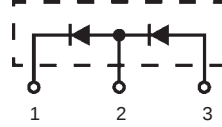




# THE DATASHEET OF DSP25-16AR

# Phase-leg Rectifier Diode

| $V_{RSM}$ | $V_{RRM}$ | TO-247 AD  | TO-268 AA   | ISOPLUS 247™ |
|-----------|-----------|------------|-------------|--------------|
| V         | V         | Type       |             |              |
| 1300      | 1200      | DSP 25-12A | DSP 25-12AT |              |
| 1700      | 1600      | DSP 25-16A | DSP 25-16AT | DSP 25-16AR  |

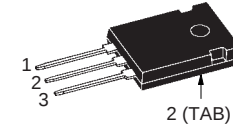


$$V_{RRM} = 1200/1600 \text{ V}$$

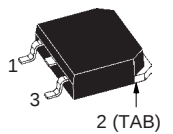
$$I_{F(RMS)} = 2 \times 43 \text{ A}$$

$$I_{F(AV)M} = 2 \times 28 \text{ A}$$

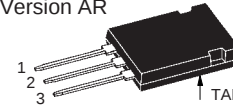
TO-247 AD  
Version A



TO-268 AA  
Version AT



ISOPLUS 247™  
Version AR



1 = Cathode, 2 = Anode/Cathode, 3 = Anode

## Features

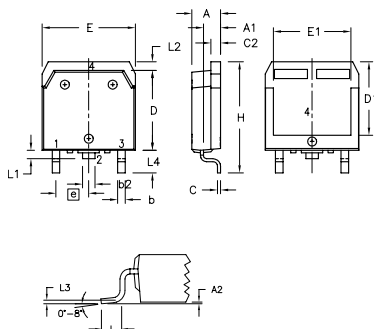
- International standard packages  
JEDEC TO-247 AD and TO-268 AA  
surface mountable
- For single and three phase bridge  
configuration
- Planar passivated chips
- Epoxy meets UL 94V-0 flammability  
classification
- Version AR isolated and  
UL registered E153432

| Symbol          | Test Conditions                                                 | Maximum Ratings      |
|-----------------|-----------------------------------------------------------------|----------------------|
| $I_{F(RMS)}$    | $T_{VJ} = T_{VJM}$                                              | 43 A                 |
| $I_{F(AV)M}$    | $T_{case} = 100^{\circ}\text{C}; 180^{\circ}$ sine              | 28 A                 |
| $I_{FSM}$       | $T_{VJ} = 45^{\circ}\text{C}; t = 10 \text{ ms}$ (50 Hz), sine  | 300 A                |
|                 | $t = 8.3 \text{ ms}$ (60 Hz), sine                              | 330 A                |
|                 | $T_{VJ} = 150^{\circ}\text{C}; t = 10 \text{ ms}$ (50 Hz), sine | 270 A                |
|                 | $t = 8.3 \text{ ms}$ (60 Hz), sine                              | 300 A                |
| $I^2t$          | $T_{VJ} = 45^{\circ}\text{C}$                                   | 450 A <sup>2</sup> s |
|                 | $t = 8.3 \text{ ms}$ (60 Hz), sine                              | 450 A <sup>2</sup> s |
|                 | $T_{VJ} = 150^{\circ}\text{C}; t = 10 \text{ ms}$ (50 Hz), sine | 340 A <sup>2</sup> s |
|                 | $t = 8.3 \text{ ms}$ (60 Hz), sine                              | 325 A <sup>2</sup> s |
| $T_{VJ}$        |                                                                 | -40...+180 °C        |
| $T_{VJM}$       |                                                                 | 180 °C               |
| $T_{stg}$       |                                                                 | -40...+150 °C        |
| $M_d^*$         | mounting torque M3                                              | 0.8...1.2 Nm         |
| $F_c$           | mounting force with clip                                        | 20...120 N           |
| $V_{ISOL}^{**}$ | 50/60 Hz, RMS, $t = 1$ minute, leads-to-tab                     | 2500 V~              |
| Weight          | TO-268 / TO-247                                                 | 4 / 6 g              |

\* Version A only; \*\* Version AR only

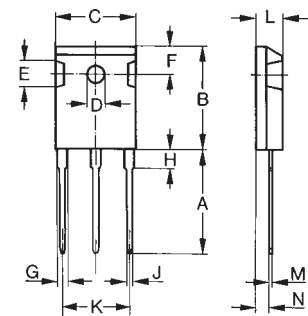
| Symbol     | Test Conditions                                   | Characteristic Values |
|------------|---------------------------------------------------|-----------------------|
| $I_R$      | $T_{VJ} = 150^{\circ}\text{C}$ $V_R = V_{RRM}$    | $\leq 2 \text{ mA}$   |
| $V_F$      | $I_F = 55 \text{ A}; T_{VJ} = 25^{\circ}\text{C}$ | $\leq 1.6 \text{ V}$  |
| $V_{T0}$   | For power-loss calculations only                  | 0.8 V                 |
| $r_T$      | $T_{VJ} = T_{VJM}$                                | 15 mΩ                 |
| $R_{thJC}$ | DC current                                        | 1.5 K/W               |
| $R_{thCH}$ | DC current (with heatsink compound)               | 0.4 K/W               |
| $a$        | Maximum allowable acceleration                    | 100 m/s <sup>2</sup>  |

## TO-268 AA Outline



| Dim.           | Millimeter<br>Min. Max. | Inches<br>Min. Max. |
|----------------|-------------------------|---------------------|
| A              | 4.9 5.1                 | .193 .201           |
| A <sub>1</sub> | 2.7 2.9                 | .106 .114           |
| A <sub>2</sub> | .02 .25                 | .001 .010           |
| b              | 1.15 1.45               | .045 .057           |
| b <sub>2</sub> | 1.9 2.1                 | .75 .83             |
| C              | .4 .65                  | .016 .026           |
| D              | 13.80 14.00             | .543 .551           |
| E              | 15.85 16.05             | .624 .632           |
| E <sub>1</sub> | 13.3 13.6               | .524 .535           |
| e              | 5.45 BSC                | .215 BSC            |
| H              | 18.70 19.10             | .736 .752           |
| L              | 2.40 2.70               | .094 .106           |
| L <sub>1</sub> | 1.20 1.40               | .047 .055           |
| L <sub>2</sub> | 1.00 1.15               | .039 .045           |
| L <sub>3</sub> | 0.25 BSC                | .010 BSC            |
| L <sub>4</sub> | 3.80 4.10               | .150 .161           |

## TO-247 AD and ISOPLUS 247™



| Dim. | Millimeter<br>Min. Max. | Inches<br>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         |

\* ISOPLUS 247™ without hole

Data according to IEC 60747 and refer to a single diode  
IXYS reserves the right to change limits, test conditions and dimensions

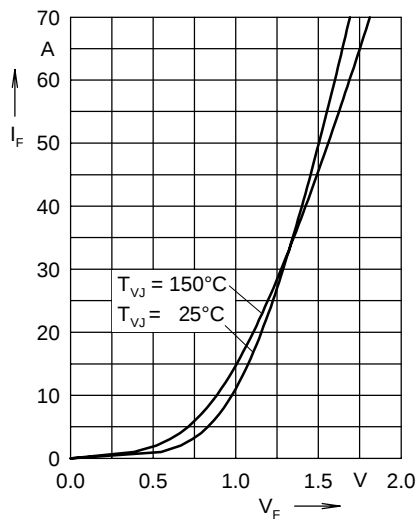


Fig. 1 Forward current versus voltage drop per diode

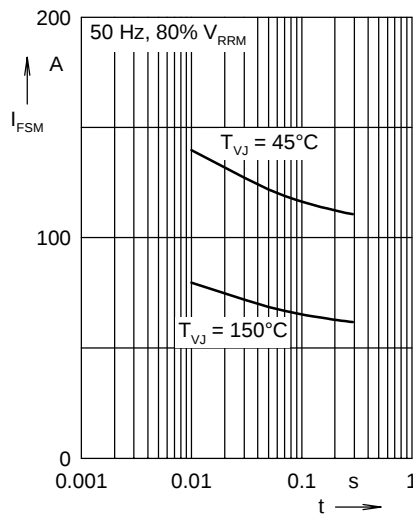


Fig. 2 Surge overload current

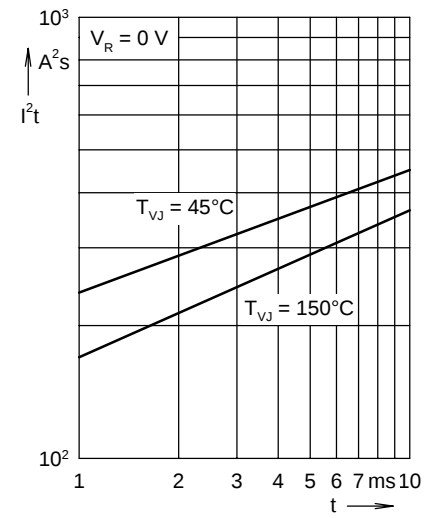


Fig. 3  $I^2t$  versus time per diode

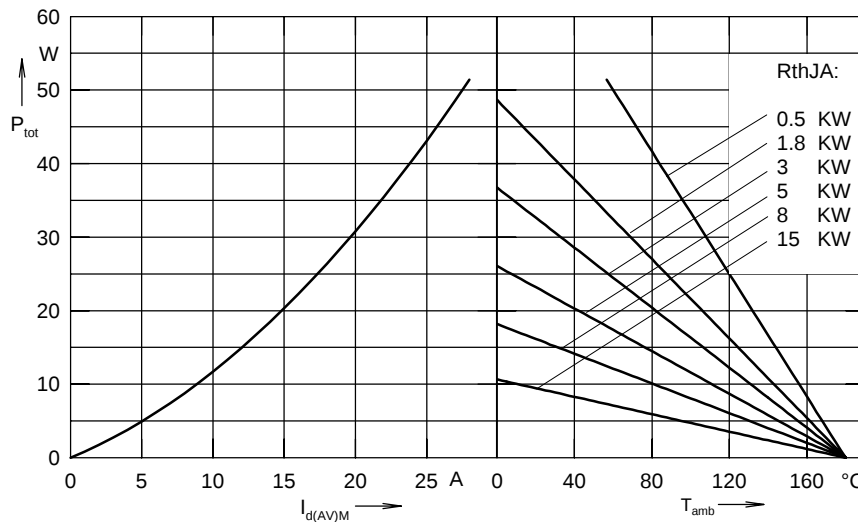


Fig. 4 Power dissipation versus direct output current and ambient temperature, sine 180°

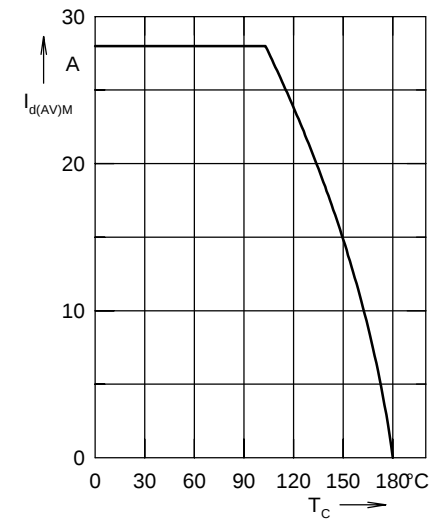


Fig. 5 Max. forward current versus case temperature

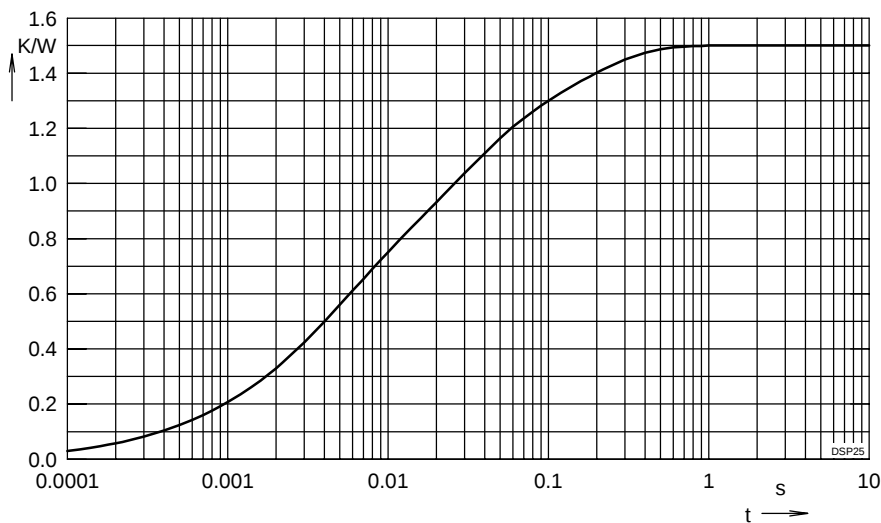


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.06075         | 0.0004    |
| 2 | 0.183           | 0.00256   |
| 3 | 0.3405          | 0.0045    |
| 4 | 0.543           | 0.0242    |
| 5 | 0.3728          | 0.15      |

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