

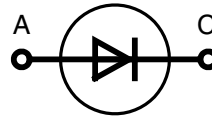
# Fast Recovery Epitaxial Diode (FRED)

$$I_{FAV} = 60 \text{ A}$$

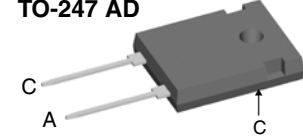
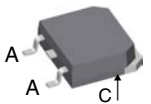
$$V_{RRM} = 600 \text{ V}$$

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

| $V_{RSM}$<br>V | $V_{RRM}$<br>V | Type         |
|----------------|----------------|--------------|
| 600            | 600            | DSEI 60-06A  |
| 600            | 600            | DSEI 60-06AT |



TO-247 AD

TO-268 AA  
(AT Type)

A = Anode, C = Cathode

| Symbol       | Conditions                                                             | Maximum Ratings |                  |
|--------------|------------------------------------------------------------------------|-----------------|------------------|
| $I_{FRMS}$   |                                                                        | 100             | A                |
| $I_{FAVM}$ ① | $T_C = 70^\circ\text{C}$ ; rectangular, $d = 0.5$                      | 60              | A                |
| $I_{FRM}$    | $t_p < 10 \mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$ |                 |                  |
| $I_{FSM}$    | $T_{VJ} = 45^\circ\text{C}$ ; $t = 10 \text{ ms}$ (50 Hz), sine        | 550             | A                |
|              | $t = 8.3 \text{ ms}$ (60 Hz), sine                                     | 600             |                  |
|              | $T_{VJ} = 150^\circ\text{C}$ ; $t = 10 \text{ ms}$ (50 Hz), sine       | 480             | A                |
|              | $t = 8.3 \text{ ms}$ (60 Hz), sine                                     | 520             |                  |
| $I^2t$       | $T_{VJ} = 45^\circ\text{C}$ ; $t = 10 \text{ ms}$ (50 Hz), sine        | 1510            | A <sup>2</sup> s |
|              | $t = 8.3 \text{ ms}$ (60 Hz), sine                                     | 1490            |                  |
|              | $T_{VJ} = 150^\circ\text{C}$ ; $t = 10 \text{ ms}$ (50 Hz), sine       | 1150            | A <sup>2</sup> s |
|              | $t = 8.3 \text{ ms}$ (60 Hz), sine                                     | 1120            |                  |
| $T_{VJ}$     |                                                                        | -55...+150      | °C               |
| $T_{VJM}$    |                                                                        | 150             | °C               |
| $T_{stg}$    |                                                                        | -55...+150      | °C               |
| $P_{tot}$    | $T_C = 25^\circ\text{C}$                                               | 166             | W                |
| $M_d$        | mounting torque                                                        | 0.8...1.2       | Nm               |
| Weight       | typical                                                                | 6               | g                |

| Symbol     | Conditions                                                                                                                                        | Characteristic Values |      |               |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------|---------------|
|            |                                                                                                                                                   | typ.                  | max. |               |
| $I_R$      | $V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$                                                                                                       |                       | 200  | $\mu\text{A}$ |
|            | $V_R = 0.8 \cdot V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$                                                                                             |                       | 100  | $\mu\text{A}$ |
|            | $V_R = 0.8 \cdot V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$                                                                                            |                       | 14   | mA            |
| $V_F$      | $I_F = 70 \text{ A}$ $T_{VJ} = 150^\circ\text{C}$                                                                                                 |                       | 1.5  | V             |
|            | $T_{VJ} = 25^\circ\text{C}$                                                                                                                       |                       | 1.8  | V             |
| $V_{T0}$   | For power-loss calculations only                                                                                                                  |                       | 1.13 | V             |
| $r_T$      | $T_{VJ} = T_{VJM}$                                                                                                                                |                       | 4.7  | m $\Omega$    |
| $R_{thJC}$ |                                                                                                                                                   |                       | 0.75 | K/W           |
| $R_{thCH}$ | (version A)                                                                                                                                       | 0.25                  |      | K/W           |
| $t_{rr}$   | $I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$                                   | 35                    | 50   | ns            |
| $I_{RM}$   | $V_R = 350 \text{ V}$ ; $I_F = 60 \text{ A}$ ; $-di_F/dt = 480 \text{ A}/\mu\text{s}$<br>$L \leq 0.05 \mu\text{H}$ ; $T_{VJ} = 100^\circ\text{C}$ | 6.0                   | 7.5  | A             |

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

## Features

- International standard package JEDEC TO-247 AD
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low IRM-values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

## 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

- 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

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

© 2007 IXYS All rights reserved

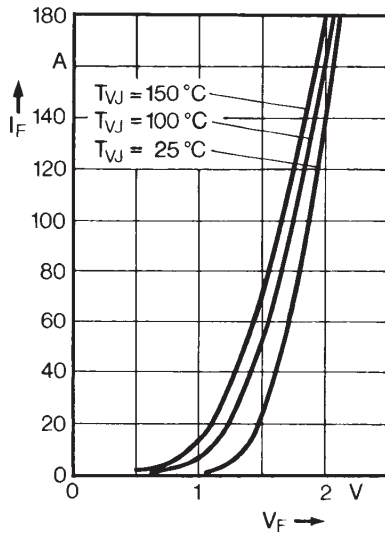


Fig. 1 Forward current versus voltage drop.

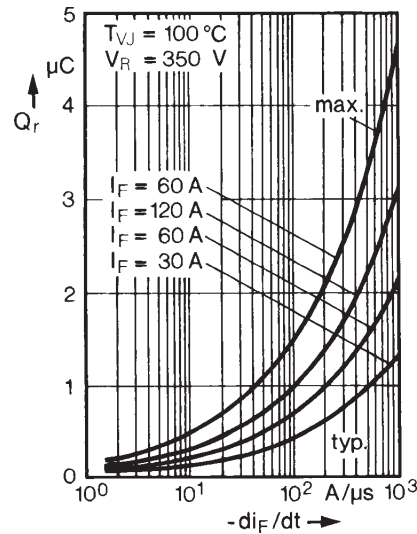


Fig. 2 Recovery charge versus  $-di_F/dt$ .

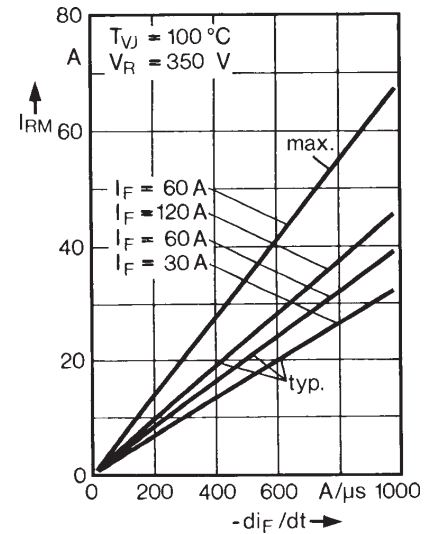


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

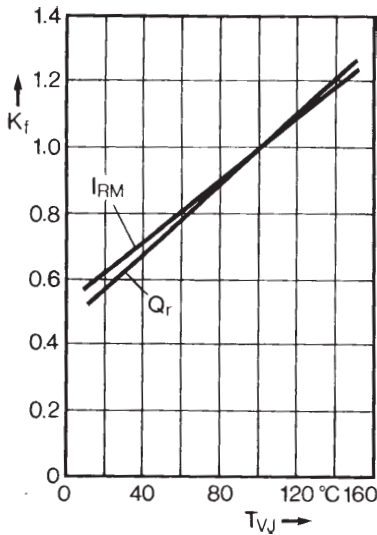


Fig. 4 Dynamic parameters versus junction temperature.

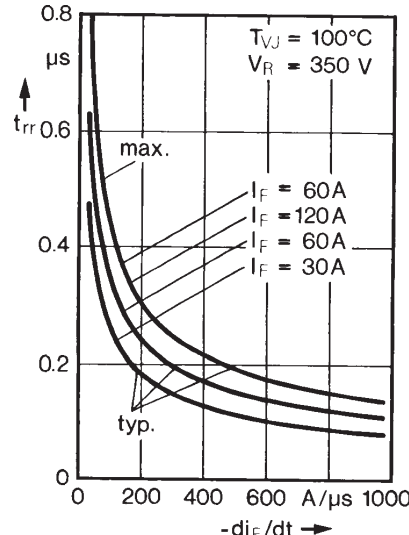


Fig. 5 Recovery time versus  $-di_F/dt$ .

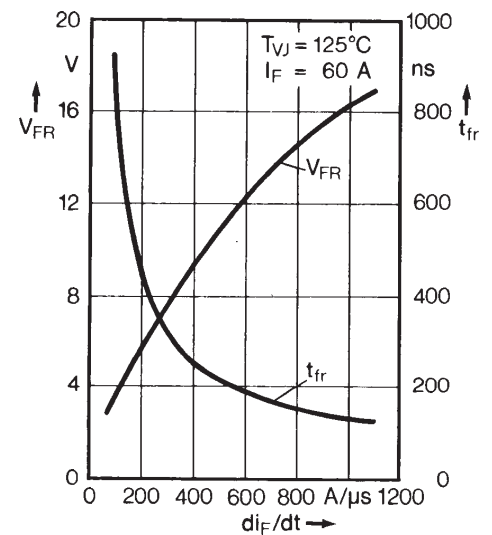


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

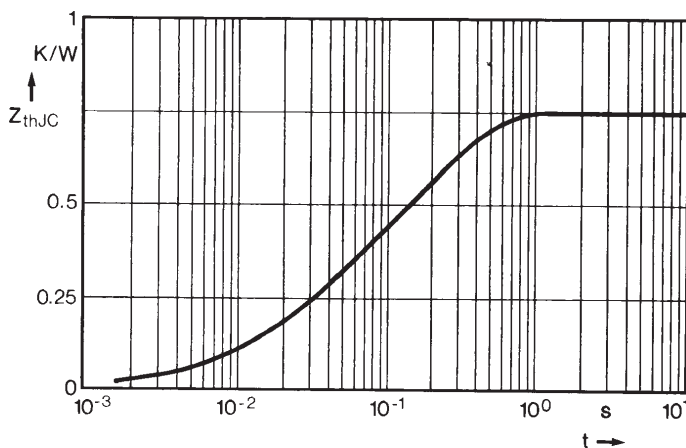
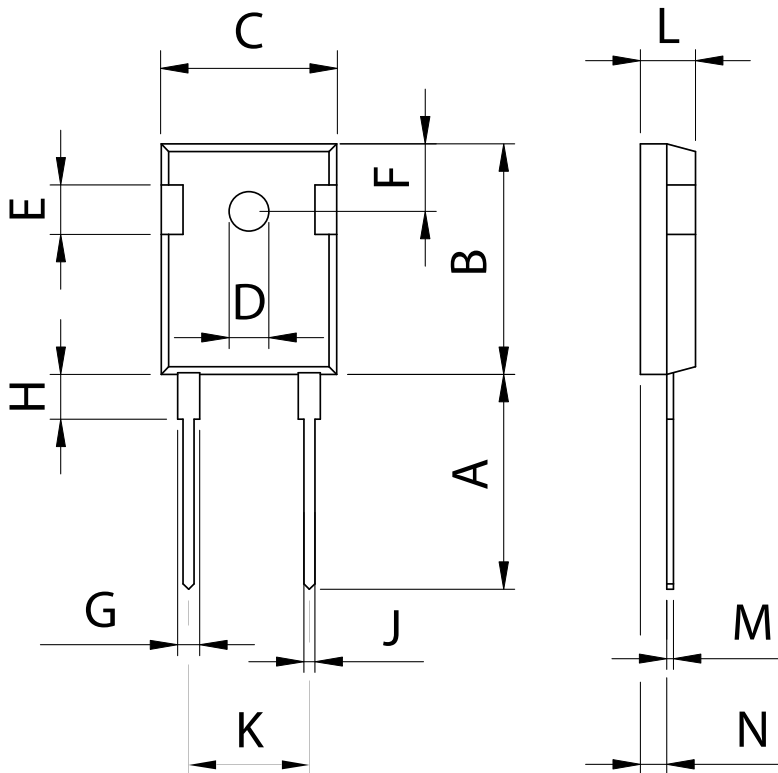


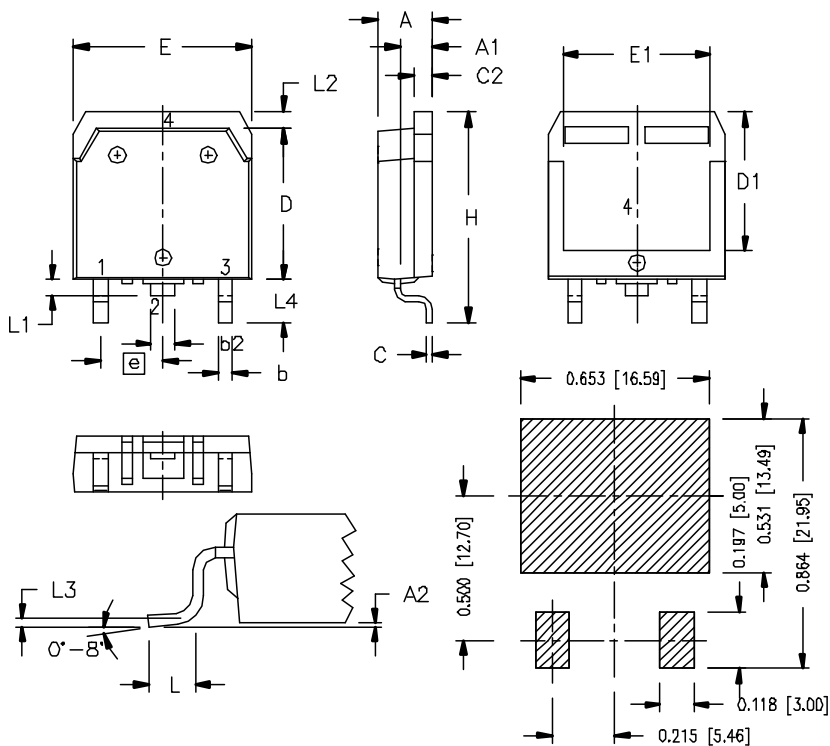
Fig. 7 Transient thermal impedance junction to case.

### Dimensions TO-247 AD



| 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 |

### Dimensions TO-268 AA



RECOMMENDED MINIMUM FOOT PRINT FOR SMD

| SYM | INCHES   |      | MILLIMETERS |       |
|-----|----------|------|-------------|-------|
|     | MIN      | MAX  | MIN         | MAX   |
| A   | .193     | .201 | 4.90        | 5.10  |
| A1  | .106     | .114 | 2.70        | 2.90  |
| A2  | .001     | .010 | 0.02        | 0.25  |
| b   | .045     | .057 | 1.15        | 1.45  |
| b2  | .075     | .083 | 1.90        | 2.10  |
| C   | .016     | .026 | 0.40        | 0.65  |
| C2  | .057     | .063 | 1.45        | 1.60  |
| D   | .543     | .551 | 13.80       | 14.00 |
| D1  | .488     | .500 | 12.40       | 12.70 |
| E   | .624     | .632 | 15.85       | 16.05 |
| E1  | .524     | .535 | 13.30       | 13.60 |
| e   | .215 BSC |      | 5.45 BSC    |       |
| H   | .736     | .752 | 18.70       | 19.10 |
| L   | .094     | .106 | 2.40        | 2.70  |
| L1  | .047     | .055 | 1.20        | 1.40  |
| L2  | .039     | .045 | 1.00        | 1.15  |
| L3  | .010 BSC |      | 0.25 BSC    |       |
| L4  | .150     | .161 | 3.80        | 4.10  |

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

© 2007 IXYS All rights reserved

20070419

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9