

THYRISTOR MODULE

PK(PD,PE,KK)130F



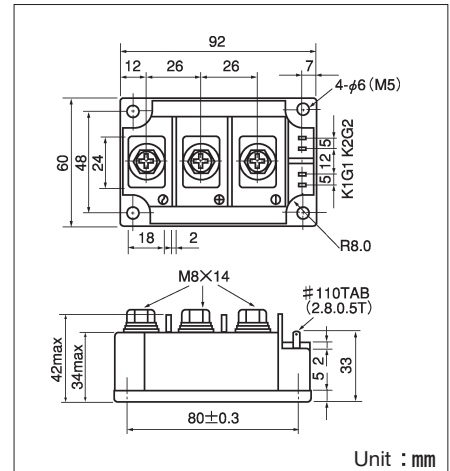
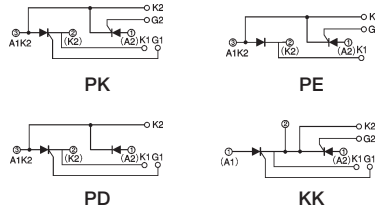
UL:E76102 (M)

Power Thyristor/Diode Module PK130F 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.

- $I_{T(AV)}$ 130A, $I_{T(RMS)}$ 205A, I_{TSM} 4400A
- 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 |
|--------|---------------------------------------|--|--|--|--|------|
| | | PK130F40 PD130F40 PE130F40 KK130F40 | PK130F80 PD130F80 PE130F80 KK130F80 | PK130F120 PD130F120 PE130F120 KK130F120 | PK130F160 PD130F160 PE130F160 KK130F160 | |
| VRRM | * Repetitive Peak Reverse Voltage | 400 | 800 | 1200 | 1600 | V |
| VRRM | * 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 |
|--------------------|---|--|-----------------|----------------------|
| $I_{T(AV)}$ | * Average On-State Current | Single phase, half wave, 180° conduction, $T_c : 90^\circ\text{C}$ | 130 | A |
| $I_{T(RMS)}$ | * R.M.S. On-State Current | Single phase, half wave, 180° conduction, $T_c : 90^\circ\text{C}$ | 205 | A |
| I_{TSM} | * Surge On-State Current | $\frac{1}{2}$ cycle, 50Hz/60Hz, peak Value, non-repetitive | 4000/4400 | A |
| I^2t | * I^2t | Value for one cycle of surge current | 8×10^4 | 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 | $I_G = 100\text{mA}$, $T_j = 25^\circ\text{C}$, $V_D = \frac{1}{2}V_{DRM}$, $di_G/dt = 0.1\text{A}/\mu\text{s}$ | 200 | A/ μ s |
| 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, $T_j = 125^\circ\text{C}$ | 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 400A, $T_j = 25^\circ\text{C}$ Inst. measurement | 1.40 | 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. | $T_j = 125^\circ\text{C}$, $V_D = \frac{1}{2}V_{DRM}$ | 0.25 | V |
| t _{gt} | Turn On Time, max. | $I_T = 130\text{A}$, $I_G = 100\text{mA}$, $T_j = 25^\circ\text{C}$, $V_D = \frac{1}{2}V_{DRM}$, $di_G/dt = 0.1\text{A}/\mu\text{s}$ | 10 | μs |
| dv/dt | Critical Rate of Rise of Off-State Voltage, min. | $T_j = 125^\circ\text{C}$, $V_D = \frac{2}{3}V_{DRM}$, 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 | 0.2 | °C/W |

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

