

THYRISTOR MODULE

PK(PD,PE)40FG

UL:E76102(M)

Power Thyristor/Diode Module PK40FG series are designed for various rectifier circuits and power controls. For your circuit application, following internal connections and wide voltage ratings up to 1600V are available. and electrically isolated mounting base make your mechanical design easy.

- $I_{T(AV)}$ 40A, $I_{T(RMS)}$ 62A, I_{TSM} 950A
- di/dt 100A/ μ s
- dv/dt 1000V/ μ s

(Applications)

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

Internal Configurations



Unit : mm

Maximum Ratings

($T_j=25^\circ\text{C}$ unless otherwise specified)

| Symbol | Item | Ratings | | | | Unit |
|-----------|---------------------------------------|----------------------------------|----------------------------------|-------------------------------------|-------------------------------------|------|
| | | PK40FG40 PD40FG40 PE40FG40 | PK40FG80 PD40FG80 PE40FG80 | PK40FG120 PD40FG120 PE40FG120 | PK40FG160 PD40FG160 PE40FG160 | |
| 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 | |
|--------------|---|---|-----------------------------------|------------------------|---|
| $I_{T(AV)}$ | * Average On-state Current | Single phase, half wave, 180° conduction, $T_c=83^\circ\text{C}$ | 40 | A | |
| $I_{T(RMS)}$ | * R.M.S. On-state Current | Single phase, half wave, 180° conduction, $T_c=83^\circ\text{C}$ | 62 | A | |
| I_{TSM} | * Surge On-state Current | $\frac{1}{2}$ Cycle, 50/60Hz, Peak Value, non-repetitive | 870/950 | A | |
| I^2t | * I^2t | Value for one cycle surge current | 3760 | A^2S | |
| P_{GM} | Peak Gate Power Dissipation | | 10 | W | |
| $P_{G(AV)}$ | Average Gate Power Dissipation | | 1 | 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 | $I_G=100\text{mA}$, $V_D=\frac{1}{2}V_{DRM}$, $di_G/dt=0.1\text{A}/\mu\text{s}$ | 100 | $\text{A}/\mu\text{s}$ | |
| V_{ISO} | * Isolation Breakdown Voltage (R.M.S.) | A.C. 1minute | 2500 | V | |
| T_j | * Operating Junction Temperature | | -40 to +125 | $^\circ\text{C}$ | |
| T_{stg} | * Storage Temperature | | -40 to +125 | $^\circ\text{C}$ | |
| | Mounting Torque | Mounting (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | $\text{N}\cdot\text{m}$ ($\text{kgf}\cdot\text{cm}$) |
| | | Terminal (M5) | Recommended Value 1.5-2.5 (15-25) | 2.7 (28) | |
| | Mass | Typical Value | | 170 | g |

Electrical Characteristics

| Symbol | Item | Conditions | Ratings | Unit |
|---------------|--|--|---------|---------------------------|
| I_{DRM} | Repetitive Peak off-state Current,max | $T_j=125^\circ\text{C}$, $V_D=V_{DRM}$ | 10 | mA |
| I_{RRM} | * Repetitive Peak Reverse Current,max | $T_j=125^\circ\text{C}$, $V_D=V_{DRM}$ | 10 | mA |
| V_{TM} | * On-state Voltage,max | $I_T=120\text{A}$ | 1.6 | V |
| I_{GT} | Gate Trigger Current,max | $V_D=6\text{V}$, $I_T=1\text{A}$ | 50 | mA |
| V_{GT} | Gate Trigger Voltage,max | $V_D=6\text{V}$, $I_T=1\text{A}$ | 3 | V |
| V_{GD} | Gate Non-Trigger Voltage,min | $T_j=125^\circ\text{C}$, $V_D=\frac{1}{2}V_{DRM}$ | 0.25 | V |
| dv/dt | Critical Rate of Rise of off-state Voltage,min | $T_j=125^\circ\text{C}$, $V_D=\frac{2}{3}V_{DRM}$ | 1000 | $\text{V}/\mu\text{s}$ |
| $R_{th(j-c)}$ | * Thermal Impedance,max | Junction to case | 0.65 | $^\circ\text{C}/\text{W}$ |

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

