

## HIGH-TEMPERATURE 10A, 1200V SIC SCHOTTKY DIODE

### FEATURES

- ▲ Reverse voltage up to 1200V.
- ▲ Operational beyond the -60°C to +230°C temperature range.
- ▲ Positive temperature coefficient for safe operation and ease paralleling.
- ▲ Extremely fast switching not dependent on temperature.
- ▲ Essentially no reverse or forward recovery.
- ▲ Ruggedized thru-hole packages.
- ▲ Also available as bare die.

### APPLICATIONS

- ▲ Reliability-critical, Automotive, Aeronautics & Aerospace, Down-hole.
- ▲ Power converters, motor drives, switched-mode power supplies, power factor conversion.

### DESCRIPTION

XTR1K1210 is 10A, 1200V 4H-SiC junction barrier Schottky diode able to reliably operate from -60°C to +230°C, with junction temperature able to reach +250°C.

This diode has zero reverse recovery charge, which makes it ideally suited for high-frequency and high-efficiency power systems with minimum or no cooling requirements.

XTR1K1210 has been designed to reduce system cost and ease adoption.

The XTR1K1210 is available in ruggedized thru-hole packages. Parts are also available as bare dies.

### ORDERING INFORMATION

|   |  |  |  |
|---|--|--|--|
| $\frac{X}{\downarrow}$<br>Source:<br>X = X-REL Semi | $\frac{TR}{\downarrow}$<br>Process:<br>TR = HiTemp, HiRel<br>R = HiRel | $\frac{1K}{\downarrow}$<br>Part family | $\frac{1210}{\downarrow}$<br>Part number |
|---|--|--|--|

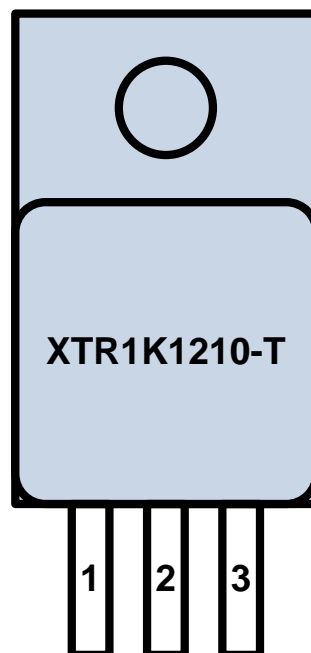
| Product Reference | Temperature Range | Package         | Pin Count | Marking   |
|-------------------|-------------------|-----------------|-----------|-----------|
| XTR1K1210-T       | -60°C to +230°C   | TO-257          | 3         | XTR1K1210 |
| XTR1K1210-TD      | -60°C to +230°C   | Tested Bare die |           |           |

Other packages and packaging configurations possible upon request.

### PRODUCT PACKAGING

#### TO-257

#### Front view



- 1 Cathode
- 2 N.C.
- 3 Anode

## ABSOLUTE MAXIMUM RATINGS

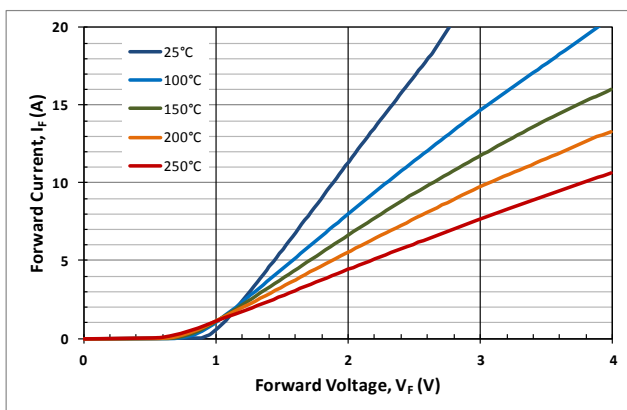
| Parameter   | Condition                | Max         | Units               |
|---|--------------------------|-------------|---------------------|
| DC Blocking Voltage<br>$V_{DC}$                   |                          | 1200        | V                   |
| Repetitive Peak Reverse Voltage<br>$V_{RRM}$      | $T_C=25^\circ\text{C}$ . | 1200        | V                   |
| Surge Peak Reverse Voltage<br>$V_{RSM}$           |                          | 1200        | V                   |
| Maximum Average Forward Current<br>$I_{F(AVE)}$   |                          | 10          | A                   |
| Non-Repetitive Forward Surge Current<br>$I_{FSM}$ |                          | 50          | A                   |
| Power Dissipation<br>$P_{Tot}$                    | $T_C=25^\circ\text{C}$ . | 90          | W                   |
| Derating Above $T_C=25^\circ\text{C}$             |                          | 0.4         | W/ $^\circ\text{C}$ |
| Maximum Junction Temperature<br>$T_{JMax}$        |                          | 250         | $^\circ\text{C}$    |
| Storage Temperature<br>$T_{Stg}$                  |                          | -70 to +230 | $^\circ\text{C}$    |

**Caution:** Stresses beyond those listed in “ABSOLUTE MAXIMUM RATINGS” may cause permanent damage to the device. These are stress ratings only and functionality of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to “ABSOLUTE MAXIMUM RATINGS” conditions for extended periods may permanently affect device reliability.

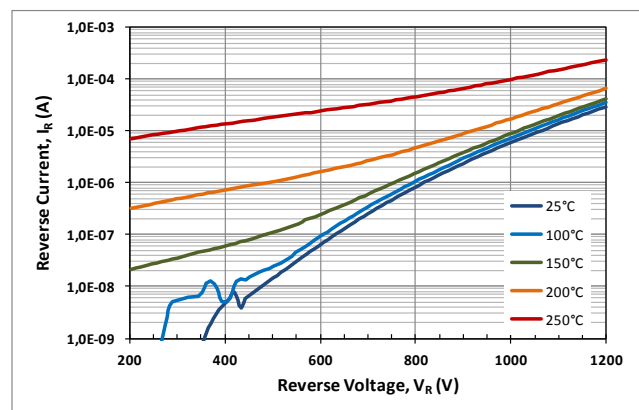
## ELECTRICAL SPECIFICATIONS

| Parameter  | Condition   | Min | Typ          | Max        | Units                     |
|--|---|-----|--------------|------------|---------------------------|
| Forward Voltage<br>$V_F$                           | $I_F=10\text{A}$<br>$T_J=25^\circ\text{C}$<br>$T_J=250^\circ\text{C}$   |     | 1.7          | 2.1<br>4.1 | V                         |
| Reverse Current<br>$I_R$                           | $V_R=1200\text{V}$<br>$T_J=25^\circ\text{C}$<br>$T_J=250^\circ\text{C}$ |     | 0.04<br>0.25 | 0.2<br>3   | mA                        |
| Junction-case Thermal Resistance<br>$\theta_{j-c}$ | TO-257  |     | 3.6          |            | $^\circ\text{C}/\text{W}$ |

## TYPICAL PERFORMANCE



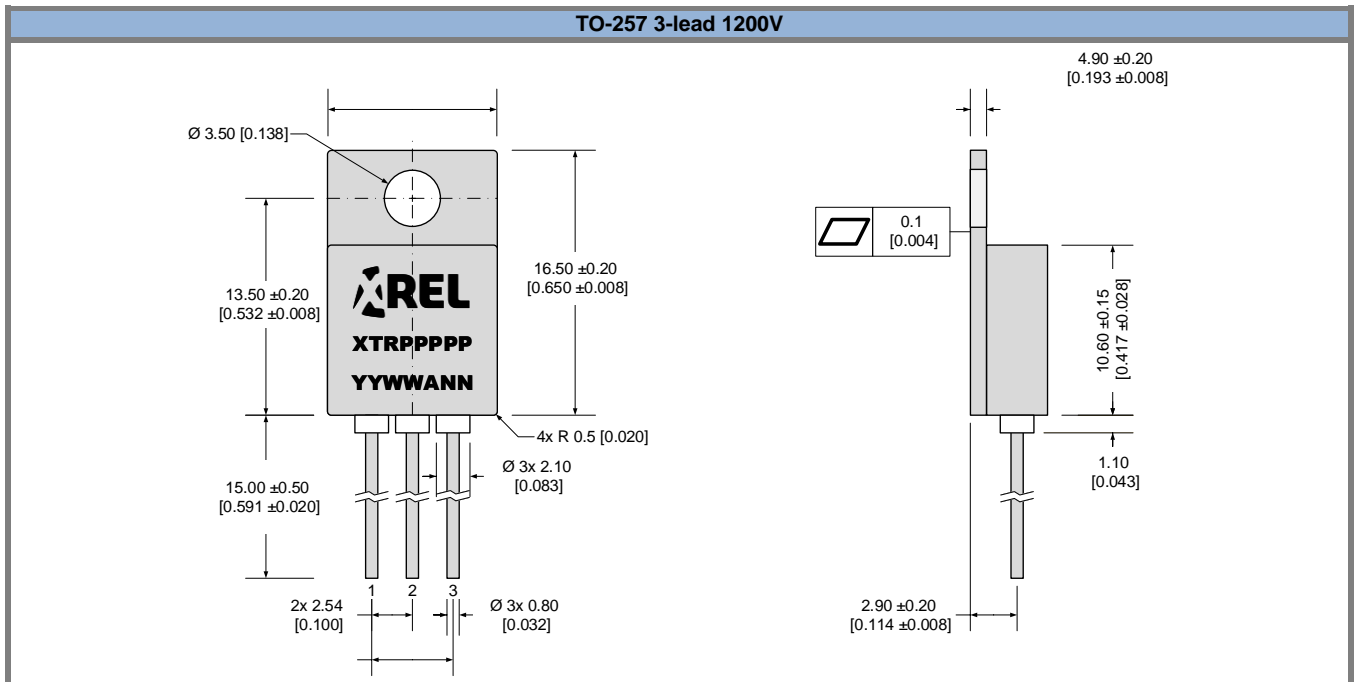
Typical Forward I-V characteristics over Temperature.



Typical Reverse I-V characteristics over Temperature.

## PACKAGE OUTLINES

Dimensions shown in mm [inches].



### Part Marking Convention

#### Part Reference: XTRPPPPPP

|              |  |
|--------------|--|
| <b>XTR</b>   | X-REL Semiconductor, high-temperature, high-reliability product (XTRM Series). |
| <b>PPPPP</b> | Part number (0-9, A-Z).  |

#### Unique Lot Assembly Code: YYWWANN

|           |  |
|-----------|--|
| <b>YY</b> | Two last digits of assembly year (e.g. 11 = 2011). |
| <b>WW</b> | Assembly week (01 to 52).                          |
| <b>A</b>  | Assembly location code.                            |

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