

preliminary

# Schottky Diode

$$V_{RRM} = 25 \text{ V}$$

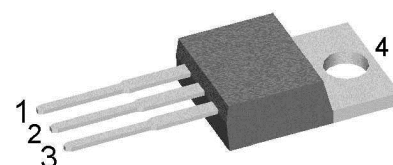
$$I_{FAV} = 2 \times 25 \text{ A}$$

$$V_F = 0.35 \text{ V}$$

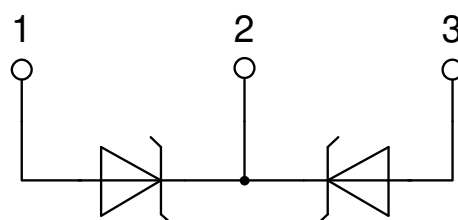
High Performance Schottky Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DSSK48-0025B**



Backside: cathode



## Features / Advantages:

- Very low  $V_f$
- Extremely low switching losses
- Low  $I_{rm}$  values
- Improved thermal behaviour
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching

## Applications:

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

## Package: TO-220

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

## Disclaimer Notice

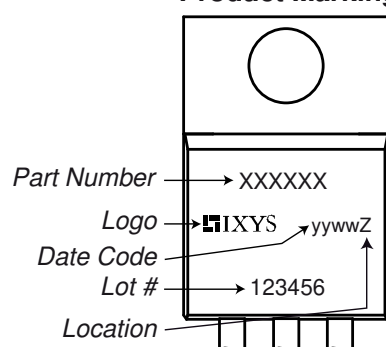
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| Schottky   |                                              |                                                                    |                                | Ratings                        |      |      |      |
|------------|----------------------------------------------|--------------------------------------------------------------------|--------------------------------|--------------------------------|------|------|------|
| Symbol     | Definition                                   | Conditions                                                         |                                | min.                           | typ. | max. | Unit |
| $V_{RSM}$  | max. non-repetitive reverse blocking voltage | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 25   | V    |
| $V_{RRM}$  | max. repetitive reverse blocking voltage     | $T_{VJ} = 25^{\circ}\text{C}$                                      |                                |                                |      | 25   | V    |
| $I_R$      | reverse current, drain current               | $V_R = 25\text{ V}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 20   | mA   |
|            |                                              | $V_R = 25\text{ V}$                                                | $T_{VJ} = 100^{\circ}\text{C}$ |                                |      | 60   | mA   |
| $V_F$      | forward voltage drop                         | $I_F = 20\text{ A}$                                                | $T_{VJ} = 25^{\circ}\text{C}$  |                                |      | 0.44 | V    |
|            |                                              | $I_F = 40\text{ A}$                                                |                                |                                |      | 0.54 | V    |
|            |                                              | $I_F = 20\text{ A}$                                                | $T_{VJ} = 125^{\circ}\text{C}$ |                                |      | 0.35 | V    |
|            |                                              | $I_F = 40\text{ A}$                                                |                                |                                |      | 0.48 | V    |
| $I_{FAV}$  | average forward current                      | $T_C = 130^{\circ}\text{C}$<br>rectangular $d = 0.5$               | $T_{VJ} = 150^{\circ}\text{C}$ |                                |      | 25   | A    |
| $V_{F0}$   | threshold voltage                            | } for power loss calculation only                                  |                                | $T_{VJ} = 150^{\circ}\text{C}$ |      | 0.19 | V    |
| $r_F$      | slope resistance                             |                                                                    |                                |                                |      | 6.8  | mΩ   |
| $R_{thJC}$ | thermal resistance junction to case          |                                                                    |                                |                                |      | 1.2  | K/W  |
| $R_{thCH}$ | thermal resistance case to heatsink          |                                                                    |                                |                                | 0.5  |      | K/W  |
| $P_{tot}$  | total power dissipation                      | $T_C = 25^{\circ}\text{C}$                                         |                                |                                |      | 105  | W    |
| $I_{FSM}$  | max. forward surge current                   | $t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$ | $T_{VJ} = 45^{\circ}\text{C}$  |                                |      | 350  | A    |
| $C_J$      | junction capacitance                         | $V_R = 5\text{ V}$ $f = 1\text{ MHz}$                              | $T_{VJ} = 25^{\circ}\text{C}$  |                                | 1.77 |      | nF   |

preliminary

| Package TO-220 |                              |                     | Ratings |      |      |      |
|----------------|------------------------------|---------------------|---------|------|------|------|
| Symbol         | Definition                   | Conditions          | min.    | typ. | max. | Unit |
| $I_{RMS}$      | RMS current                  | per terminal $\eta$ |         |      | 35   | A    |
| $T_{VJ}$       | virtual junction temperature |                     | -55     |      | 150  | °C   |
| $T_{op}$       | operation temperature        |                     | -55     |      | 125  | °C   |
| $T_{stg}$      | storage temperature          |                     | -55     |      | 150  | °C   |
| Weight         |                              |                     |         | 2    |      | g    |
| $M_D$          | mounting torque              |                     | 0.4     |      | 0.6  | Nm   |
| $F_C$          | mounting force with clip     |                     | 20      |      | 60   | N    |

### Product Marking

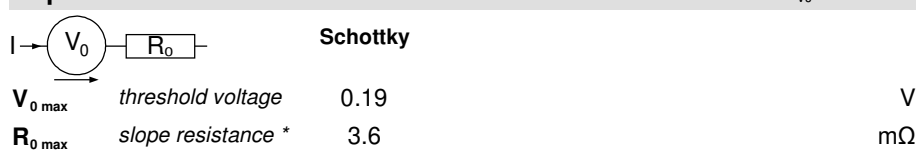


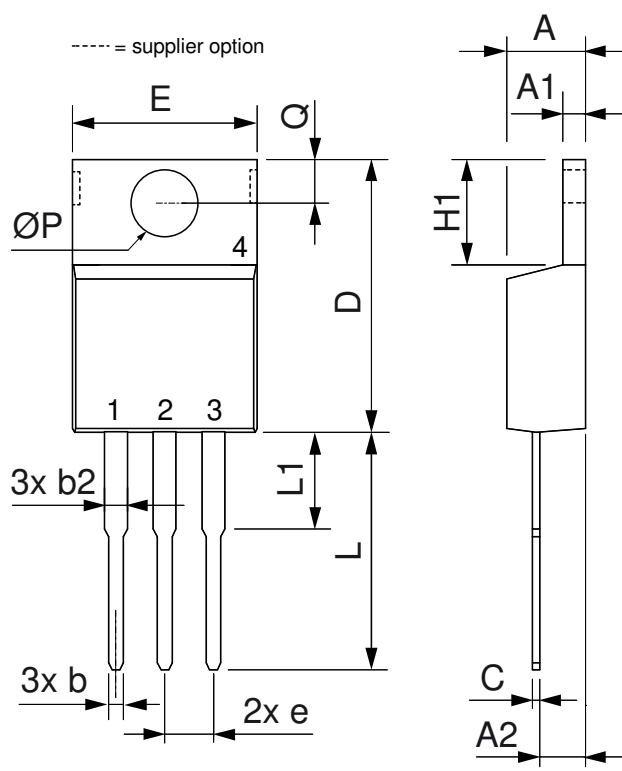
| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | DSSK48-0025B    | DSSK48-0025B       | Tube          | 50       | 485381   |

| Similar Part | Package              | Voltage class |
|--------------|----------------------|---------------|
| DSSK48-003B  | TO-220AB (3)         | 30            |
| DSSK48-003BS | TO-263AB (D2Pak) (2) | 30            |

### Equivalent Circuits for Simulation

\* on die level

 $T_{VJ} = 150^{\circ}\text{C}$ 


**Outlines TO-220**


| Dim. | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 4.32       | 4.82  | 0.170  | 0.190 |
| A1   | 1.14       | 1.39  | 0.045  | 0.055 |
| A2   | 2.29       | 2.79  | 0.090  | 0.110 |
| b    | 0.64       | 1.01  | 0.025  | 0.040 |
| b2   | 1.15       | 1.65  | 0.045  | 0.065 |
| C    | 0.35       | 0.56  | 0.014  | 0.022 |
| D    | 14.73      | 16.00 | 0.580  | 0.630 |
| E    | 9.91       | 10.66 | 0.390  | 0.420 |
| e    | 2.54       | BSC   | 0.100  | BSC   |
| H1   | 5.85       | 6.85  | 0.230  | 0.270 |
| L    | 12.70      | 13.97 | 0.500  | 0.550 |
| L1   | 2.79       | 5.84  | 0.110  | 0.230 |
| ØP   | 3.54       | 4.08  | 0.139  | 0.161 |
| Q    | 2.54       | 3.18  | 0.100  | 0.125 |

