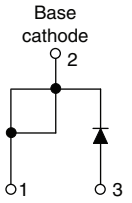
# Input Rectifier Diode, 10 A

TO-220AC




## FEATURES

- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level

Pb-free Available

RoHS* COMPLIANT

## APPLICATIONS

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

## DESCRIPTION

The 10ETS..PbF rectifier series has been optimized for very low forward voltage drop, with moderate leakage.

The glass passivation technology used has reliable operation up to 150 °C junction temperature.

| PRODUCT SUMMARY | |
|---|---|
| $V_F$ at 10 A | < 1.1 V |
| $I_{FSM}$ | 200 A |
| $V_{RRM}$ | 800 V/1200 V |

| OUTPUT CURRENT IN TYPICAL APPLICATIONS | | | |
|---|---|---|---|
| APPLICATIONS | SINGLE-PHASE BRIDGE | THREE-PHASE BRIDGE | UNITS |
| Capacitive input filter $T_A$ = 55 °C, $T_J$ = 125 °C common heatsink of 1 °C/W | 12.0 | 16.0 | A |

| MAJOR RATINGS AND CHARACTERISTICS | | | |
|---|---|---|---|
| SYMBOL | CHARACTERISTICS | VALUES | UNITS |
| $I_{F(AV)}$ | Sinusoidal waveform | 10 | A |
| $V_{RRM}$ | | 800/1200 | V |
| $I_{FSM}$ | | 200 | A |
| $V_F$ | 10 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 |
| 10ETS08PbF | 800 | 900 | 0.5 |
| 10ETS12PbF | 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 | 10 | A |
| Maximum peak one cycle non-repetitive surge current | $I_{FSM}$ | 10 ms sine pulse, rated $V_{RRM}$ applied | 170 | |
| | | 10 ms sine pulse, no voltage reapplied | 200 | |
| Maximum $I^2t$ for fusing | $I^2t$ | 10 ms sine pulse, rated $V_{RRM}$ applied | 130 | $A^2s$ |
| | | 10 ms sine pulse, no voltage reapplied | 145 | |
| Maximum $I^2\sqrt{t}$ for fusing | $I^2\sqrt{t}$ | t = 0.1 ms to 10 ms, no voltage reapplied | 1450 | $A^2\sqrt{s}$ |

* Pb containing terminations are not RoHS compliant, exemptions may apply

| ELECTRICAL SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | | **VALUES** | **UNITS** |
| Maximum forward voltage drop | $V_{FM}$ | 10 A, $T_J$ = 25 °C | | 1.1 | V |
| Forward slope resistance | $r_t$ | $T_J$ = 150 °C | | 20 | mΩ |
| Threshold voltage | $V_{F(TO)}$ | | | 0.82 | V |
| Maximum reverse leakage current | $I_{RM}$ | $T_J$ = 25 °C | $V_R$ = Rated $V_{RRM}$ | 0.05 | mA |
| | | $T_J$ = 150 °C | | 0.50 | |

| THERMAL - MECHANICAL SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | **VALUES** | **UNITS** |
| Maximum junction and storage temperature range | $T_J$, $T_{Stg}$ | | - 40 to 150 | °C |
| Maximum thermal resistance, junction to case | $R_{thJC}$ | DC operation | 2.5 | °C/W |
| Maximum thermal resistance, junction to ambient (PCB mount) | $R_{thJA}$ (1) | | 62 | |
| Soldering temperature | $T_S$ | | 240 | °C |
| Approximate weight | | | 2 | g |
| | | | 0.07 | oz. |
| Marking device | | Case style TO-220AC | 10ETS08 | |
| | | | 10ETS12 | |

**Note**

(1) When mounted on 1" square (650 $mm^2$) PCB of FR-4 or G-10 material 4 oz. (140 µm) copper 40 °C/W
For recommended footprint and soldering techniques refer to application note #AN-994



For technical questions within your region, please contact one of the following:
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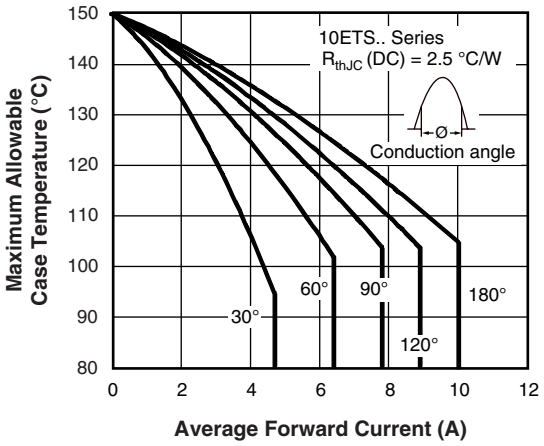



Fig. 1 - Current Rating Characteristics

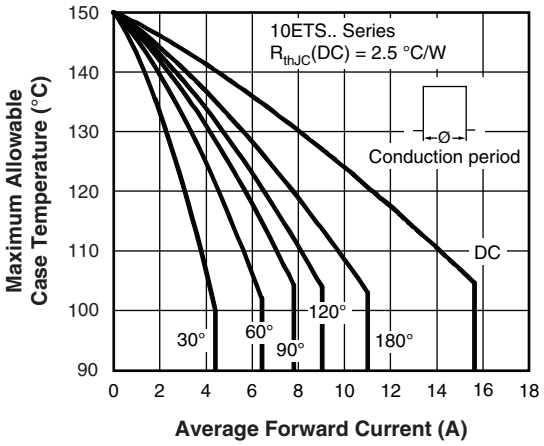



Fig. 2 - Current Rating Characteristics

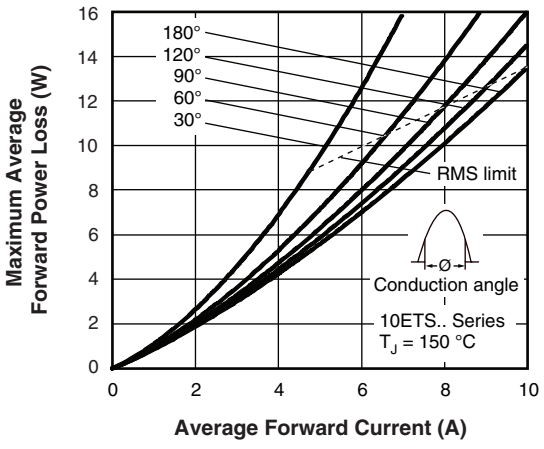



Fig. 3 - Forward Power Loss Characteristics

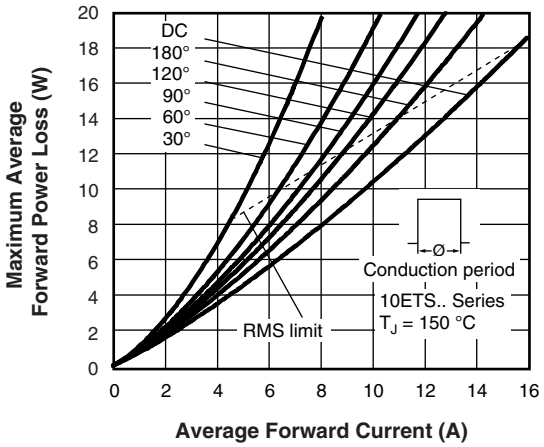



Fig. 4 - Forward Power Loss Characteristics

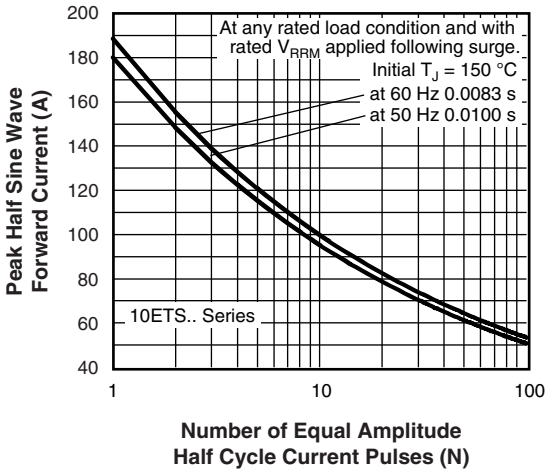



Fig. 5 - Maximum Non-Repetitive Surge Current

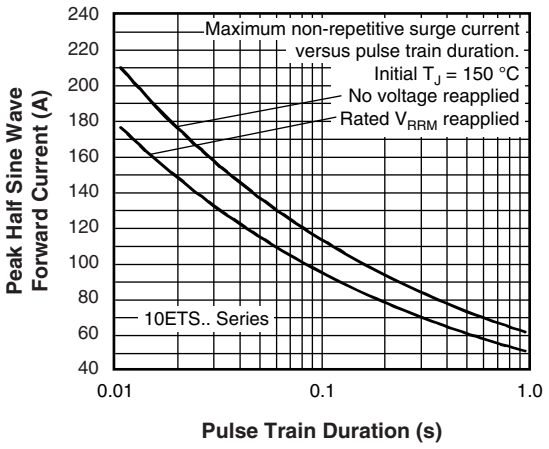



Fig. 6 - Maximum Non-Repetitve Surge Current

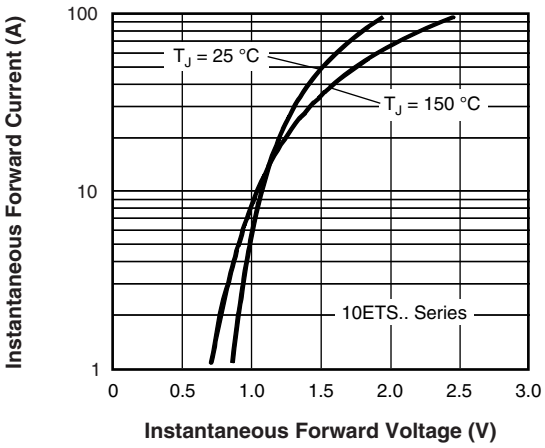



Fig. 7 - Forward Voltage Drop Characteristics

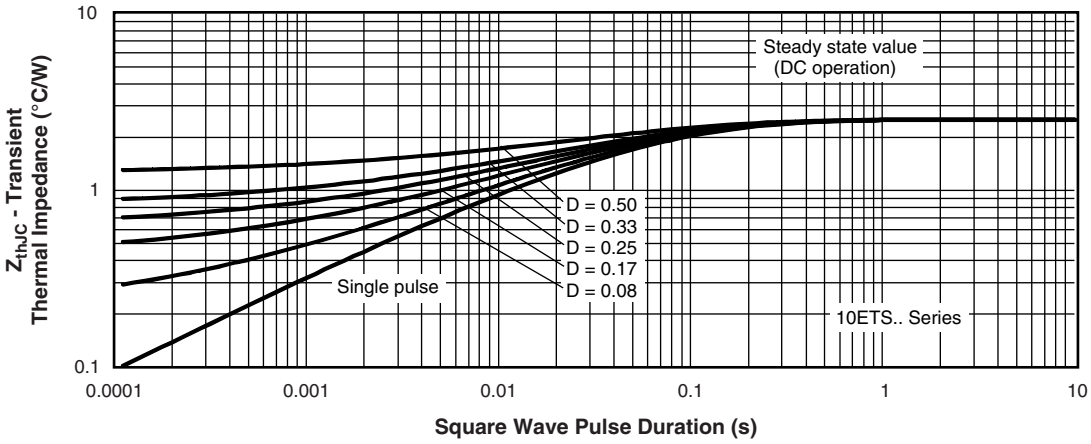
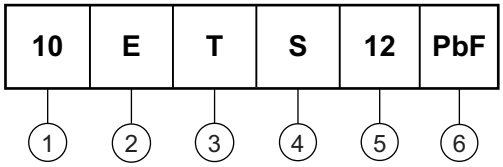



Fig. 8 - Thermal Impedance $Z_{thJC}$ Characteristics

## ORDERING INFORMATION TABLE

**Device code**




1 - Current rating (10 = 10 A)

2 - Circuit configuration:
E = Single diode

3 - Package:
T = TO-220AC

4 - Type of silicon:
S = Standard recovery rectifier

5 - Voltage code x 100 = $V_{RRM}$ (08 = 800 V, 12 = 1200 V)

6 - • None = Standard production
• PbF = Lead (Pb)-free

| LINKS TO RELATED DOCUMENTS | |
|---|---|
| Dimensions | www.vishay.com/doc?95221 |
| Part marking information | www.vishay.com/doc?95224 |

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