

Super Fast Recovery Diode

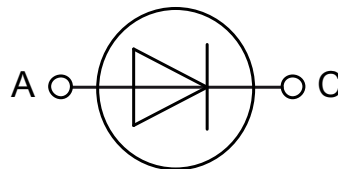
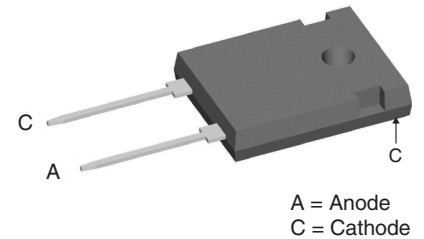
preliminary data

$$I_{FAVM} = 63 \text{ A}$$

$$V_{RRM} = 1600 \text{ V}$$

$$t_{rr} = 40 \text{ ns}$$

Part number
DSDI60-16A



Features / Advantages:

- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} values
- Soft recovery behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

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

Package: TO-247 AD

- International standard package JEDEC TO-247 AD
- Creepage distance between leads 8.5 mm
- Epoxy meets UL 94V-0

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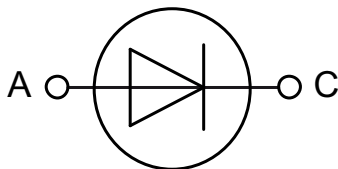
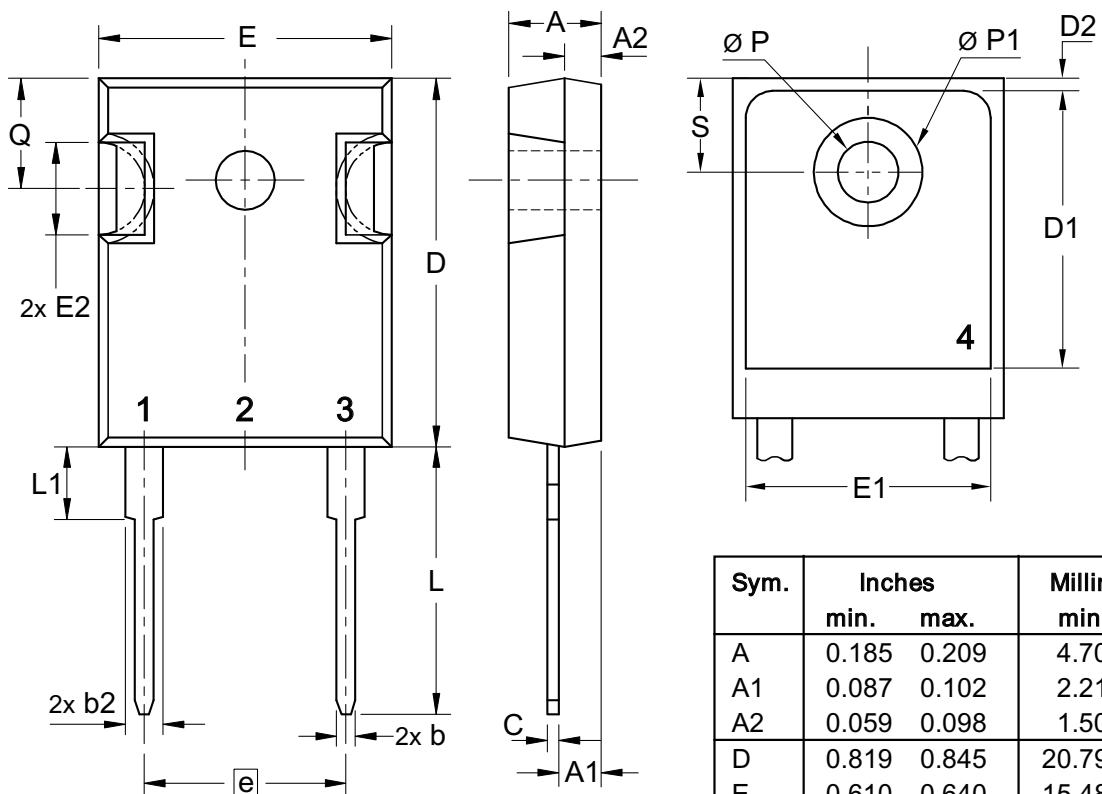
preliminary data

| Diode | | | | Ratings | | | |
|--------------|---|---|--------------------------------|---------|------|------------------|--|
| Symbol | Definitions | Conditions | min. | typ. | max. | | |
| V_{RRM} | max. repetitive reverse voltage | | | | 1600 | V | |
| V_{RSM} | max. non-repetitive reverse voltage | | | | 1600 | V | |
| I_{FRMS} | RMS forward current | | $T_{VJ} = 150^{\circ}\text{C}$ | | 100 | A | |
| I_{FAVM} ① | max. average forward current | rectangular, d = 0.5 | $T_C = 60^{\circ}\text{C}$ | | 63 | A | |
| I_{FRM} | max. repetitive forward current | $t_p < 10 \mu\text{s}$ rep. rating, pulse width limited by T_{VJM} | | | 800 | A | |
| I_{FSM} | max. surge forward current | t = 10 ms (50 Hz), sine | $T_{VJ} = 45^{\circ}\text{C}$ | | 500 | A | |
| | | t = 8.3 ms (60 Hz), sine | | | 540 | A | |
| | | t = 10 ms (50 Hz), sine | $T_{VJ} = 150^{\circ}\text{C}$ | | 450 | A | |
| | | t = 8.3 ms (60 Hz), sine | | | 480 | A | |
| I^2t | I^2t value for fusing | t = 10 ms (50 Hz), sine | $T_{VJ} = 45^{\circ}\text{C}$ | | 1250 | A ² s | |
| | | t = 8.3 ms (60 Hz), sine | | | 1200 | A ² s | |
| | | t = 10 ms (50 Hz), sine | $T_{VJ} = 150^{\circ}\text{C}$ | | 1000 | A ² s | |
| | | t = 8.3 ms (60 Hz), sine | | | 950 | A ² s | |
| I_R | reverse current | $V_R = V_{RRM}$ | $T_{VJ} = 25^{\circ}\text{C}$ | 1 | 2 | mA | |
| | | $V_R = 0.8 \cdot V_{RRM}$ | $T_{VJ} = 25^{\circ}\text{C}$ | 0.5 | | mA | |
| | | $V_R = 0.8 \cdot V_{RRM}$ | $T_{VJ} = 125^{\circ}\text{C}$ | 3 | | mA | |
| V_F | forward voltage | $I_F = 70 \text{ A}$ | $T_{VJ} = 125^{\circ}\text{C}$ | 2.6 | | V | |
| | | | $T_{VJ} = 25^{\circ}\text{C}$ | | 4.1 | V | |
| V_{TO} | threshold voltage | | $T_{VJ} = 150^{\circ}\text{C}$ | | 1.9 | V | |
| r_T | slope resistance | for power-loss calculations only | $T_{VJ} = 150^{\circ}\text{C}$ | | 10 | m Ω | |
| P_{tot} | total power dissipation | | $T_{VJ} = 25^{\circ}\text{C}$ | | 416 | W | |
| R_{thJC} | thermal resistance junction to case | | | | 0.4 | K/W | |
| R_{thCH} | thermal resistance junction to heatsink | | | 0.25 | | K/W | |
| t_{rr} | reverse recovery time | $I_F = 1 \text{ A}; -di/dt = 200 \text{ A}/\mu\text{s}; V_R = 30 \text{ V}$ | $T_{VJ} = 25^{\circ}\text{C}$ | | 40 | ns | |
| t_{rr} | reverse recovery time | $I_F = 70 \text{ A}; -di_F/dt = 500 \text{ A}/\mu\text{s}$ | $T_{VJ} = 25^{\circ}\text{C}$ | | 300 | ns | |
| I_{RM} | max. reverse recovery current | $V_R = 1000 \text{ V}$ | | | 60 | A | |
| t_{rr} | reverse recovery time | $I_F = 70 \text{ A}; -di_F/dt = 500 \text{ A}/\mu\text{s}$ | $T_{VJ} = 125^{\circ}\text{C}$ | | 400 | ns | |
| I_{RM} | max. reverse recovery current | $V_R = 1000 \text{ V}$ | | | 85 | A | |

① I_{FAVM} rating includes reverse blocking losses at T_{VJM} , $V_R = 0.8 V_{RRM}$, duty cycle d = 0.5

preliminary data

| Package TO-247 AD | | | Ratings | | |
|-------------------|------------------------------|------------|---------|------|------|
| Symbol | Definitions | Conditions | min. | typ. | max. |
| I_{RMS} | RMS current | | | | 70 |
| T_{VJ} | virtual junction temperature | | -40 | | 150 |
| T_{op} | operation temperature | | -40 | | 125 |
| T_{stg} | storage temperature | | -40 | | 150 |
| Weight | | | | 6 | g |
| M_D | mounting torque | | 0.8 | | 1.2 |
| F_c | mounting force with clip | | 20 | | 120 |



| Sym. | Inches | | Millimeter | |
|------|-----------|-------|------------|-------|
| | min. | max. | min. | max. |
| A | 0.185 | 0.209 | 4.70 | 5.30 |
| A1 | 0.087 | 0.102 | 2.21 | 2.59 |
| A2 | 0.059 | 0.098 | 1.50 | 2.49 |
| D | 0.819 | 0.845 | 20.79 | 21.45 |
| E | 0.610 | 0.640 | 15.48 | 16.24 |
| E2 | 0.170 | 0.216 | 4.31 | 5.48 |
| e | 0.430 BSC | | 10.92 BSC | |
| L | 0.780 | 0.800 | 19.80 | 20.30 |
| L1 | - | 0.177 | - | 4.49 |
| Ø P | 0.140 | 0.144 | 3.55 | 3.65 |
| Q | 0.212 | 0.244 | 5.38 | 6.19 |
| S | 0.242 BSC | | 6.14 BSC | |
| b | 0.039 | 0.055 | 0.99 | 1.40 |
| b2 | 0.065 | 0.094 | 1.65 | 2.39 |
| b4 | 0.102 | 0.135 | 2.59 | 3.43 |
| c | 0.015 | 0.035 | 0.38 | 0.89 |
| D1 | 0.515 | - | 13.07 | - |
| D2 | 0.020 | 0.053 | 0.51 | 1.35 |
| E1 | 0.530 | - | 13.45 | - |
| Ø P1 | - | 0.29 | - | 7.39 |