

Fast Recovery Diode

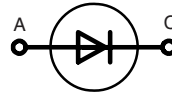
SONIC-FRD™ series

$$I_{FAVM} = 40 \text{ A}$$

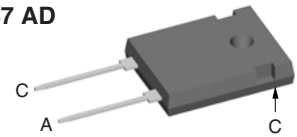
$$V_{RRM} = 1800 \text{ V}$$

$$t_{rr} = 100 \text{ ns}$$

| V_{RSM} | V_{RRM} | Type |
|-----------|-----------|-----------|
| V | V | |
| 1800 | 1800 | DH 40-18A |



TO-247 AD



A = Anode, C = Cathode

| Symbol | Conditions | Maximum Ratings | |
|------------|---|-----------------|------------------|
| I_{FRMS} | $T_{VJ} = T_{VJM}$ | 70 | A |
| I_{FAVM} | $T_C = 85^\circ\text{C}$; rectangular, $d = 0.5$ | 40 | A |
| I_{FRM} | $t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM} | 500 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine | 350 | A |
| E_{AS} | $T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = \text{tbd A}$; $L = 100 \mu\text{H}$ | 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} | $T_C = 25^\circ\text{C}$ | 280 | W |
| M_d | Mounting torque | 0.8...1.2 | Nm |
| Weight | | 6 | g |

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

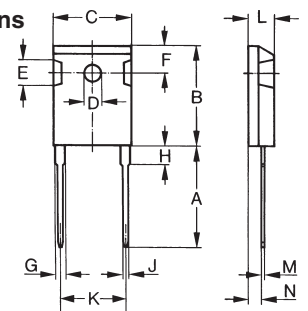
Applications

- 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

| Symbol | Conditions | Characteristic Values | | |
|------------|--|-----------------------|------|---------------|
| | | typ. | max. | |
| I_R | $T_{VJ} = 25^\circ\text{C}$ | 50 | 100 | μA |
| | $T_{VJ} = 125^\circ\text{C}$ | | | mA |
| V_F | $I_F = 40 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | 2.4 | | V |
| | | 2.4 | 2.7 | V |
| V_{T0} | For power-loss calculations only | | 2.0 | V |
| r_T | $T_{VJ} = T_{VJM}$ | | 18 | m Ω |
| R_{thJC} | | | 0.45 | K/W |
| R_{thCH} | | 0.25 | | K/W |
| t_{rr} | $I_F = 60 \text{ A}$; $-di/dt = 400 \text{ A}/\mu\text{s}$; $V_R = 1200 \text{ V}$; | 100 | | ns |
| I_{RM} | $T_{VJ} = 25^\circ\text{C}$ | 30 | | A |
| S | t_b/t_a | tbd | | |
| RSF | $di_F/dt / di_R/dt$ | tbd | | |
| t_{rr} | $I_F = 60 \text{ A}$; $-di/dt = 400 \text{ A}/\mu\text{s}$; $V_R = 1200 \text{ V}$; | 250 | | ns |
| I_{RM} | $T_{VJ} = 125^\circ\text{C}$ | 40 | | A |
| S | t_b/t_a | tbd | | |
| RSF | $di_F/dt / di_R/dt$ | tbd | | |

Data according to IEC 60747

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 |

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