

## Three Phase Bridge Rectifier, 25 A, 35 A


**D-63**
**FEATURES**

- Universal, 3 way terminals: push-on, wrap around or solder
- High thermal conductivity package, electrically insulated case
- Center hole fixing
- Excellent power/volume ratio
- UL E300359 approved
- Nickel plated terminals solderable using lead (Pb)-free solder; solder alloy Sn/Ag/Cu (SAC305); solder temperature 260 °C to 275 °C
- Designed and qualified for industrial and consumer level
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

| PRIMARY CHARACTERISTICS |                    |
|-------------------------|--------------------|
| $I_o$                   | 25 A, 35 A         |
| $V_{RRM}$               | 50 V to 1600 V     |
| Package                 | D-63               |
| Circuit configuration   | Three phase bridge |

**DESCRIPTION**

A range of extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and instrumentation applications.

| MAJOR RATINGS AND CHARACTERISTICS |                 |                  |                  |                  |
|-----------------------------------|-----------------|------------------|------------------|------------------|
| SYMBOL                            | CHARACTERISTICS | VALUES<br>26MT.. | VALUES<br>36MT.. | UNITS            |
| $I_o$                             |                 | 25               | 35               | A                |
|                                   | $T_C$           | 70               | 60               | °C               |
| $I_{FSM}$                         | 50 Hz           | 360              | 475              | A                |
|                                   | 60 Hz           | 375              | 500              |                  |
| $i^2t$                            | 50 Hz           | 635              | 1130             | A <sup>2</sup> s |
|                                   | 60 Hz           | 580              | 1030             |                  |
| $V_{RRM}$                         |                 | 50 to 1600       |                  | V                |
| $T_J$                             |                 | -55 to +150      |                  | °C               |

**ELECTRICAL SPECIFICATIONS**

| VOLTAGE RATINGS        |              |  |  |  |
|------------------------|--------------|--|--|--|
| TYPE NUMBER            | VOLTAGE CODE | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J$ MAXIMUM<br>mA |
| VS-26MT..<br>VS-36MT.. | 05           | 50   | 75   | 2  |
|                        | 10           | 100  | 150  |  |
|                        | 20           | 200  | 275  |  |
|                        | 40           | 400  | 500  |  |
|                        | 60           | 600  | 725  |  |
|                        | 80           | 800  | 900  |  |
|                        | 100          | 1000   | 1100   |  |
|                        | 120          | 1200   | 1300   |  |
|                        | 140          | 1400   | 1500   |  |
|                        | 160          | 1600   | 1700   |  |

| FORWARD CONDUCTION                                     |               |  |                           |                             |               |                   |                  |
|--|---------------|--|---------------------------|-----------------------------|---------------|-------------------|------------------|
| PARAMETER  | SYMBOL        | TEST CONDITIONS  |                           | VALUES 26MT..               | VALUES 36MT.. | UNITS             |                  |
| Maximum DC output current at $T_C$                     | $I_O$         | 120° rect. conduction angle  |                           | 25                          | 35            | A                 |                  |
|  |               |  |                           | 70                          | 60            | °C                |                  |
| Maximum peak, one-cycle non-repetitive forward current | $I_{FSM}$     | t = 10 ms  | No voltage reapplied      | Initial $T_J = T_J$ maximum | 360           | 475               | A                |
|  |               | t = 8.3 ms   |                           |                             | 375           | 500               |                  |
|  |               | t = 10 ms  | 100 % $V_{RRM}$ reapplied |                             | 300           | 400               |                  |
|  |               | t = 8.3 ms   |                           |                             | 314           | 420               |                  |
| Maximum $I^2t$ for fusing                              | $I^2t$        | t = 10 ms  | No voltage reapplied      | Initial $T_J = T_J$ maximum | 635           | 1130              | A <sup>2</sup> s |
|  |               | t = 8.3 ms   |                           |                             | 580           | 1030              |                  |
|  |               | t = 10 ms  | 100 % $V_{RRM}$ reapplied |                             | 450           | 800               |                  |
|  |               | t = 8.3 ms   |                           |                             | 410           | 730               |                  |
| Maximum $I^2\sqrt{t}$ for fusing                       | $I^2\sqrt{t}$ | $I^2t$ for time $t_x = I^2\sqrt{t} \times \sqrt{t_x}$ ; $0.1 \leq t_x \leq 10$ ms, $V_{RRM} = 0$ V |                           | 6360                        | 11 300        | A <sup>2</sup> √s |                  |
| Low level of threshold voltage                         | $V_{F(TO)1}$  | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J$ maximum                  |                           | 0.88                        | 0.86          | V                 |                  |
| High level of threshold voltage                        | $V_{F(TO)2}$  | $(I > \pi \times I_{F(AV)})$ , $T_J$ maximum   |                           | 1.13                        | 1.03          |                   |                  |
| Low level forward slope resistance                     | $r_{t1}$      | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$ , $T_J$ maximum                  |                           | 7.9                         | 6.3           | mΩ                |                  |
| High level forward slope resistance                    | $r_{t2}$      | $(I > \pi \times I_{F(AV)})$ , $T_J$ maximum   |                           | 5.2                         | 5.0           |                   |                  |
| Maximum forward voltage drop                           | $V_{FM}$      | $T_J = 25$ °C, $I_{FM} = 40$ A <sub>pk</sub> - per single junction                                 |                           | 1.26                        | 1.19          | V                 |                  |
| Maximum DC reverse current                             | $I_{RRM}$     | $T_J = 25$ °C, per junction at rated $V_{RRM}$   |                           | 100                         |               | μA                |                  |
| RMS isolation voltage                                  | $V_{INS}$     | $T_J = 25$ °C, all terminal shorted; f = 50 Hz, t = 1 s  |                           | 2700                        |               | V                 |                  |

| THERMAL - MECHANICAL SPECIFICATIONS            |                |   |  |             |             |       |
|--|----------------|---|--|-------------|-------------|-------|
| PARAMETER                                      | SYMBOL         | TEST CONDITIONS   |  | VALUES 26MT | VALUES 36MT | UNITS |
| Maximum junction and storage temperature range | $T_J, T_{Stg}$ |   |  | -55 to +150 |             | °C    |
| Maximum thermal resistance, junction to case   | $R_{thJC}$     | DC operation per bridge (based on total power loss of bridge) |  | 1.42        | 1.35        | K/W   |
| Maximum thermal resistance, case to heatsink   | $R_{thCS}$     | Mounting surface, smooth, flat and greased                    |  | 0.2         | 0.2         |       |
| Approximate weight                             |                |   |  | 20          |             | g     |
| Mounting torque ± 10 %                         |                | Bridge to heatsink with screw M4                              |  | 2.0         |             | Nm    |

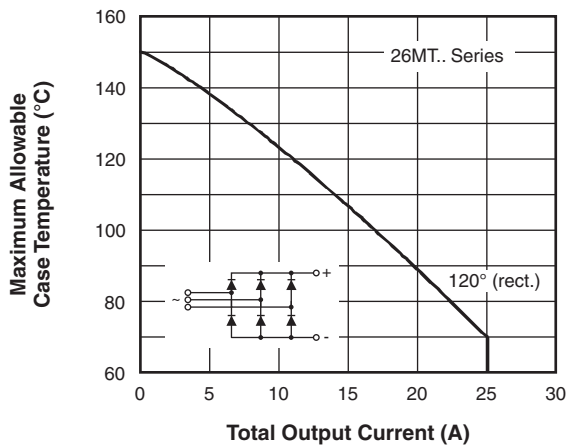


Fig. 1 - Current Ratings Characteristics

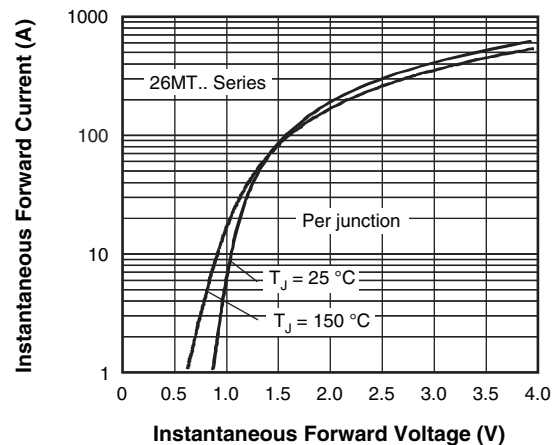


Fig. 2 - Forward Voltage Drop Characteristics

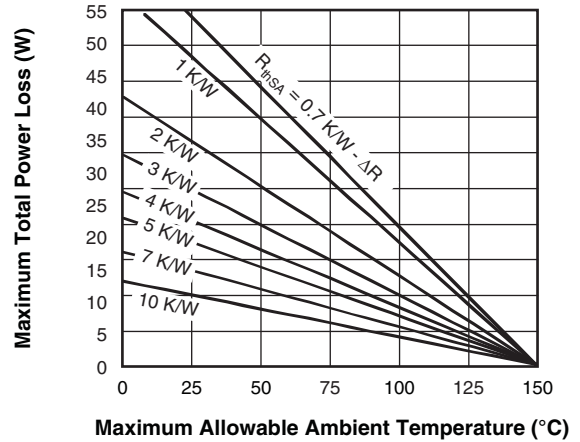
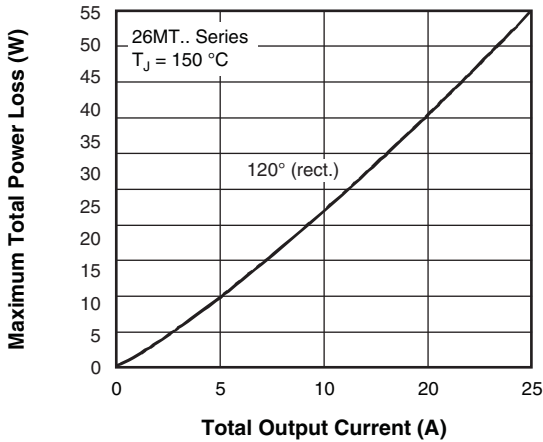


Fig. 3 - Total Power Loss Characteristics

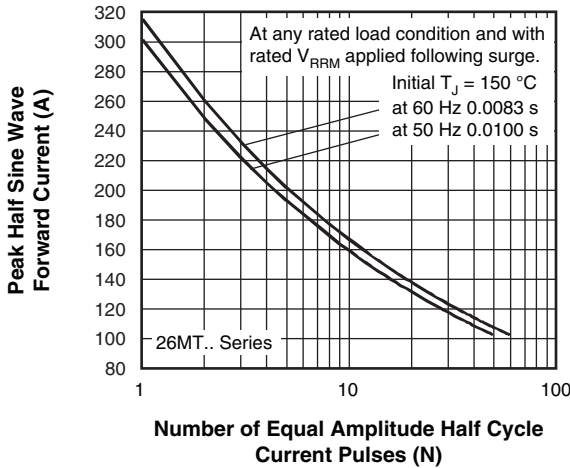


Fig. 4 - Maximum Non-Repetitive Surge Current

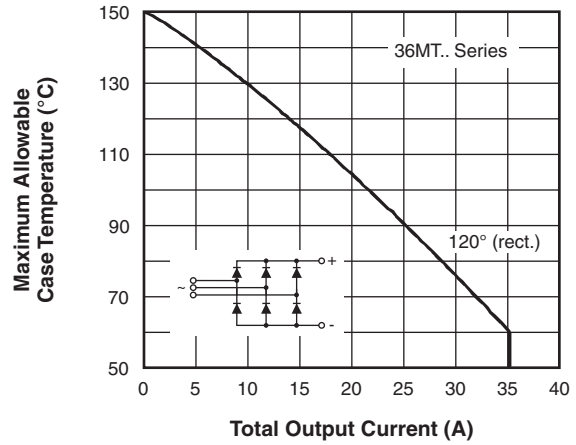


Fig. 6 - Current Ratings Characteristics

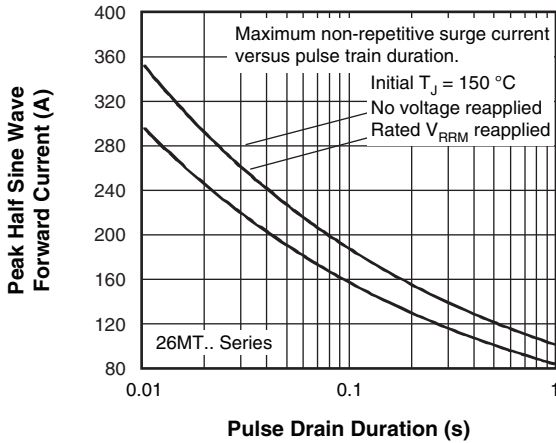


Fig. 5 - Maximum Non-Repetitive Surge Current

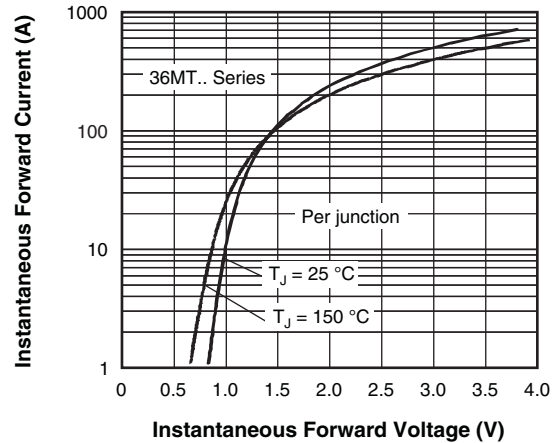


Fig. 7 - Forward Voltage Drop Characteristics

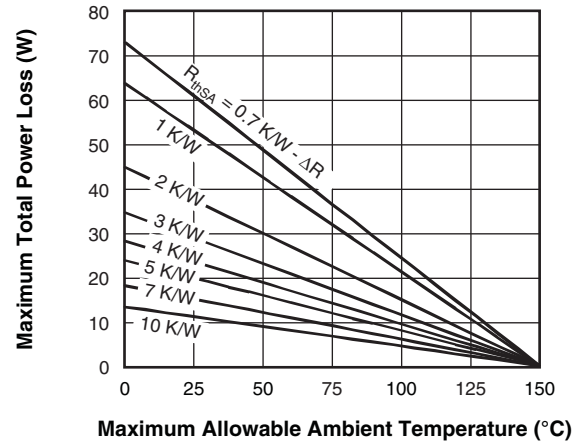
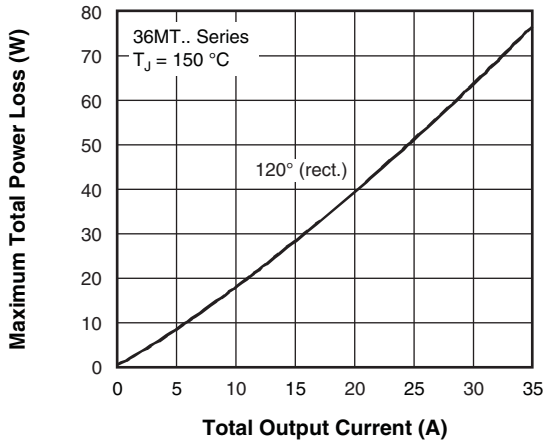


Fig. 8 - Total Power Loss Characteristics

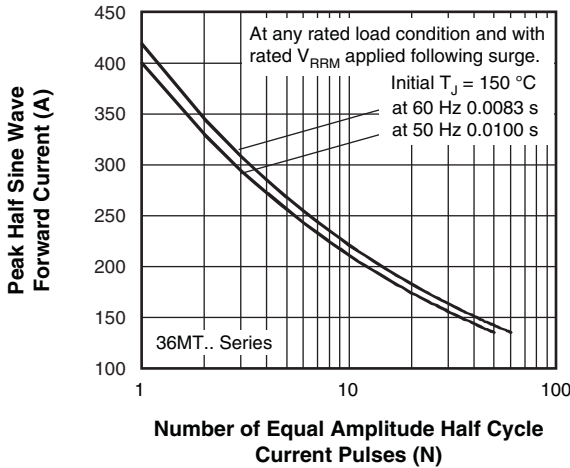


Fig. 9 - Maximum Non-Repetitive Surge Current

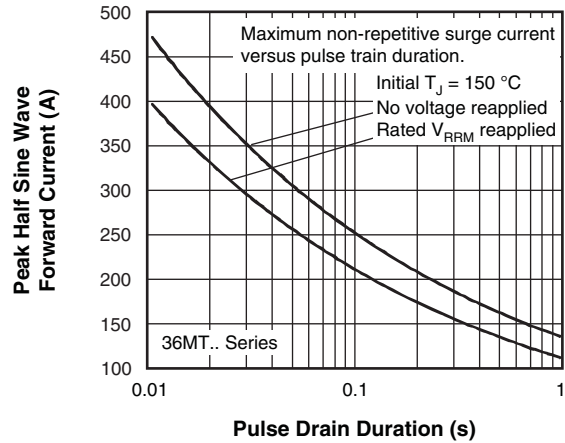


Fig. 10 - Maximum Non-Repetitive Surge Current

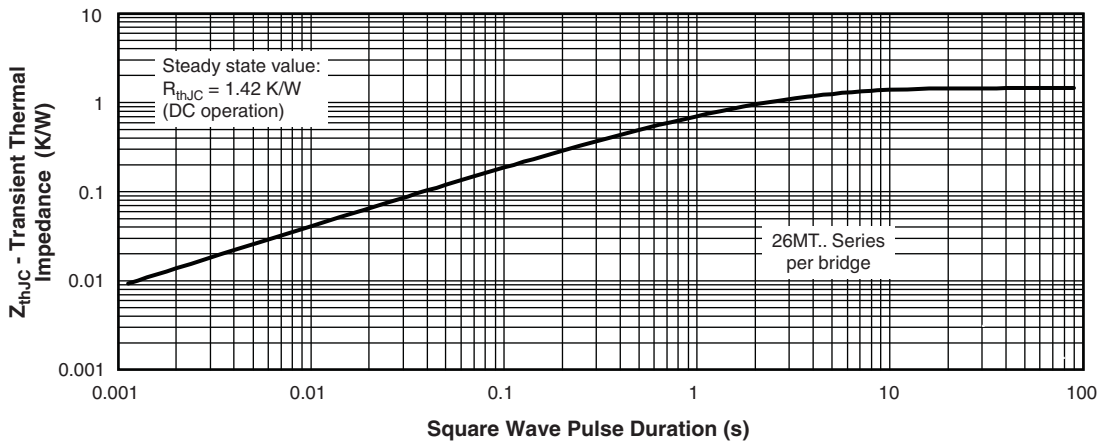


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristics

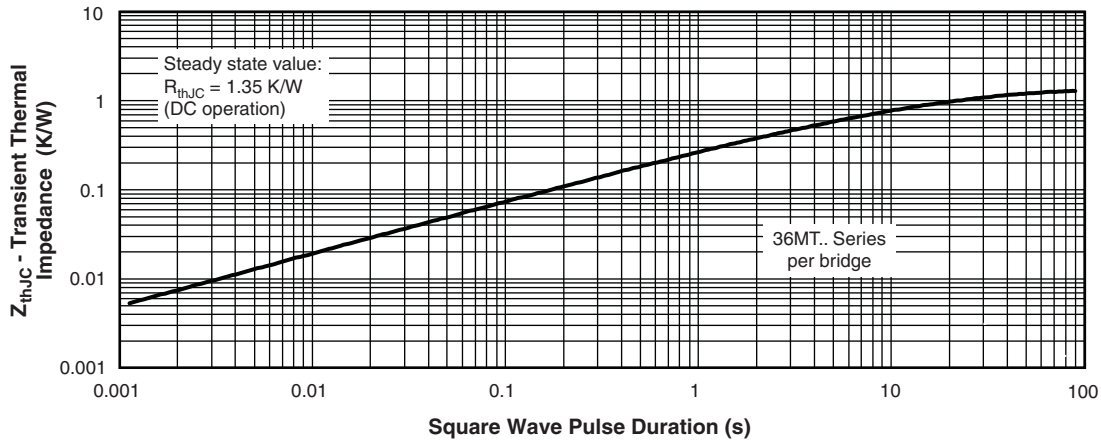
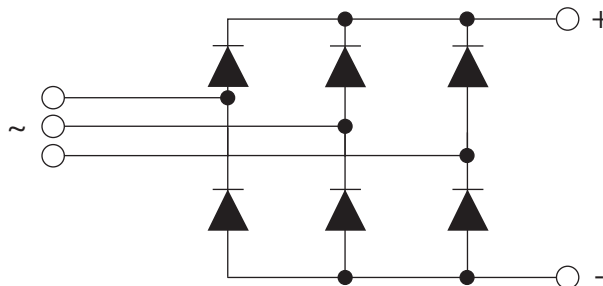


Fig. 12 - Thermal Impedance  $Z_{thJC}$  Characteristics

**ORDERING INFORMATION TABLE**

|             |                                 |  |                     |                                 |
|-------------|---------------------------------|--|---------------------|---------------------------------|
| Device code | <b>VS-</b>                      | <b>36</b>                                  | <b>MT</b>           | <b>160</b>                      |
|             | ①                               | ②  | ③                   | ④                               |
|             | 1                               | 2  | 3                   | 4                               |
|             | - Vishay Semiconductors product | - Current rating code                      | - Basic part number | - Voltage code x 10 = $V_{RRM}$ |
|             |                                 | 26 = 25 A (average)<br>36 = 35 A (average) |                     |                                 |

**CIRCUIT CONFIGURATION**



| LINKS TO RELATED DOCUMENTS |  |
|----------------------------|--|
| Dimensions                 | <a href="http://www.vishay.com/doc?95251">www.vishay.com/doc?95251</a> |



## D-63

**DIMENSIONS** in millimeters (inches)



Not to scale



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