{\circ}\text{C}, V_D = \frac{1}{2}V_{DRM}, di_G/dt = 0.1\text{A}/\mu\text{s}$	200	A/ μs
V_{ISO}	*Isolation Breakdown Voltage (R.M.S.)		A.C. 1 minute	2500	V
T_j	*Operating Junction Temperature			-40~+125	°C
T_{stg}	*Storage Temperature			-40~+125	°C
	Mounting Torque	Mounting (M5)	Recommended 1.5~2.5 (15~25)	2.7 (28)	N・m (kgf・cm)
		Terminal (M8)	Recommended 8.8~10 (90~105)	11 (115)	
	Mass			510	g

Electrical Characteristics

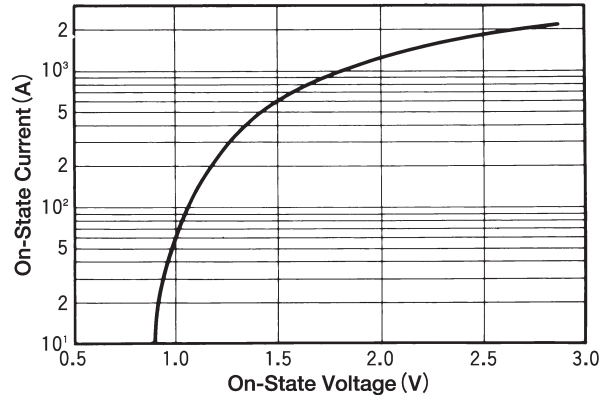
Symbol	Item	Conditions	Ratings	Unit
I _{DRM}	Repetitive Peak Off-State Current, max.	at V _{DRM} , single phase, half wave, $T_j = 125^\circ C$	50	mA
I _{RRM}	* Repetitive Peak Reverse Current, max.	at V _{DRM} , single phase, half wave, $T_j = 125^\circ C$	50	mA
V _{TM}	* Peak On-State Voltage, max.	On-State Current 500A, $T_j = 25^\circ C$ Inst. measurement	1.42	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.	$I_T = 160A$, $I_G = 100mA$, $T_j = 25^\circ C$, $V_D = 1/2 V_{DRM}$, $dI_G/dt = 0.1A/\mu s$	10	μs
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/ μs
I _H	Holding Current, typ.	$T_j = 25^\circ C$	50	mA
I _L	Latching Current, typ.	$T_j = 25^\circ C$	100	mA
R _{th(j-c)}	* Thermal Impedance, max.	Junction to case	0.18	°C/W

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

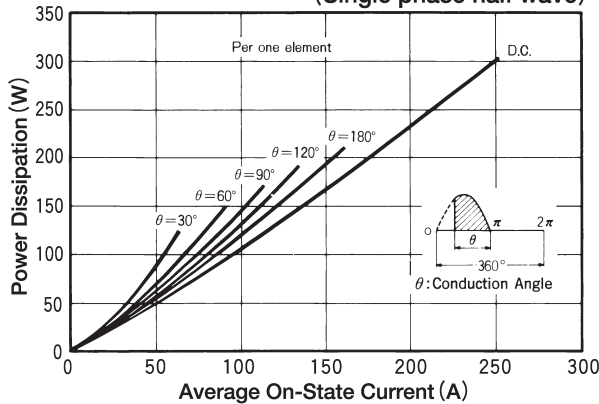
Gate Characteristics



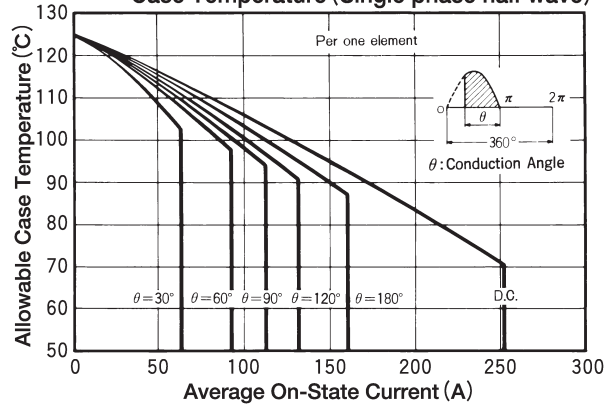
On-State Voltage max



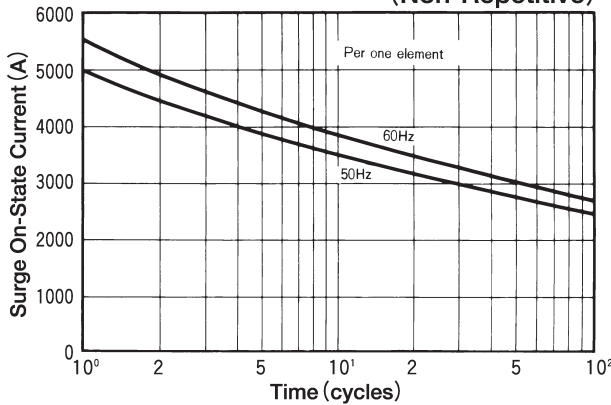
Average On-State Current Vs Power Dissipation (Single phase half wave)



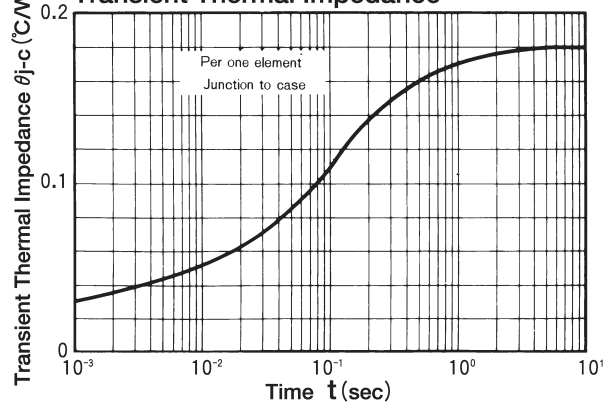
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



Surge On-State Current Rating (Non-Repetitive)

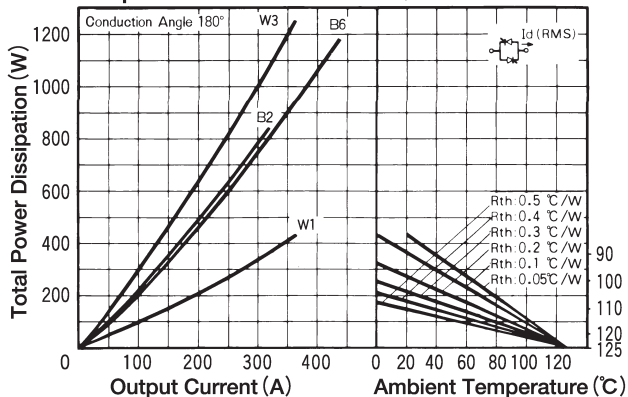


Transient Thermal Impedance

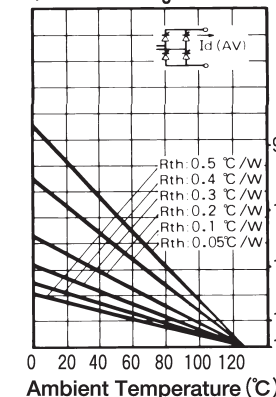


Output Current

W1; Bidirectional connection



B2; Two Pulse bridge connection



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

