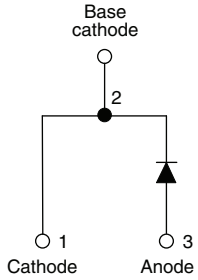
# High Voltage, Input Rectifier Diode, 40 A


TO-247AC 2L




## FEATURES

- Very low forward voltage drop
- 150 °C max. operating junction temperature
- Glass passivated pellet chip junction
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE Available

## APPLICATIONS

- Input rectification
- Vishay Semiconductors switches and output rectifiers which are available in identical package outlines

## DESCRIPTION

High voltage rectifiers optimized for very low forward voltage drop with moderate leakage.

These devices are intended for use in main rectification (single or three phase bridge).

| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 40 A |
| $V_R$ | 800 V to 1200 V |
| $V_F$ at $I_F$ | 1.1 V |
| $I_{FSM}$ | 475 A |
| $T_J$ max. | 150 °C |
| Package | TO-247AC 2L |
| Circuit configuration | Single |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|---|---|---|---|
| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
| $I_{F(AV)}$ | Sinusoidal waveform | 40 | A |
| $V_{RRM}$ | Range | 800/1200 | V |
| $I_{FSM}$ | | 475 | A |
| $V_F$ | 40 A, $T_J$ = 25 °C | 1.1 | V |
| $T_J$ | | -40 to +150 | °C |

| VOLTAGE RATINGS | | | |
|---|---|---|---|
| PART NUMBER | $V_{RRM}$, MAXIMUM PEAK REVERSE VOLTAGE V | $V_{RSM}$, MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V | $I_{RRM}$ AT 150 °C mA |
| VS-40EPS08-M3 | 800 | 900 | 1 |
| VS-40EPS12-M3 | 1200 | 1300 | |

| ABSOLUTE MAXIMUM RATINGS | | | | |
|---|---|---|---|---|
| PARAMETER | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
| Maximum average forward current | $I_{F(AV)}$ | $T_C$ = 105 °C, 180° conduction half sine wave | 40 | A |
| Maximum peak one cycle non-repetitive surge current | $I_{FSM}$ | 10 ms sine pulse, rated $V_{RRM}$ applied | 400 | |
| | | 10 ms sine pulse, no voltage reapplied | 475 | |
| Maximum $I^2t$ for fusing | $I^2t$ | 10 ms sine pulse, rated $V_{RRM}$ applied | 800 | $A^2s$ |
| | | 10 ms sine pulse, no voltage reapplied | 1131 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reapplied | 11 310 | $A^2\sqrt{s}$ |

## ELECTRICAL SPECIFICATIONS

| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUES | UNITS |
|---|---|---|---|---|---|
| Maximum forward voltage drop | $V_{FM}$ | 20 A, $T_J$ = 25 °C | | 1.0 | V |
| | | 40 A, $T_J$ = 25 °C | | 1.1 | |
| Forward slope resistance | $r_t$ | $T_J$ = 150 °C | | 7.16 | mΩ |
| Threshold voltage | $V_{F(TO)}$ | | | 0.74 | V |
| Maximum reverse leakage current | $I_{RM}$ | $T_J$ = 25 °C | $V_R$ = Rated $V_{RRM}$ | 0.1 | mA |
| | | $T_J$ = 150 °C | | 1.0 | |

## THERMAL - MECHANICAL SPECIFICATIONS

| PARAMETER | | SYMBOL | TEST CONDITIONS | VALUES | UNITS |
|---|---|---|---|---|---|
| Maximum junction and storrage temperature range | | $T_J$, $T_{Stg}$ | | -40 to +150 | °C |
| Maximum thermal resistance, junction to case | | $R_{thJC}$ | DC operation | 0.6 | °C/W |
| Maximum thermal resistance, junction to ambient | | $R_{thJA}$ | | 40 | |
| Typical thermal resistance, case to heatsink | | $R_{thCS}$ | Mounting surface, flat, smooth, and greased | 0.2 | |
| Approximate weight | | | | 6 | g |
| | | | | 0.21 | oz. |
| Mounting torque | minimum | | | 6 (5) | kgf · cm (lbf · in) |
| | maximum | | | 12 (10) | |
| Marking device | | | Case style TO-247AC 2L | 40EPS08 | |
| | | | | 40EPS12 | |

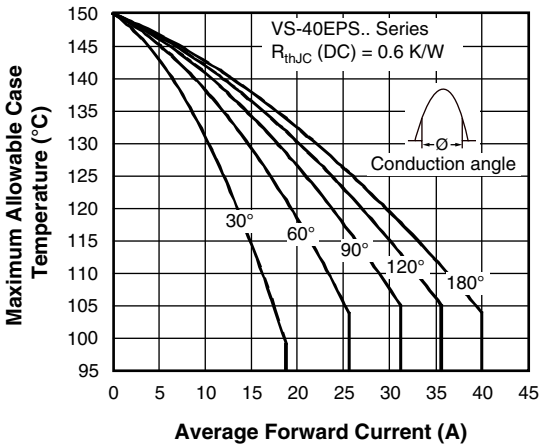



Fig. 1 - Current Rating Characteristics

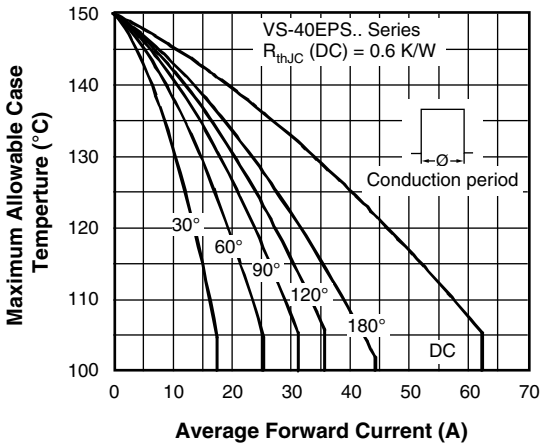



Fig. 2 - Current Rating Characteristics

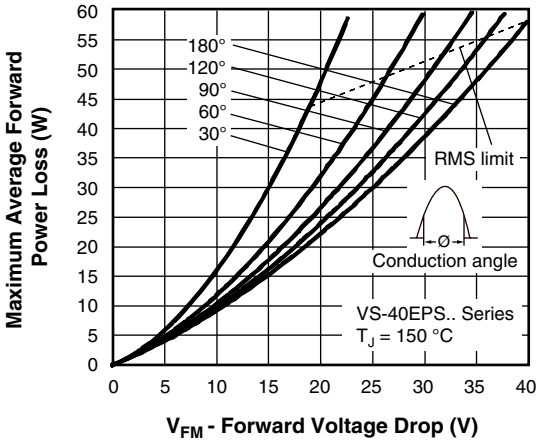



Fig. 3 - Forward Power Loss Characteristics

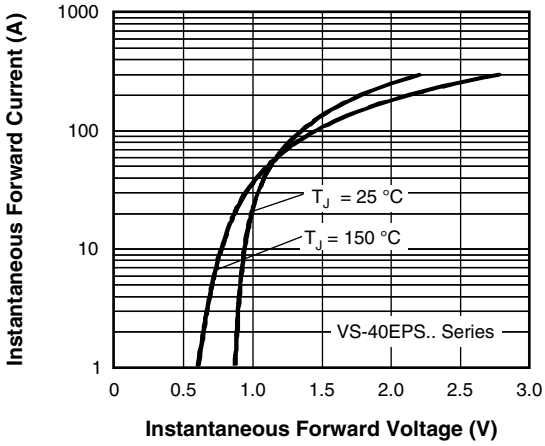



Fig. 5 - Forward Voltage Drop Chacteristics

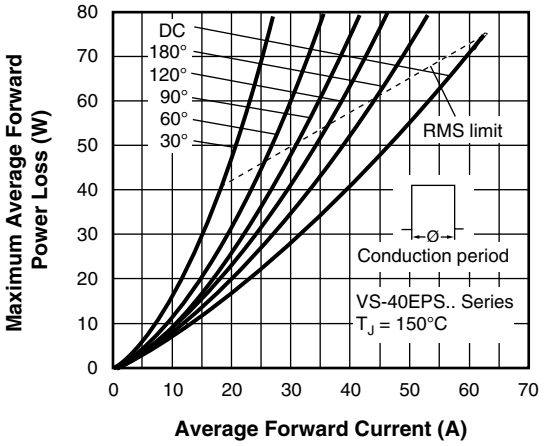



Fig. 4 - Forward Power Loss Characteristics

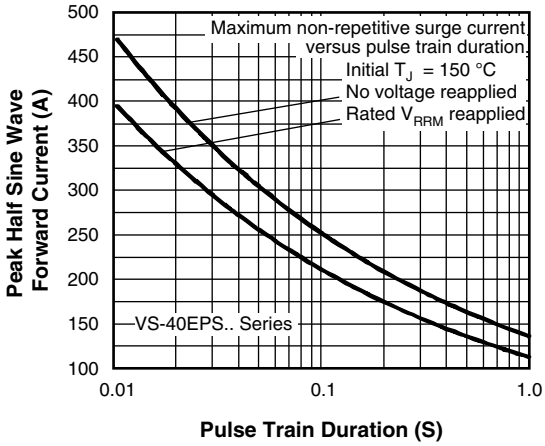



Fig. 6 - Maximum Non-Repetitive Surge Current

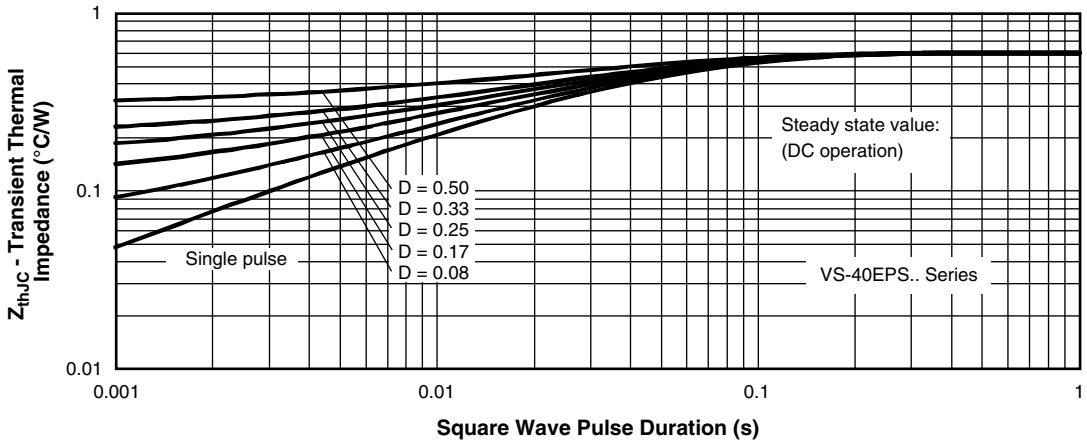
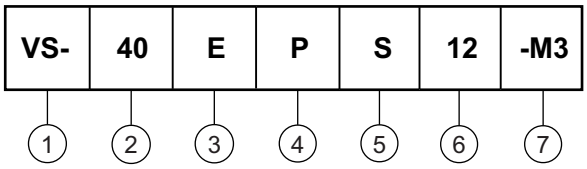



Fig. 7 - Thermal Impedance $Z_{thJC}$ Characteristics

## ORDERING INFORMATION TABLE

Device code




1 - Vishay Semiconductors product
2 - Current rating (40 = 40 A)
3 - Circuit configuration:
E = single diode
4 - Package:
P = TO-247AC 2L
5 - Type of silicon:
S = standard recovery rectifier
6 - Voltage rating (08 = 800 V, 12 = 1200 V)
7 - Environmental digit:
-M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free

| ORDERING INFORMATION (Example) | | | |
|---|---|---|---|
| **PREFERRED P/N** | **QUANTITY PER T/R** | **MINIMUM ORDER QUANTITY** | **PACKAGING DESCRIPTION** |
| VS-40EPS08-M3 | 25 | 500 | Antistatic plastic tubes |
| VS-40EPS12-M3 | 25 | 500 | Antistatic plastic tubes |

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?96144 |
| Part marking information | www.vishay.com/doc?95648 |
| SPICE model | www.vishay.com/doc?96047 |

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