

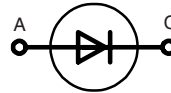
## Fast Recovery Diode

### SONIC-FRD™ series

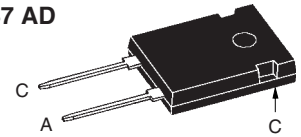
$$I_{FAVM} = 20 \text{ A}$$

$$V_{RRM} = 1800 \text{ V}$$

| $V_{RSM}$ | $V_{RRM}$ | Type      |
|-----------|-----------|-----------|
| V         | V         |           |
| 1800      | 1800      | DH 20-18A |



TO-247 AD



A = Anode, C = Cathode

| Symbol     | Conditions                                                                                      | Maximum Ratings |                  |
|------------|-------------------------------------------------------------------------------------------------|-----------------|------------------|
| $I_{FRMS}$ | $T_{VJ} = T_{VJM}$                                                                              | 70              | A                |
| $I_{FAVM}$ | $T_C = 80^\circ\text{C}$ ; rectangular, $d = 0.5$                                               | 20              | A                |
| $I_{FRM}$  | $t_p < 10 \mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$                          | 200             | A                |
| $I_{FSM}$  | $T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine                               | 150             | A                |
| $E_{AS}$   | $T_{VJ} = 25^\circ\text{C}$ ; non-repetitive<br>$I_{AS} = \text{tbd A}$ ; $L = 100 \mu\text{H}$ | tbd             | mJ               |
| $I_{AR}$   | $V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$ ; repetitive                                   | tbd             | A                |
| $T_{VJ}$   |                                                                                                 | -40...+150      | $^\circ\text{C}$ |
| $T_{VJM}$  |                                                                                                 | 150             | $^\circ\text{C}$ |
| $T_{stg}$  |                                                                                                 | -40...+150      | $^\circ\text{C}$ |
| $P_{tot}$  | $T_C = 25^\circ\text{C}$                                                                        | 140             | W                |
| $M_d$      | Mounting torque                                                                                 | 0.8...1.2       | Nm               |
| Weight     |                                                                                                 | 6               | g                |

| Symbol     | Conditions                                                                                                             | Characteristic Values |            |
|------------|------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|
|            |                                                                                                                        | typ.                  | max.       |
| $I_R$      | $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$<br>$T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$                            | 20<br>0.4             | 50<br>mA   |
| $V_F$      | $I_F = 20 \text{ A}$ ; $T_{VJ} = 125^\circ\text{C}$<br>$T_{VJ} = 25^\circ\text{C}$                                     | 2.5<br>2.5            | V<br>V     |
| $V_{T0}$   | For power-loss calculations only                                                                                       | 2.1                   | V          |
| $r_T$      | $T_{VJ} = T_{VJM}$                                                                                                     | 44                    | m $\Omega$ |
| $R_{thJC}$ |                                                                                                                        | 0.9                   | K/W        |
| $R_{thCH}$ |                                                                                                                        | 0.25                  | K/W        |
| $t_{rr}$   | $I_F = 20 \text{ A}$ ; $-di/dt = 450 \text{ A}/\mu\text{s}$ ; $V_R = 1200 \text{ V}$ ;<br>$T_{VJ} = 25^\circ\text{C}$  | 230                   | ns         |
| $I_{RM}$   |                                                                                                                        | 23                    | A          |
| $S$        | $t_b/t_a$                                                                                                              | 3.6                   |            |
| $RSF$      | $di_F/dt / di_R/dt$                                                                                                    | tbd                   |            |
| $t_{rr}$   | $I_F = 20 \text{ A}$ ; $-di/dt = 450 \text{ A}/\mu\text{s}$ ; $V_R = 1200 \text{ V}$ ;<br>$T_{VJ} = 125^\circ\text{C}$ | 400                   | ns         |
| $I_{RM}$   |                                                                                                                        | 27                    | A          |
| $S$        | $t_b/t_a$                                                                                                              | 7                     |            |
| $RSF$      | $di_F/dt / di_R/dt$                                                                                                    | tbd                   |            |

Data according to IEC 60747

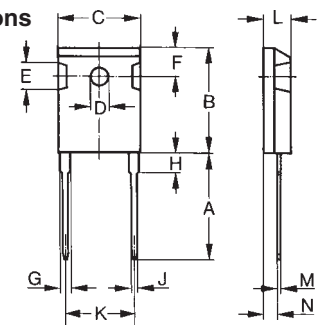
#### Features

- Small temperature dependence for
  - forward voltage drop
  - reverse recovery current
- Optimized for
  - dynamic avalanche ruggedness
  - low loss performance
- Exceptionally soft recovery
- Low reverse recovery current characteristic
- Soft recovery current without tail
- Optimized for high frequency hard switching

#### 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)
- Induction heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

#### Dimensions



| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 19.81      | 20.32 | 0.780  | 0.800 |
| B    | 20.80      | 21.46 | 0.819  | 0.845 |
| C    | 15.75      | 16.26 | 0.610  | 0.640 |
| D    | 3.55       | 3.65  | 0.140  | 0.144 |
| E    | 4.32       | 5.49  | 0.170  | 0.216 |
| F    | 5.4        | 6.2   | 0.212  | 0.244 |
| G    | 1.65       | 2.13  | 0.065  | 0.084 |
| H    | -          | 4.5   | -      | 0.177 |
| J    | 1.0        | 1.4   | 0.040  | 0.055 |
| K    | 10.8       | 11.0  | 0.426  | 0.433 |
| L    | 4.7        | 5.3   | 0.185  | 0.209 |
| M    | 0.4        | 0.8   | 0.016  | 0.031 |
| N    | 1.5        | 2.49  | 0.087  | 0.102 |

IXYS reserves the right to change limits, test conditions and dimensions

# AMEYA360

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