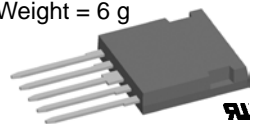
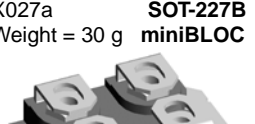

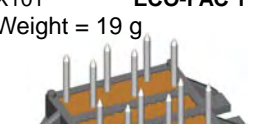


# Rectifier Bridges with Fast Diodes

## Rectifier Bridges with Superfast Recovery Diodes

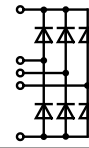
1-phase, B2U

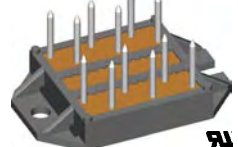
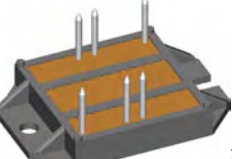


| Type          | V <sub>RRM</sub> | I <sub>dAV</sub> | @ T <sub>C</sub> | I <sub>FSM</sub><br>45°C<br>10 ms | V <sub>TO</sub> | r <sub>T</sub> | T <sub>VJM</sub> | R <sub>thJC</sub><br>per Chip | R <sub>thCH</sub><br>typ | Fig. No. | Package style<br>Outline drawings<br>on pages O-30...O-52  |
|---------------|------------------|------------------|------------------|-----------------------------------|-----------------|----------------|------------------|-------------------------------|--------------------------|----------|--|
| ➤ New         | V                | A                | °C               | A                                 | V               | mΩ             | °C               | K/W                           | K/W                      |          |  |
| VBE 17-06NO7  | 600              | 27               | 85               | 50                                | 1.18            | 22.0           | 150              | 2.50                          | 0.30                     | X101     | X024a <b>ISOPLUS i4-PAC™</b><br>Weight = 6 g   |
| VBE 17-12NO7  | 1200             | 19               | 85               | 40                                | 1.32            | 30.0           | 150              | 2.50                          | 0.30                     |          |  |
| VBE 20-20NO1  | 2000             | 20               | 65               | 75                                | 3.30            | 93.0           | 150              | 1.70                          | 0.30                     | X103     | <br>Weight = 6 g  |
| VBE 26-06NO7  | 600              | 44               | 85               | 110                               | 1.13            | 13.0           | 150              | 1.60                          | 0.30                     | X101     |  |
| VBE 26-12NO7  | 1200             | 32               | 85               | 90                                | 1.32            | 30.0           | 150              | 1.60                          | 0.30                     |          | X027a <b>SOT-227B</b><br>Weight = 30 g   |
| VBE 55-06NO7  | 600              | 68               | 100              | 250                               | 0.98            | 8.0            | 150              | 0.90                          | 0.30                     |          |  |
| VBE 55-12NO7  | 1200             | 59               | 85               | 200                               | 1.31            | 15.0           | 150              | 0.90                          | 0.30                     |          | <br>Weight = 30 g |
| VBE 60-06A    | 600              | 60               | 90               | 250                               | 0.98            | 6.8            | 150              | 1.15                          | 0.10                     | X027a    |  |
| FBE 22-06N1   | 600              | 20               | 90               | 40                                | -               | -              | 150              | 3.50                          | 0.15                     | X024a    | <br>Weight = 30 g |
| VBE 100-06NO7 | 600              | 100              | 85               | 600                               | 1.09            | 4.3            | 150              | 0.80                          | 0.20                     | X102     |  |
| VBE 100-12NO7 | 1200             | 100              | 70               | 500                               | 1.07            | 8.2            | 150              | 0.80                          | 0.20                     |          | <br>Weight = 30 g |
| FBS 10-06SC*  | 600              | 6.6              | 90               | 12                                | -               | -              | 175              | 8.00                          | 3.50                     | X024a    |  |
| FBS 16-06SC*  | 600              | 11               | 90               | 20                                | -               | -              | 175              | 5.60                          | 3.00                     |          |  |

\* SiC-Diodes

3-phase, B6U



|               |      |     |     |     |      |      |     |      |      |       |  |
|---------------|------|-----|-----|-----|------|------|-----|------|------|-------|--|
| FUS 45-0045B  | 45   | 20  | 90  | 150 | -    | -    | 150 | 3.10 | 0.15 | X024a | X101 <b>ECO-PAC 1</b><br>Weight = 19 g   |
| VUE 50-12NO1  | 1200 | 50  | 85  | 200 | 1.65 | 18.2 | 150 | 1.20 | 0.30 | X103  |  |
| VUE 30-20NO1  | 2000 | 30  | 65  | 75  | 3.30 | 93.0 | 150 | 1.70 | 0.30 |       | <br>Weight = 19 g   |
| VUE 22-06NO7  | 600  | 34  | 85  | 50  | 1.18 | 22.0 | 150 | 2.50 | 0.30 | X101  |  |
| VUE 22-12NO7  | 1200 | 24  | 85  | 40  | 1.39 | 55.0 | 150 | 2.50 | 0.30 |       | See data sheet for pin arrangement   |
| VUE 35-06NO7  | 600  | 56  | 85  | 110 | 1.13 | 13.0 | 150 | 1.60 | 0.30 | X101  |  |
| VUE 35-12NO7  | 1200 | 40  | 85  | 90  | 1.32 | 30.0 | 150 | 1.60 | 0.30 |       | X102 <b>ECO-PAC 2</b><br>Weight = 24 g   |
| VUE 75-06NO7  | 600  | 86  | 100 | 250 | 0.98 | 8.0  | 150 | 0.90 | 0.30 |       |  |
| VUE 75-12NO7  | 1200 | 74  | 85  | 200 | 1.31 | 15.0 | 150 | 0.90 | 0.30 |       | <br>Weight = 24 g |
| FUE 30-12N1   | 1200 | 30  | 90  | 80  | -    | -    | 150 | 2.30 | 0.15 | X024a |  |
| VUE 130-06NO7 | 600  | 130 | 85  | 600 | 1.09 | 4.3  | 150 | 0.80 | 0.20 | X102  | See data sheet for pin arrangement   |
| VUE 130-12NO7 | 1200 | 130 | 70  | 500 | 1.07 | 8.2  | 150 | 0.80 | 0.20 |       |  |

See data sheet for pin arrangement

X103 **V1-A-Pack**  
Weight = 35 g



## Rectifier Bridges incorporating Fast Diodes

Power switching semiconductors are used in inverter systems with DC-Link. Due to high switching frequencies, harmonics and line distortion may be generated. It is important that the new designs reduce these influences and fulfill the EMI filtering requirements according to EMI/EMC VDE 0871 and other.

The noise level can be reduced by up to **10dB** when the input rectifier is equipped with semi-fast diodes and is therefore optimised for turn off; resulting in a lower peak recovery current compared to non-optimised and normal rectifier diodes.

The noise level can be further reduced approximately by another **5dB** when using rectifier bridges equipped with Fast Recovery Epitaxial Diodes (FRED) like module types VBE (single phase bridge) or VUE (three phase bridge). However these are more expensive but may be necessary in some applications to fulfill the VDE or other standards.

This behaviour has a direct influence on the design of the EMI filter networks with its capacitors and inductors of which the size and costs can be reduced.

More detailed information is available in the IXYS application note D98005E „Input Rectifiers with Semi-fast Diodes for DC Link“ on [www.ixys.com](http://www.ixys.com).