## 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 $T_J$ = 150 °C mA |
|---|---|---|---|---|
| VSK.91 | 04 | 400 | 500 | 10 |
| | 06 | 600 | 700 | |
| | 08 | 800 | 900 | |
| | 10 | 1000 | 1100 | |
| | 12 | 1200 | 1300 | |
| | 14 | 1400 | 1500 | |
| | 16 | 1600 | 1700 | |

### FORWARD CONDUCTION

| PARAMETER | SYMBOL | TEST CONDITIONS | | | VALUES | UNITS |
|---|---|---|---|---|---|---|
| Maximum average forward current at case temperature | $I_{F(AV)}$ | 180° conduction, half sine wave | | | 100 | A |
| | | | | | 100 | °C |
| Maximum RMS forward current | $I_{F(RMS)}$ | DC at 90 °C case temperature | | | 157 | A |
| Maximum peak, one-cycle forward, non-repetitive surge current | $I_{FSM}$ | t = 10 ms | No voltage reapplied | Sinusoidal half wave, initial $T_J = T_J$ maximum | 2020 | |
| | | t = 8.3 ms | | | 2110 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 1700 | |
| | | t = 8.3 ms | | | 1780 | |
| Maximum $I^2t$ for fusing | $I^2t$ | t = 10 ms | No voltage reapplied | | 20.43 | $kA^2s$ |
| | | t = 8.3 ms | | | 18.65 | |
| | | t = 10 ms | 100 % $V_{RRM}$ reapplied | | 14.45 | |
| | | t = 8.3 ms | | | 13.19 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reapplied | | | 204.3 | $kA^2\sqrt{s}$ |
| Low level value of threshold voltage | $V_{F(TO)1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.79 | V |
| High level value of threshold voltage | $V_{F(TO)2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 0.87 | |
| Low level value of forward slope resistance | $r_{f1}$ | (16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 1.78 | mΩ |
| High level value of forward slope resistance | $r_{f2}$ | (I > π x $I_{F(AV)}$), $T_J = T_J$ maximum | | | 1.57 | |
| Maximum forward voltage drop | $V_{FM}$ | $I_{FM}$ = π x $I_{F(AV)}$, $T_J$ = 25 °C, $t_p$ = 400 µs square wave | | | 1.45 | V |

### BLOCKING

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|---|---|---|---|
| Maximum peak reverse leakage current | $I_{RRM}$ | $T_J$ = 150 °C | 10 | mA |
| RMS insulation voltage | $V_{INS}$ | 50 Hz, circuit to base, all terminals shorted | 3500 (1 s) | V |

| THERMAL AND MECHANICAL SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | **VALUES** | **UNITS** |
| Maximum junction operating and storage temperature range | $T_J$, $T_{Stg}$ | | - 40 to 150 | °C |
| Maximum thermal resistance, junction to case per junction | $R_{thJC}$ | DC operation | 0.35 | K/W |
| Typical thermal resistance, case to heatsink | $R_{thCS}$ | Mounting surface flat, smooth and greased | 0.1 | |
| Mounting torque ± 10 % — to heatsink | | A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound. | 5 | Nm |
| Mounting torque ± 10 % — busbar | | | 4 | |
| Approximate weight | | | 110 | g |
| | | | 4 | oz. |
| Case style | | JEDEC | ADD-A-PAK (TO-240AA) | |

| ΔR CONDUCTION PER JUNCTION | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **DEVICES** | **SINE HALF WAVE CONDUCTION** | | | | | **RECTANGULAR WAVE CONDUCTION** | | | | | **UNITS** |
| | **180°** | **120°** | **90°** | **60°** | **30°** | **180°** | **120°** | **90°** | **60°** | **30°** | |
| VSK.91 | 0.052 | 0.064 | 0.082 | 0.112 | 0.164 | 0.043 | 0.069 | 0.088 | 0.115 | 0.165 | °C/W |

**Note**

- Table shows the increment of thermal resistance $R_{thJC}$ when devices operate at different conduction angles than DC

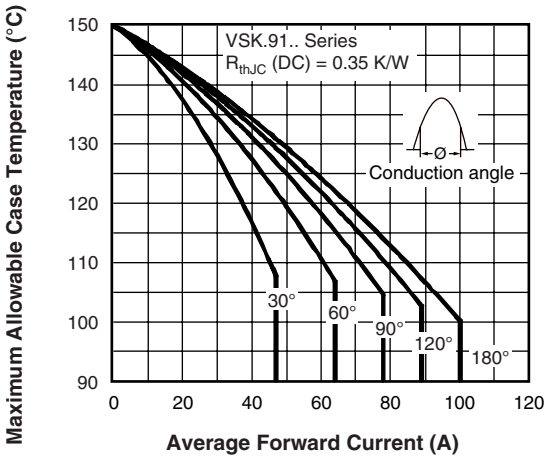



Fig. 1 - Current Ratings Characteristics

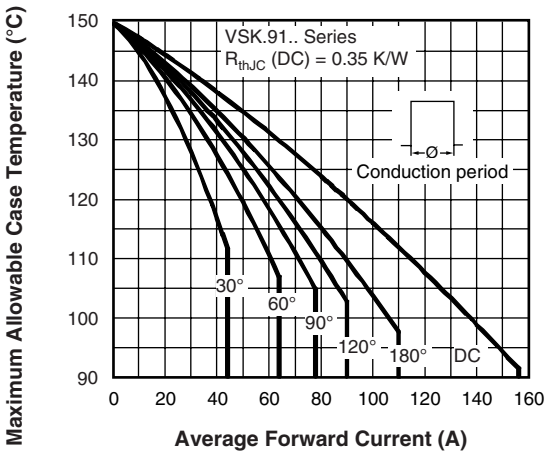



Fig. 2 - Current Ratings Characteristics

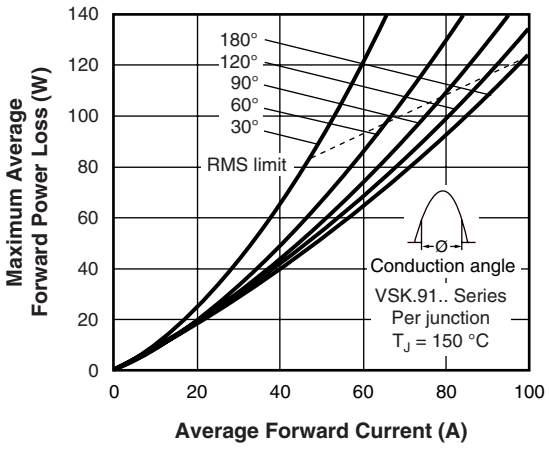



Fig. 3 - Forward Power Loss Characteristics

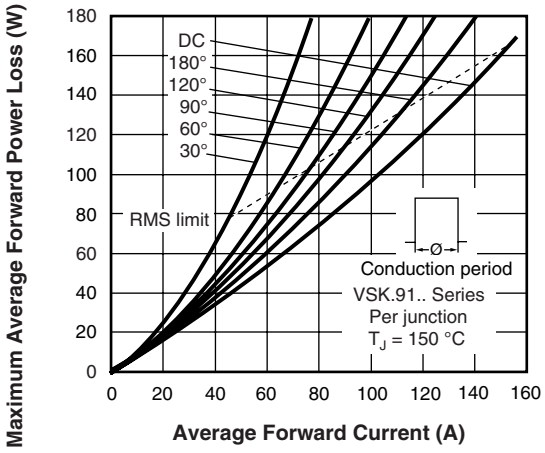



Fig. 4 - Foward Power Loss Characteristics

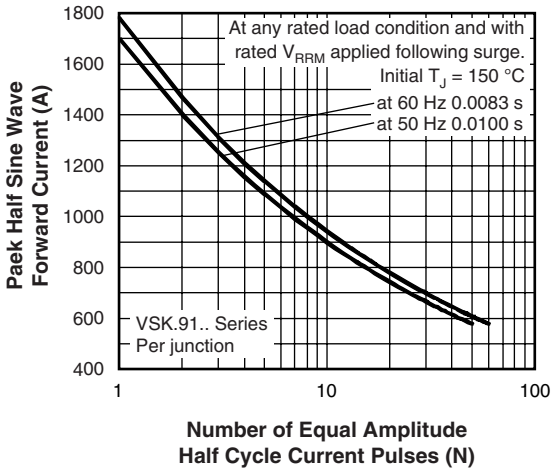



Fig. 5 - Maximum Non-Repetitive Surge Current

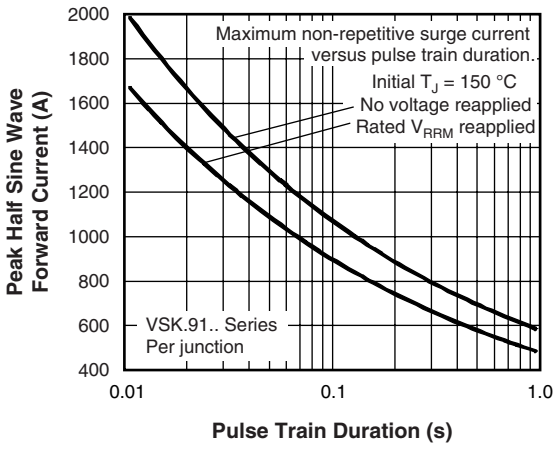



Fig. 6 - Maximum Non-Repetitive Surge Current

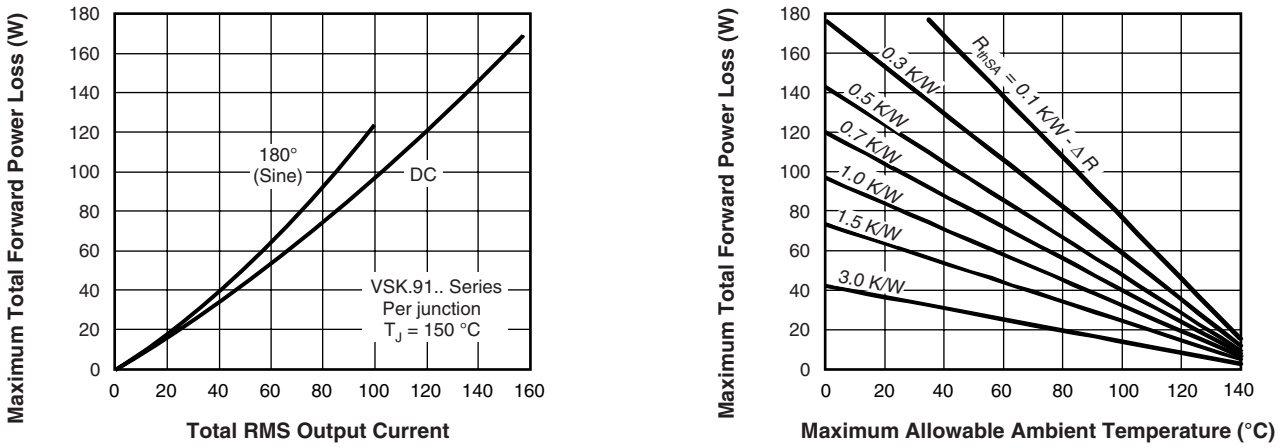



Fig. 7 - Forward Power Loss Characteristics

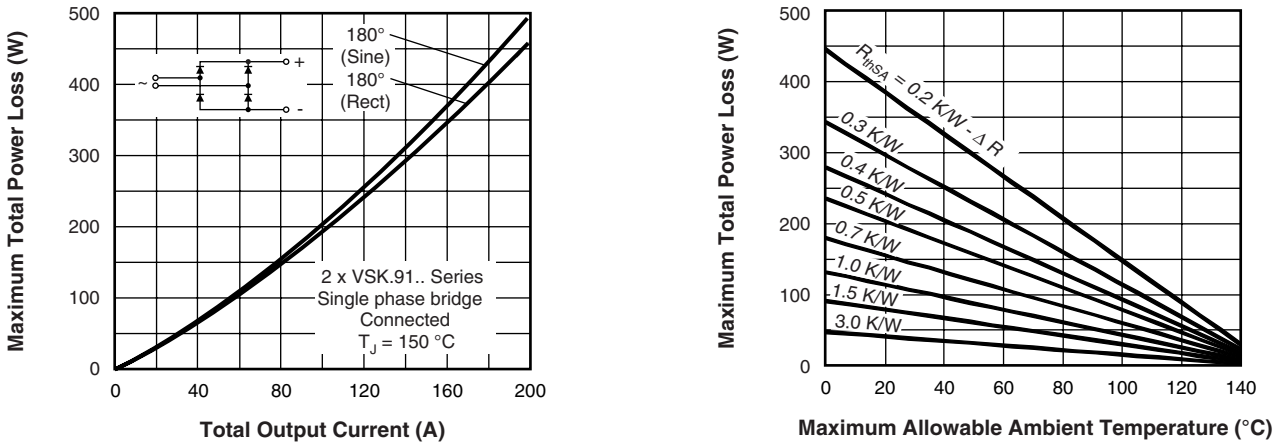



Fig. 8 - Forward Power Loss Characteristics

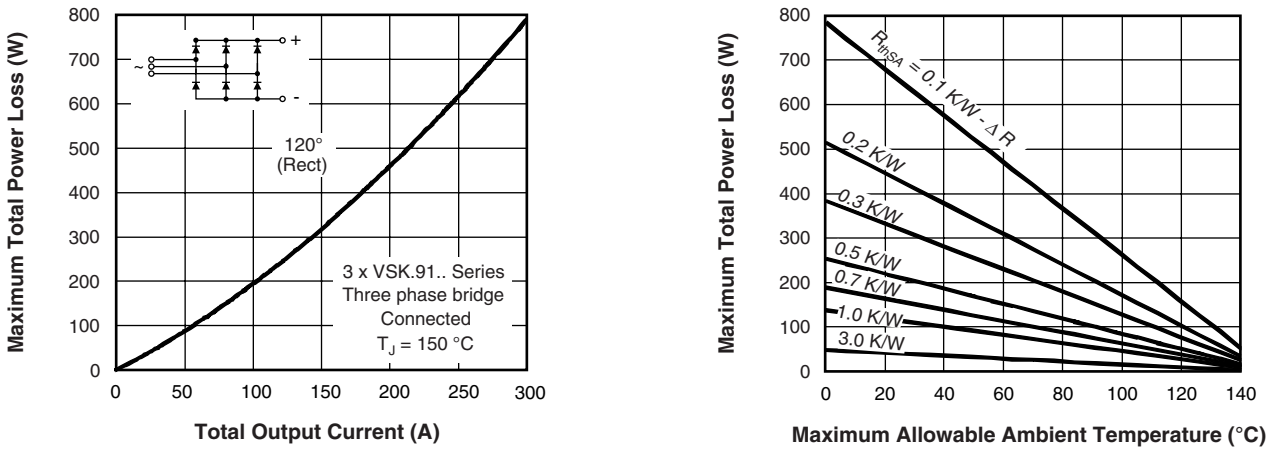



Fig. 9 - Forward Power Loss Characteristics

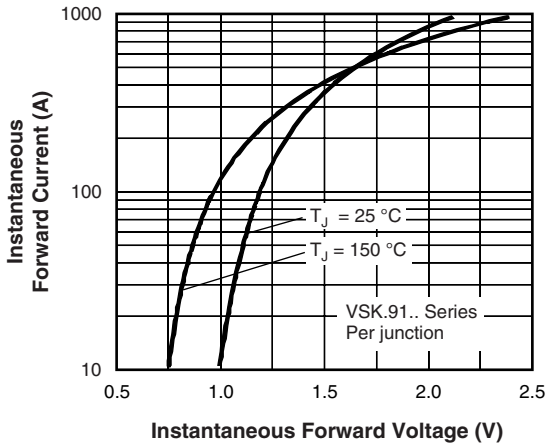



Fig. 10 - Forward Voltage Drop Characteristics

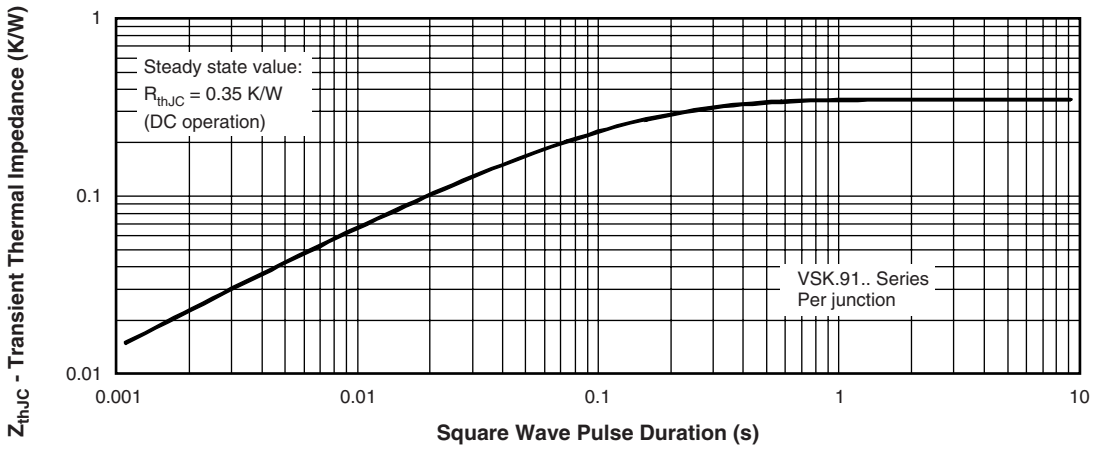



Fig. 11 - Thermal Impedance $Z_{thJC}$ Characteristic

## ORDERING INFORMATION TABLE

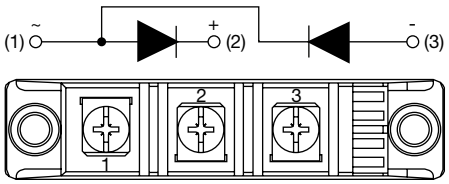
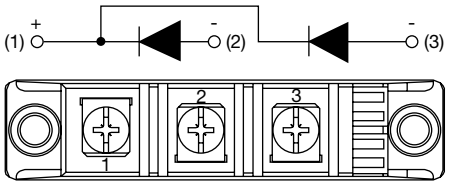
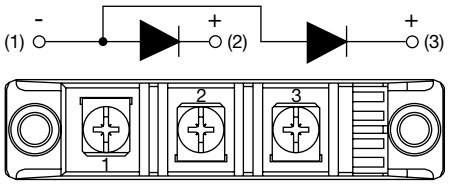
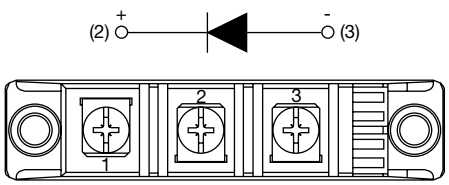
**Device code**

| VSK | D | 91 | / | 16 | P |
|---|---|---|---|---|---|
| 1 | 2 | 3 | | 4 | 5 |

| | | |
|---|---|---|
| 1 | - | Module type |
| 2 | - | Circuit configuration (see Circuit Configuration table) |
| 3 | - | Current code |
| 4 | - | Voltage code (see Voltage Ratings table) |
| 5 | - | P = Lead (Pb)-free |

**Note**

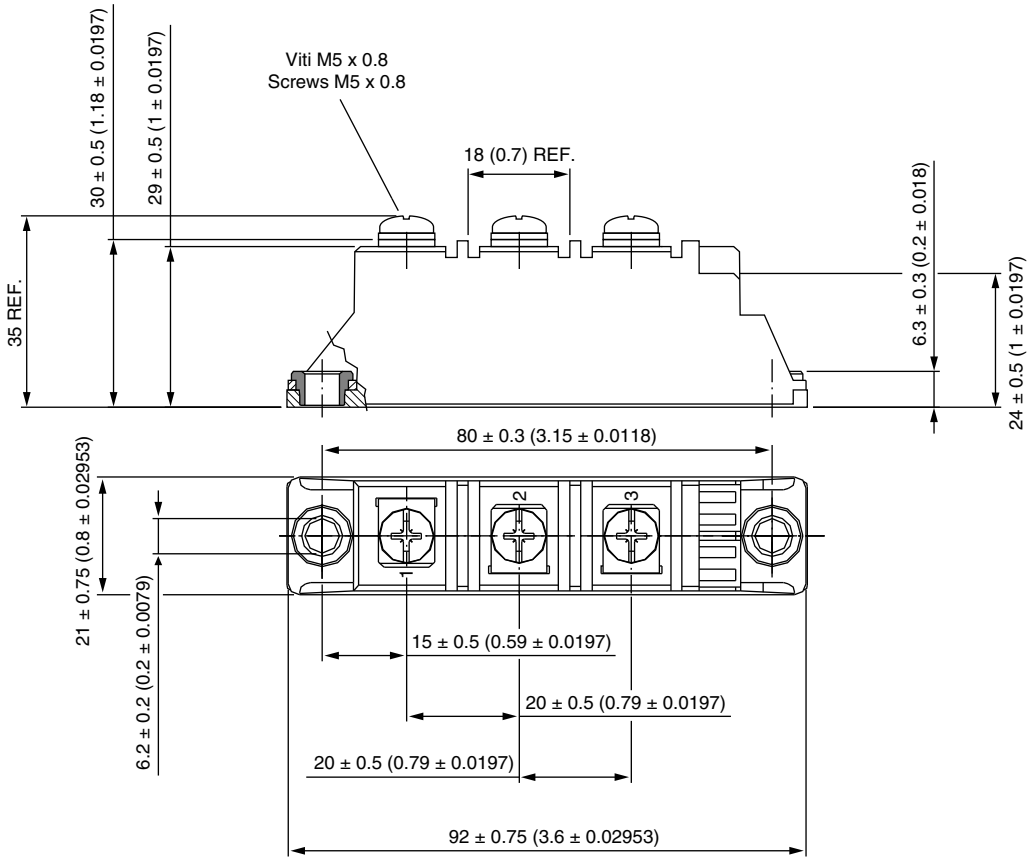
- To order the optional hardware go to www.vishay.com/doc?95172

| CIRCUIT CONFIGURATION | | |
|---|---|---|
| **CIRCUIT DESCRIPTION** | **CIRCUIT CONFIGURATION CODE** | **CIRCUIT DRAWING** |
| Two diodes doubler circuit | D | **VSKD...**   |
| Two diodes common cathodes | C | **VSKC...**   |
| Two diodes common anodes | J | **VSKJ...**   |
| Single diode | E | **VSKE...**   |

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?95015 |

# ADD-A-PAK Diode

**DIMENSIONS** in millimeters (inches)



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