



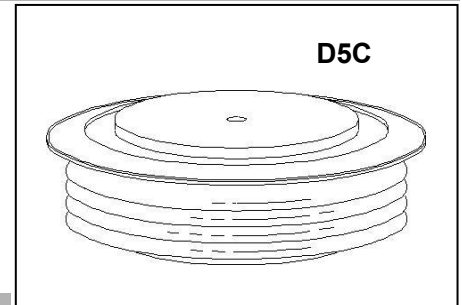
# ZK640- FAST RECOVERY DIODE

2400-3000V<sub>RRM</sub>

## FAST RECOVERY RECTIFIER DIODE

### Features:

- . All diffused structure
- . High surge rating
- . Blocking capability up to 3000 volts
- . Soft recovery
- . Ceramic housing hermetic package
- . Pressure assembled device



## ELECTRICAL CHARACTERISTICS AND RATINGS

### Reverse Blocking

| Device Type | V <sub>RRM</sub> (1) | V <sub>RSM</sub> (1) |
|-------------|----------------------|----------------------|
| ZK640-24    | 2400                 | 2500                 |
| ZK640-26    | 2600                 | 2700                 |
| ZK640-28    | 2800                 | 2900                 |
| ZK640-30    | 3000                 | 3100                 |

V<sub>RRM</sub> = Repetitive peak reverse voltage

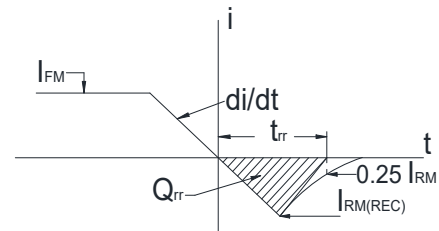
V<sub>RSM</sub> = Non repetitive peak reverse voltage (2)

|                                         |                  |                    |
|-----------------------------------------|------------------|--------------------|
| Repetitive peak reverse leakage current | I <sub>RRM</sub> | 10 mA<br>30 mA (3) |
|-----------------------------------------|------------------|--------------------|

Notes:

All ratings are specified for T<sub>j</sub>=25 °C, unless otherwise stated

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40°C to +125 °C.
- (2) 10 msec. max. pulse width
- (3) Maximum value for T<sub>j</sub> = 125 °C.
- (4) See parameter definition below :



reverse recovery characteristic

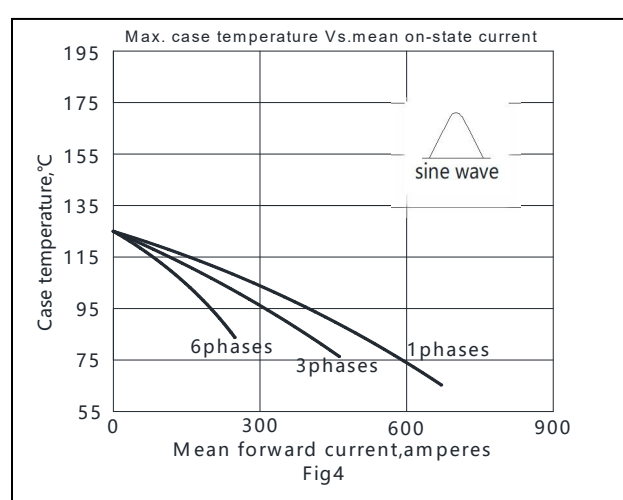
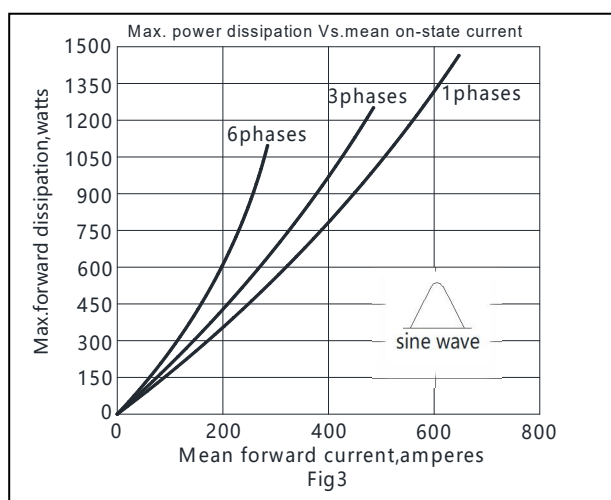
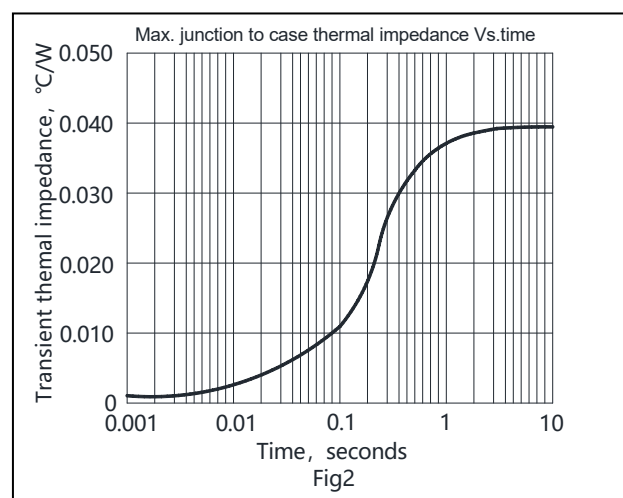
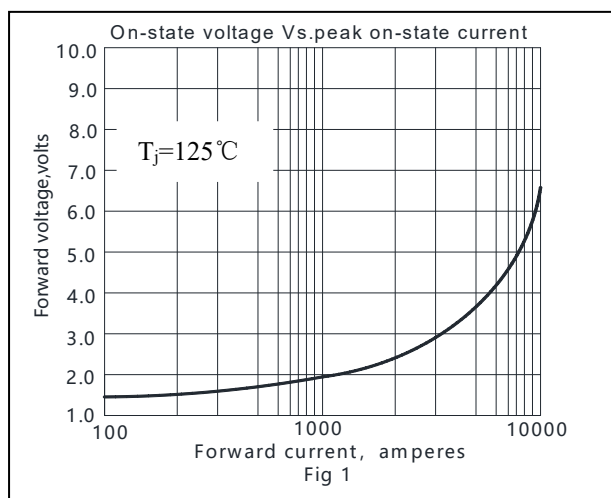
### Conducting - on state

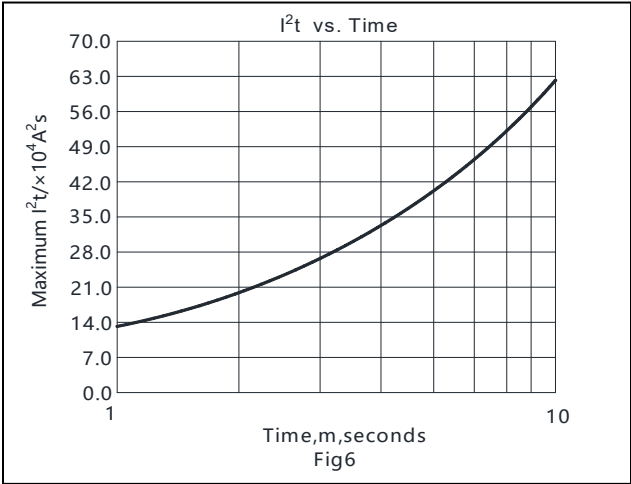
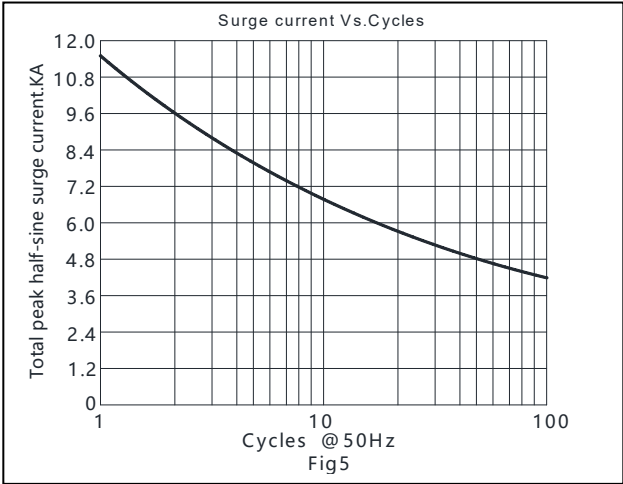
| Parameter                                     | Symbol               | Min. | Max.                   | Typ. | Units            | Conditions                                                                    |
|-----------------------------------------------|----------------------|------|------------------------|------|------------------|-------------------------------------------------------------------------------|
| Average forward current                       | I <sub>F(AV)</sub>   |      | 640                    |      | A                | Sinewave 180°, T <sub>c</sub> =70°C                                           |
| RMS forward current                           | I <sub>FRMS</sub>    |      | 1005                   |      | A                |                                                                               |
| Peak one cycle surge (non repetitive) current | I <sub>FSM</sub>     |      | 11520                  |      | A                | 10 msec (50Hz), sinusoidal wave-shape, 180° conduction, T <sub>j</sub> =125°C |
| I square t                                    | I <sup>2</sup> t     |      | 66.3 × 10 <sup>4</sup> |      | A <sup>2</sup> s | 8.3 msec and 10.0 msec                                                        |
| Peak forward voltage                          | V <sub>FM</sub>      |      | 2.60                   |      | V                | I <sub>FM</sub> = 1500A; Duty cycle ≤ 0.01%                                   |
| Threshold voltage                             | V <sub>FO</sub>      |      | 1.38                   |      | V                | T <sub>j</sub> =125°C, I=0.5 π I <sub>F(AV)</sub> to 1.5 π I <sub>F(AV)</sub> |
| Slope resistance                              | r <sub>F</sub>       |      | 0.53                   |      | mΩ               | T <sub>j</sub> =125°C, I=0.5 π I <sub>F(AV)</sub> to 1.5 π I <sub>F(AV)</sub> |
| Reverse Recovery Current (4)                  | I <sub>RM(REC)</sub> |      | *                      |      | A                | I <sub>FM</sub> = 1000 A; dI <sub>F</sub> /dt = 10 A/μs; T <sub>j</sub> max   |
| Reverse Recovery Charge (4)                   | Q <sub>rr</sub>      |      | *                      |      | μC               | I <sub>FM</sub> = 1000 A; dI <sub>F</sub> /dt = 10 A/μs; T <sub>j</sub> max   |
| Reverse Recovery Time (4)                     | t <sub>rr</sub>      |      | 6                      |      | μs               | I <sub>FM</sub> = 1000 A; dI <sub>F</sub> /dt = 10 A/μs; T <sub>j</sub> max   |

| Parameter                             | Symbol            | Min. | Max.           | Typ. | Units | Conditions                                     |
|---------------------------------------|-------------------|------|----------------|------|-------|------------------------------------------------|
| Operating temperature                 | $T_j$             | -40  | +125           |      | °C    |                                                |
| Storage temperature                   | $T_{stg}$         | -40  | +140           |      | °C    |                                                |
| Thermal resistance - junction to case | $R_{\Theta(j-c)}$ |      | 0.039          |      | °C/W  | Double sided cooled                            |
| Thermal resistance - junction to case | $R_{\Theta(j-c)}$ |      | 0.078          |      | °C/W  | Single sided cooled                            |
| Thermal resistance - case to heatsink | $R_{\Theta(c-s)}$ |      | 0.008<br>0.016 |      | °C/W  | Double sided cooled *<br>Single sided cooled * |
| Mounting force                        | F                 |      |                | 15   | kN    |                                                |
| Weight                                | m                 |      |                | 0.26 | kg.   |                                                |

\* Mounting surfaces smooth, flat and greaseless

## Graph





CASE OUTLINE AND DIMENSIONS

