THYRISTOR MODULE

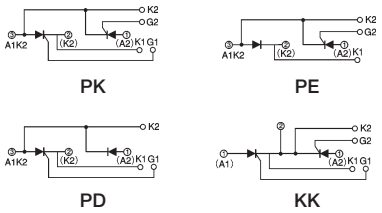
PK(PD,PE,KK)160F

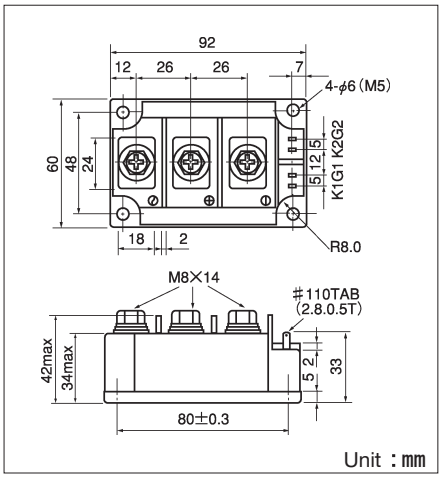
UL:E76102 (M)

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/ μs
- dv/dt 500V/ μs

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





■Maximum Ratings

Symbol	Item	Ratings				Unit
		PK160F40 PD160F40 PE160F40 KK160F40	PK160F80 PD160F80 PE160F80 KK160F80	PK160F120 PD160F120 PE160F120 KK160F120	PK160F160 PD160F160 PE160F160 KK160F160	
V_{RRM}	＊Repetitive Peak Reverse Voltage	400	800	1200	1600	V
V_{RSM}	＊Non-Repetitive Peak Reverse Voltage	480	960	1300	1700	V
V_{DRM}	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, Tc：87℃	160	A
$I_{T(RMS)}$, $I_{F(RMS)}$	＊R.M.S. On-State Current		Single phase, half wave, 180° conduction, Tc：87℃	250	A
I_{TSM}, I_{FSM}	＊Surge On-State Current		½cycle, 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^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 (Forward)			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℃, V_D=½V_{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	℃
Tstg	＊Storage Temperature			−40～+125	℃
	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

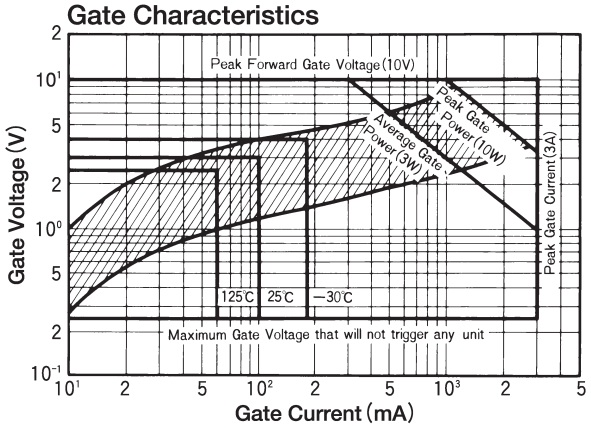
■Electrical Characteristics

Symbol	Item	Conditions	Ratings	Unit
I_{DRM}	Repetitive Peak Off-State Current, max.	at V_{DRM}, single phase, half wave, Tj=125℃	50	mA
I_{RRM}	＊Repetitive Peak Reverse Current, max.	at V_{DRM}, single phase, half wave, Tj=125℃	50	mA
V_{TM}	＊Peak On-State Voltage, max.	On-State Current 500A, Tj=25℃ Inst. measurement	1.42	V
I_{GT}／V_{GT}	Gate Trigger Current/Voltage, max.	Tj=25℃, I_T=1A, V_D=6V	100/3	mA/V
V_{GD}	Non-Trigger Gate, Voltage. min.	Tj=125℃, V_D=½V_{DRM}	0.25	V
tgt	Turn On Time, max.	I_T=160A, I_G=100mA, Tj=25℃, V_D=½V_{DRM}, dI_G/dt=0.1A/μs	10	μs
dv／dt	Critical Rate of Rise of Off-State Voltage, min.	Tj=125℃, V_D=⅔V_{DRM}, Exponential wave.	500	V/μs
I_H	Holding Current, typ.	Tj=25℃	50	mA
I_L	Lutching Current, typ.	Tj=25℃	100	mA
Rth (j-c)	＊Thermal Impedance, max.	Junction to case	0.18	℃/W

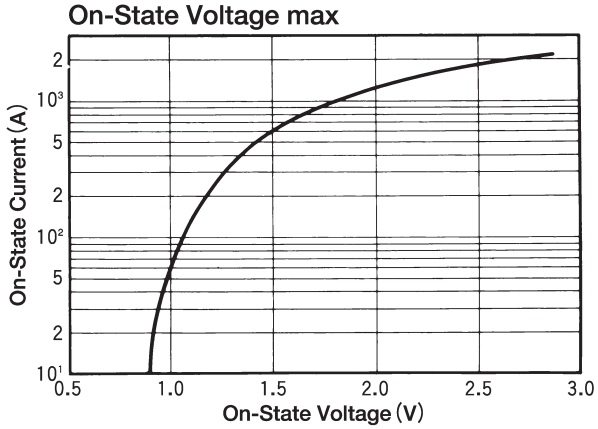
＊mark：Thyristor and Diode part. No mark：Thyristor part

SanRex

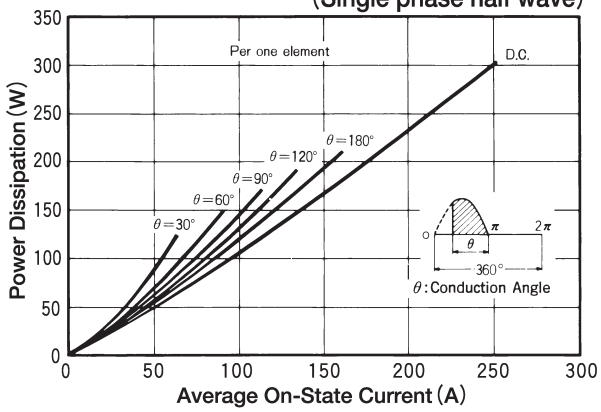
Gate Characteristics



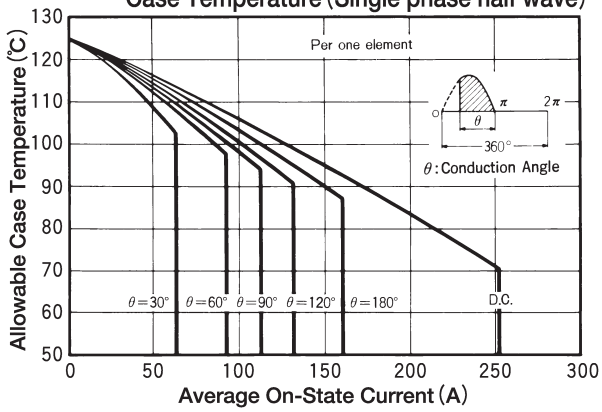
On-State Voltage max



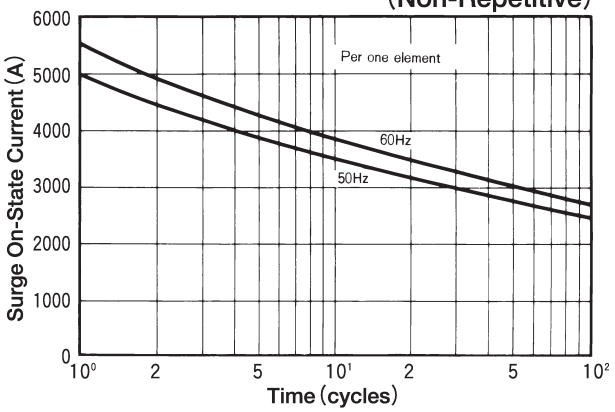
Average On-State Current Vs Power Dissipation (Single phase half wave)



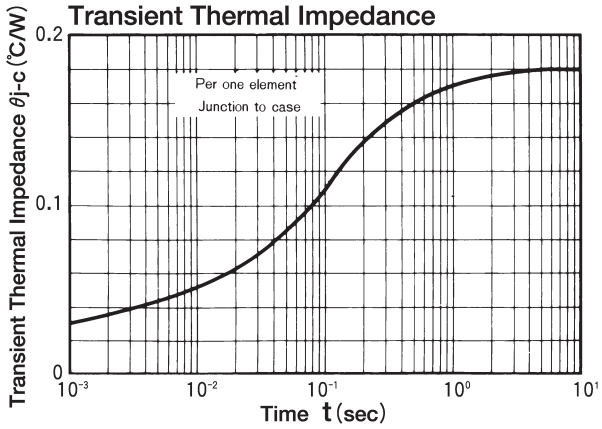
Average On-State Current Vs Maximum Allowable Case Temperature (Single phase half wave)



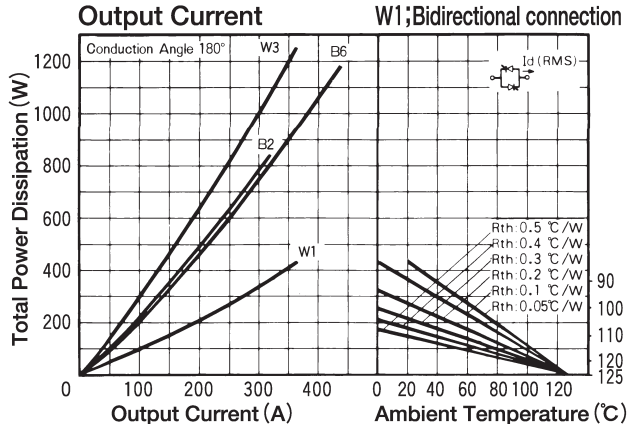
Surge On-State Current Rating (Non-Repetitive)



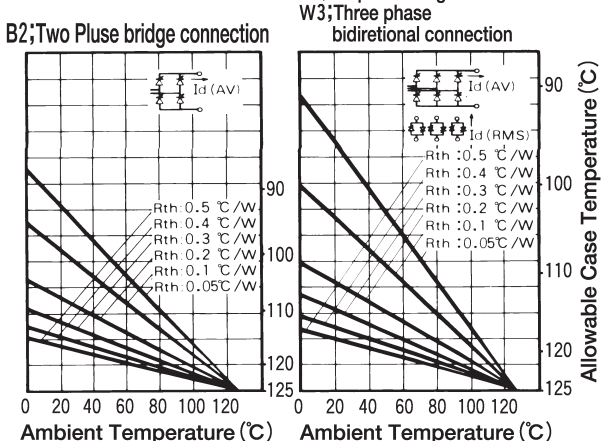
Transient Thermal Impedance



Output Current



W1;Bidirectional connection

B2;Two Pluse bridge connection

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