

THYRISTOR MODULE

PK(PD,PE,KK)160F

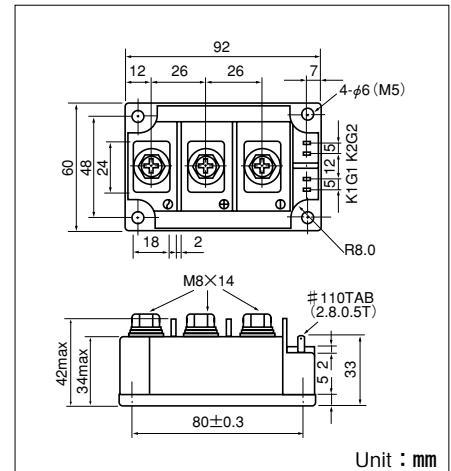
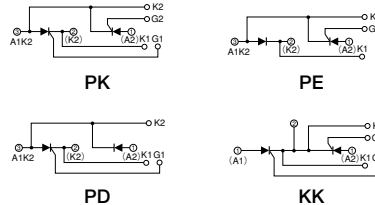
UL:E76102(M)

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/ μ s
- dv/dt 500V/ μ s

(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 | |
| 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 | 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 | $I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$ | 200 | A/ μ s | |
| V_{ISO} | * Isolation Breakdown Voltage (R.M.S.) | A.C. 1minute | 2500 | V | |
| T_j | * Operating Junction Temperature | | -40 to +125 | °C | |
| T_{stg} | * Storage Temperature | | -40 to +125 | °C | |
| | Mounting Torque | Mounting (M5) Terminal (M8) | Recommended 1.5-2.5 (15-25) Recommended 8.8-10 (90-105) | 2.7 (28) 11 (115) | N·m (kgf·cm) |
| | 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, $T_j=125^\circ\text{C}$ | 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 500A, $T_j=25^\circ\text{C}$ Inst. measurement | 1.42 | 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. | $I_T=160\text{A}$, $I_G=100\text{mA}$, $T_j=25^\circ\text{C}$, $V_D=1/2V_{DRM}$, $dI_G/dt=0.1\text{A}/\mu\text{s}$ | 10 | μ 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/ 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 | 0.18 | °C/W |

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

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