

## Fast Recovery Epitaxial Diode (FRED)

## PSEI 2x161

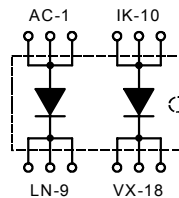
$$I_{FAVM} = 2 \times 147 \text{ A}$$

$$V_{RRM} = 600 \text{ V}$$

$$t_{rr} = 35 \text{ ns}$$

Preliminary Data Sheet

| $V_{RSM}$<br>(V) | $V_{RRM}$<br>(V) | Type          |
|------------------|------------------|---------------|
| 600              | 600              | PSEI 2x161/06 |



| Symbol        | Test Conditions  | Maximum Ratings |                  |
|---------------|--|-----------------|------------------|
| $I_{FRMS}$    | $T_{VJ} = T_{VJM}$   | 270             | A                |
| $I_{FAVM}^*$  | $T_C = 70^\circ\text{C}$ , rectangular, $d=0.5$                | 147             | A                |
| $I_{FSM}$     | $T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine  | 1200            | A                |
|               | $V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine                   | 1300            | A                |
|               | $T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine | 1080            | A                |
|               | $V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine                   | 1170            | A                |
| $\int i^2 dt$ | $T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine  | 7200            | A <sup>2</sup> s |
|               | $V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine                   | 7100            | A <sup>2</sup> s |
|               | $T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine | 5800            | A <sup>2</sup> s |
|               | $V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine                   | 5700            | A <sup>2</sup> s |
| $T_{VJ}$      |  | -40... + 150    | °C               |
| $T_{VJM}$     |  | 150             | °C               |
| $T_{stg}$     |  | -40... + 125    | °C               |
| $V_{ISOL}$    | 50/60 Hz, RMS $t = 1 \text{ min}$                              | 2500            | V~               |
|               | $I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$                 | 3600            | V~               |
| $M_d$         | Mounting torque (M4)   | 1.5 - 2.0       | Nm               |
|               |  | 14 - 18         | lb.in.           |
| <b>Weight</b> | typ.   | 24              | g                |

| Symbol     | Test Conditions   | Characteristic Value |                  |
|------------|---|----------------------|------------------|
| $I_R$      | $T_{VJ} = 25^\circ\text{C}$ , $V_R = V_{RRM}$   | max.                 | 12 mA            |
|            | $T_{VJ} = 25^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$   | max.                 | 3 mA             |
|            | $T_{VJ} = 125^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$  | max.                 | 80 mA            |
| $V_F$      | $I_F = 200 \text{ A}$ , $T_{VJ} = 25^\circ\text{C}$   | max.                 | 1.45 V           |
| $V_{TO}$   | For power-loss calculations only  | 0.85                 | V                |
| $r_T$      |   | 2.7                  | mΩ               |
| $R_{thJC}$ | per diode; max.   | 0.29                 | K/W              |
| $R_{thCH}$ | per diode; typ.   | 0.2                  | K/W              |
| $I_{RM}$   | $I_F = 100 \text{ A}$ ; $-di_F/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 100 \text{ V}$<br>$L \leq 0.05 \text{ mH}$ ; $T_{VJ} = 100^\circ\text{C}$ | typ.                 | 45 A             |
| $t_{rr}$   | $I_F = 1 \text{ A}$ ; $-di_F/dt = 400 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ ;<br>$T_{VJ} = 25^\circ\text{C}$                              | typ.                 | 35 ns            |
| $d_s$      | Creeping distance on surface  | 11.2                 | mm               |
| $d_A$      | Creeping distance in air  | 11.2                 | mm               |
| $a$        | Max. allowable acceleration   | 50                   | m/s <sup>2</sup> |

### Features

- 2 independent FRED in 1 package
- Isolation voltage 3600 V~
- Planar glass passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering
- Very short recovery time
- Soft recovery behaviour
- UL registered, E 148688

### Applications

- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

### Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Low noise switching
- Small and light weight

Data according to IEC 60747 refer to a single diode unless otherwise stated

\* $I_{FAVM}$  rating includes blocking losses at  $T_{VJM}$ ;  
 $V_R = 0.8 V_{RRM}$ ; duty cycle  $d = 0.5$

### Package style and outline

Dimensions in mm (1mm = 0.0394")

