# 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

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 26MT.. | VALUES 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 | $A^2s$ |
| | 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 V | $V_{RSM}$, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | $I_{RRM}$ MAXIMUM AT $T_J$ MAXIMUM mA |
| VS-26MT.. 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 | | 635 | 1130 | $A^2s$ |
| | | 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 $t_x = I^2\sqrt{t} \times \sqrt{t_x}$; $0.1 \le t_x \le 10$ ms, $V_{RRM}$ = 0 V | | | 6360 | 11 300 | $A^2\sqrt{s}$ |
| Low level of threshold voltage | $V_{F(TO)1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J$ maximum | | | 0.88 | 0.86 | V |
| High level of threshold voltage | $V_{F(TO)2}$ | (I > π x $I_{F(AV)}$), $T_J$ maximum | | | 1.13 | 1.03 | |
| Low level forward slope resistance | $r_{t1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J$ maximum | | | 7.9 | 6.3 | mΩ |
| High level forward slope resistance | $r_{t2}$ | (I > π x $I_{F(AV)}$), $T_J$ maximum | | | 5.2 | 5.0 | |
| Maximum forward voltage drop | $V_{FM}$ | $T_J$ = 25 °C, $I_{FM}$ = 40 $A_{pk}$ - 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 |

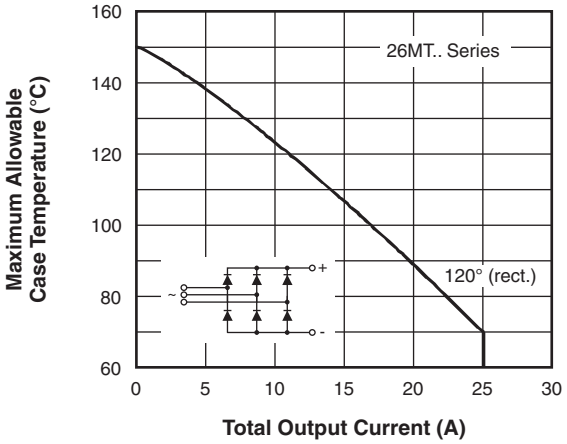



Fig. 1 - Current Ratings Characteristics

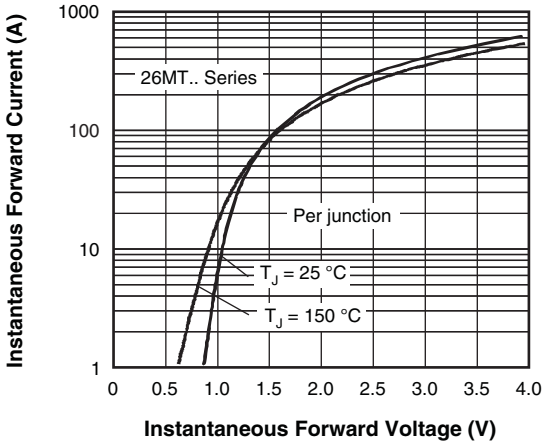
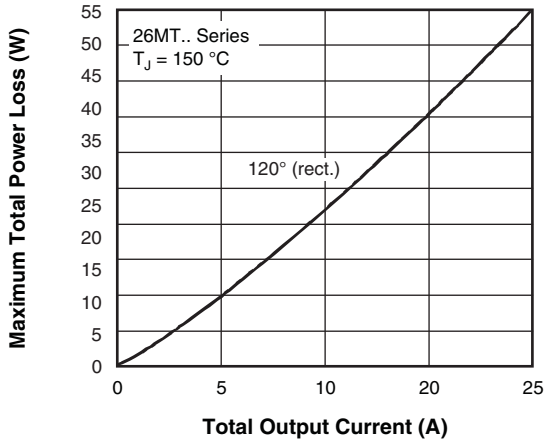



Fig. 2 - Forward Voltage Drop Characteristics



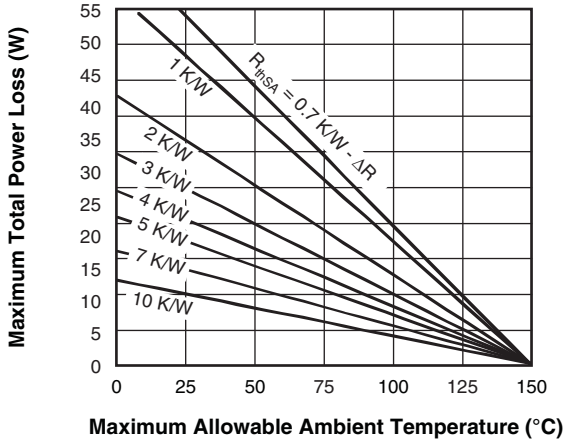




Fig. 3 - Total Power Loss Characteristics

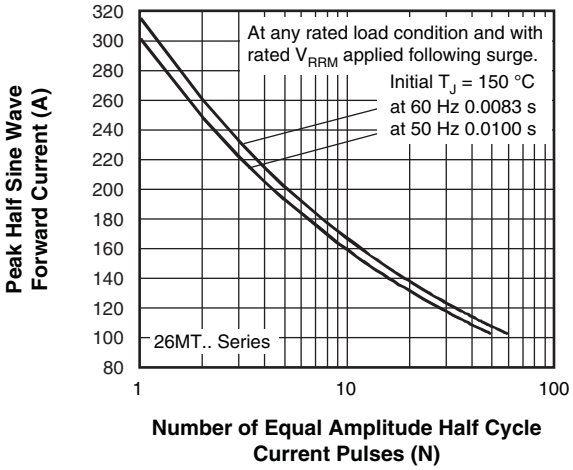



Fig. 4 - Maximum Non-Repetitive Surge Current

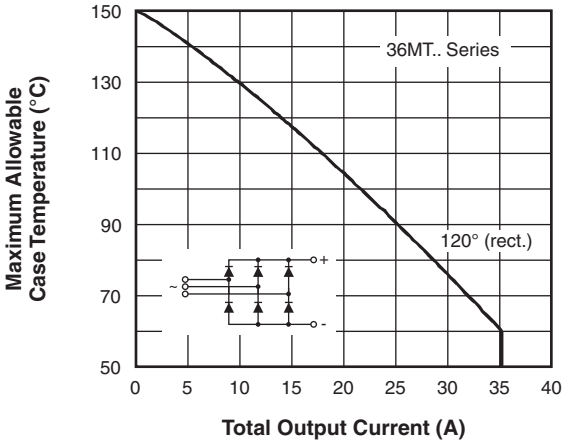



Fig. 6 - Current Ratings Characteristics

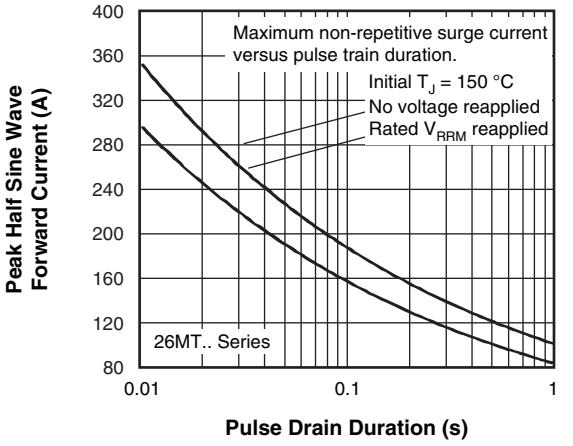



Fig. 5 - Maximum Non-Repetitive Surge Current

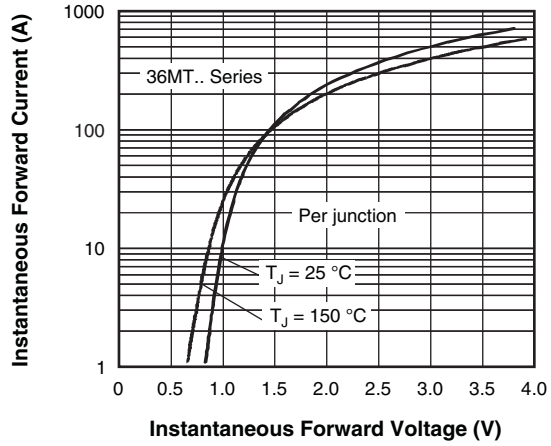



Fig. 7 - Forward Voltage Drop Characteristics

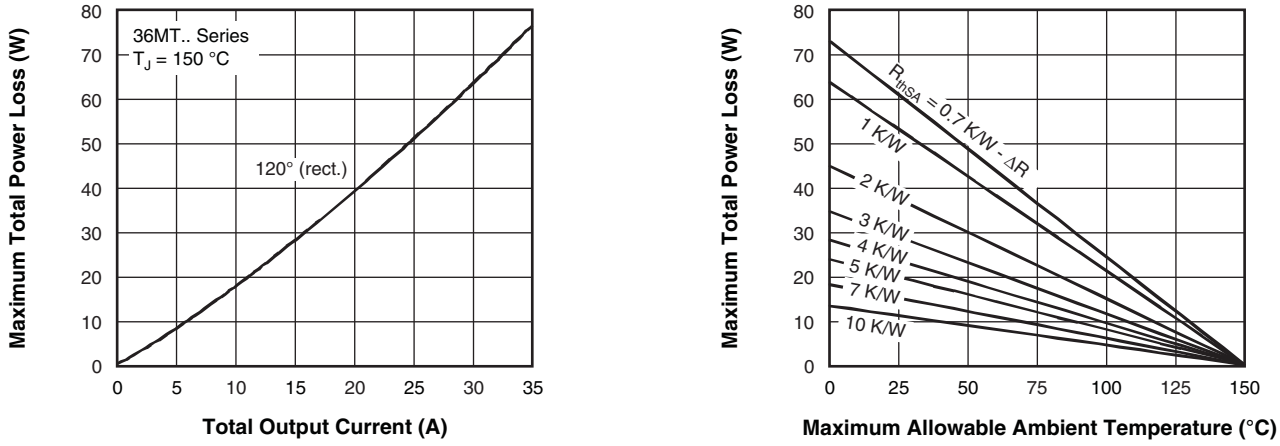



Fig. 8 - Total Power Loss Characteristics

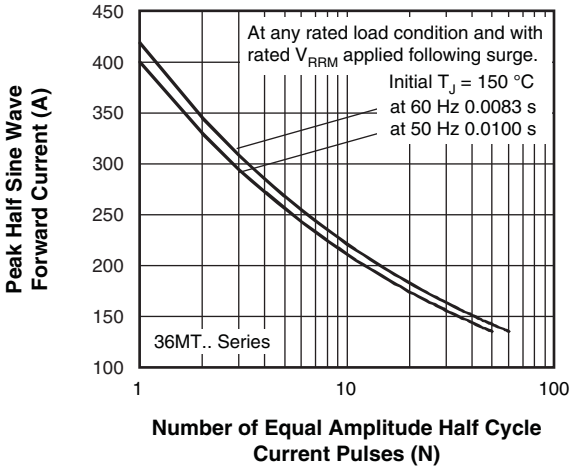



Fig. 9 - Maximum Non-Repetitive Surge Current

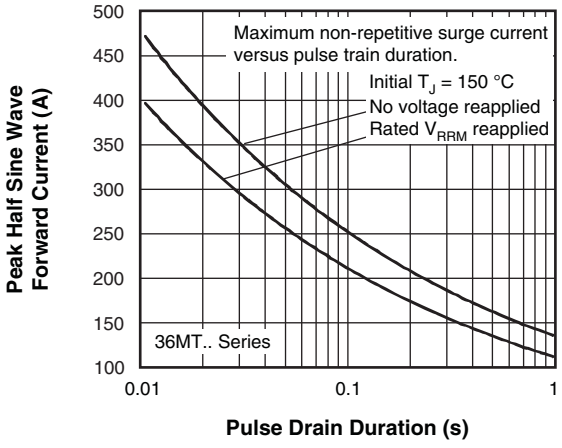



Fig. 10 - Maximum Non-Repetitive Surge Current

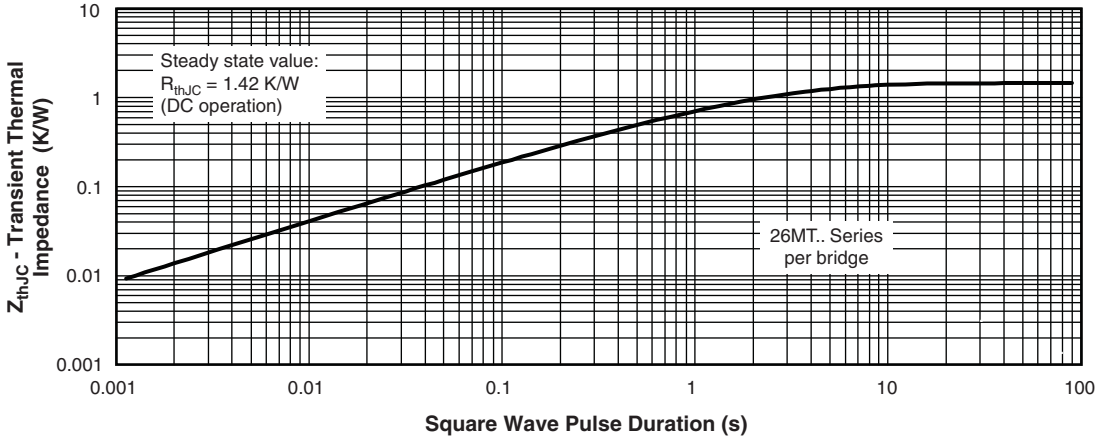



Fig. 11 - Thermal Impedance $Z_{thJC}$ Characteristics

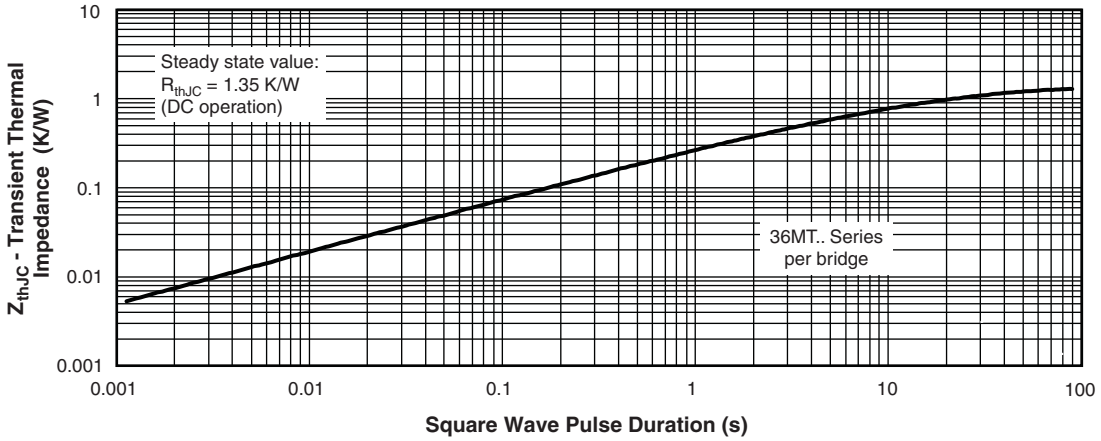



Fig. 12 - Thermal Impedance $Z_{thJC}$ Characteristics

## ORDERING INFORMATION TABLE

Device code

| VS- | 36 | MT | 160 |
|---|---|---|---|
| 1 | 2 | 3 | 4 |

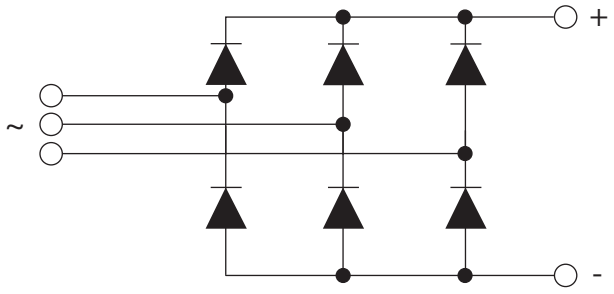
1 - Vishay Semiconductors product

2 - Current rating code (26 = 25 A (average), 36 = 35 A (average))

3 - Basic part number

4 - Voltage code x 10 = $V_{RRM}$

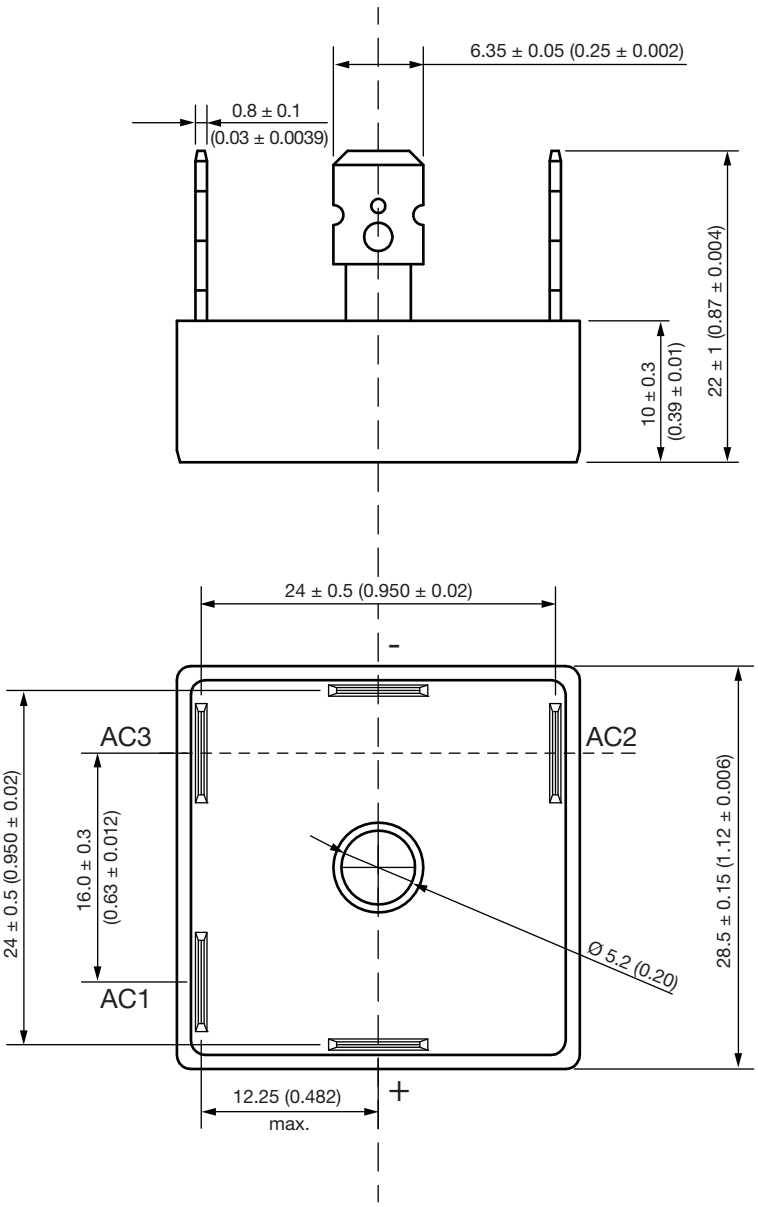
## CIRCUIT CONFIGURATION




| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?95251 |

# D-63

**DIMENSIONS** in millimeters (inches)




**Not to scale**

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