



SiC SCHOTTKY DIODE TYPE 20A

Features

- High surge current capable
- Zero reverse recovery current
- High bandwidth
- RoHS compliant
- Temperature Independent Switching Behavior
- High temperature soldering guaranteed: 260°C / 10 seconds at terminals
- VDC 1700 V
- I<sub>F</sub> (T<sub>c</sub><150°C) 20A

Benefits

- Unipolar rectifier
- Zero switching loss
- Higher efficiency
- Smaller heat sink
- Parallel devices without thermal runaway

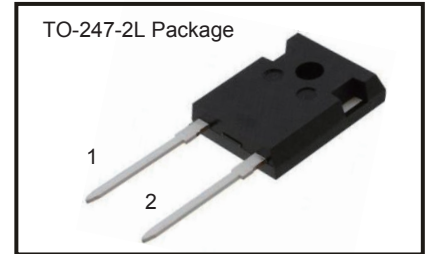
Applications

- Motor drives
- Switch mode power supplies
- Ev chargers
- Solar inverters
- Welding equipment
- Power factor correction
- Diode snubber
- Automotive
- induction heating

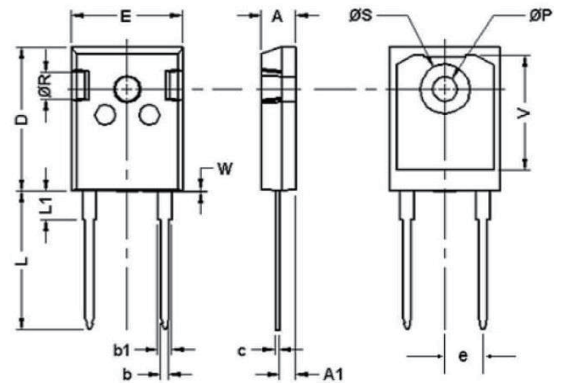
Maximum Ratings

Operating Junction Temperature : - 55 °C to +175 °C

Storage Temperature : -55 °C to +175 °C



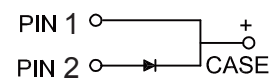
Package Dimensions



| Part Number | Maximum Recurrent Peak Reverse Voltage | Maximum DC Blocking Voltage |
|-------------|--|-----------------------------|
| CSR20170P   | 1700V                                  | 1700V                       |

| POS | Inches |       | Millimeters |       |
|-----|--------|-------|-------------|-------|
|     | Min    | Max   | Min         | Max   |
| A   | 0.185  | 0.209 | 4.70        | 5.31  |
| A1  | 0.087  | 0.102 | 2.21        | 2.59  |
| b   | 0.040  | 0.055 | 1.02        | 1.40  |
| b1  | 0.065  | 0.088 | 1.65        | 2.23  |
| C   | 0.016  | 0.031 | 0.41        | 0.79  |
| D   | 0.819  | 0.845 | 20.80       | 21.46 |
| E   | 0.61   | 0.640 | 15.49       | 16.26 |
| e   | 0.215  | 0.215 | 5.46        | 5.46  |
| L   | 0.78   | 0.80  | 19.81       | 20.32 |
| L1  | 0.164  | 0.176 | 4.17        | 4.47  |
| øP  | 0.140  | 0.144 | 3.56        | 3.66  |
| Q   | 0.212  | 0.244 | 5.38        | 6.20  |
| øR  | 0.135  | 0.157 | 3.43        | 3.99  |
| øS  | 0.278  | 0.288 | 7.06        | 7.32  |
| V   | 0.652  | 0.662 | 16.56       | 16.81 |
| W   | 0.000  | 0.006 | 0.00        | 0.15  |

| Maximum Rating                                     | Symbol             | Conditions                                     | Value | Unit |
|--|--------------------|--|-------|------|
| Continuous forward current                         | I <sub>F</sub>     | T <sub>C</sub> =150 °C                         | 20    | A    |
| Surge non-repetitive forward current sine halfwave | I <sub>FSM</sub>   | T <sub>C</sub> =25 °C, t <sub>p</sub> =8.3 ms  | 160   |      |
|  |                    | T <sub>C</sub> =150 °C, t <sub>p</sub> =8.3 ms | 100   |      |
| Non-repetitive peak forward current                | I <sub>F,max</sub> | T <sub>C</sub> =25 °C, t <sub>p</sub> =10 μs   | 400   |      |
| Repetitive peak reverse voltage                    | V <sub>RRM</sub>   | T <sub>J</sub> =25 °C                          | 1700  | V    |





Electrical Characteristics, at  $T_j=25\text{ }^\circ\text{C}$ , unless otherwise specified.

| Static Characteristics | Symbol   | Conditions  | Values |      |      | Unit          |
|------------------------|----------|---|--------|------|------|---------------|
|                        |          |   | min.   | typ. | max. |               |
| DC blocking voltage    | $V_{DC}$ |   | 1700   | -    | -    | V             |
| Diode forward voltage  | $V_F$    | $I_F=20\text{A}, T_j=25\text{ }^\circ\text{C}$    | -      | 1.55 | 1.75 |               |
|                        |          | $I_F=20\text{A}, T_j=175\text{ }^\circ\text{C}$   | -      | 2.30 | 2.80 |               |
| Reverse current        | $I_R$    | $V_R=1700\text{V}, T_j=25\text{ }^\circ\text{C}$  | -      | 3    | 40   | $\mu\text{A}$ |
|                        |          | $V_R=1700\text{V}, T_j=175\text{ }^\circ\text{C}$ | -      | 100  | 500  |               |

### AC Characteristics

| Static Characteristics  | Symbol | Conditions   | Values |      |      | Unit |
|-------------------------|--------|--|--------|------|------|------|
|                         |        |  | min.   | typ. | max. |      |
| Total capacitive charge | $Q_C$  | $V_R=1700\text{V}, T_j=25\text{ }^\circ\text{C}$                     | -      | 117  | -    | nC   |
| Total capacitance       | C      | $V_R=1\text{V}, f=1\text{ MHz}$<br>$T_j=25\text{ }^\circ\text{C}$    | -      | 1624 | -    | pF   |
|                         |        | $V_R=850\text{V}, f=1\text{ MHz}$<br>$T_j=25\text{ }^\circ\text{C}$  | -      | 79   | -    |      |
|                         |        | $V_R=1700\text{V}, f=1\text{ MHz}$<br>$T_j=25\text{ }^\circ\text{C}$ | -      | 71   | -    |      |

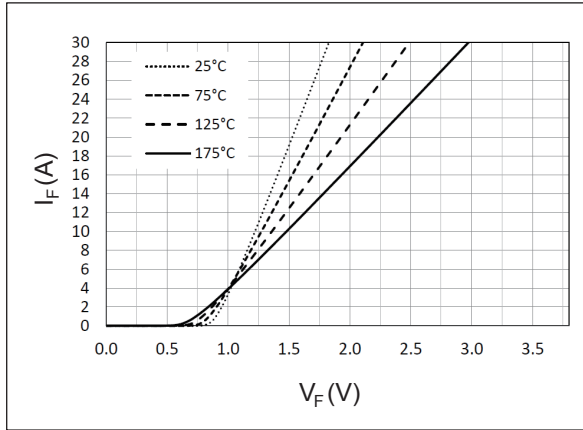
### Thermal Characteristics

| Static Characteristics                   | Symbol          | Values | Unit               |
|--|-----------------|--------|--------------------|
|  |                 | typ.   |                    |
| Thermal resistance from junction to case | $R_{\theta JC}$ | 0.30   | $^\circ\text{C/W}$ |

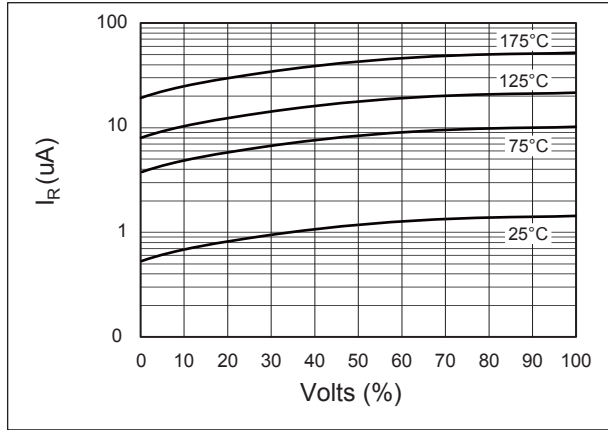


Typical Performance

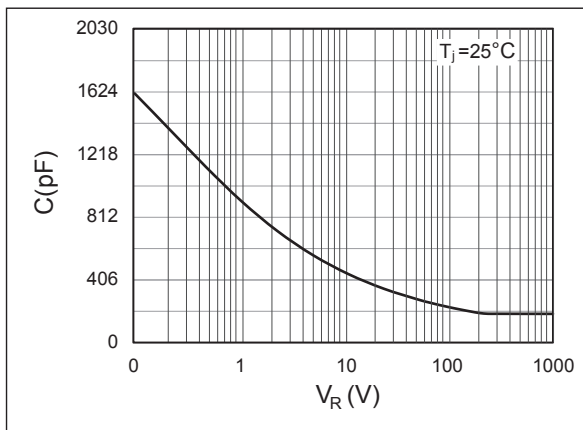
Forward Characteristics (parameterized on  $T_j$ )



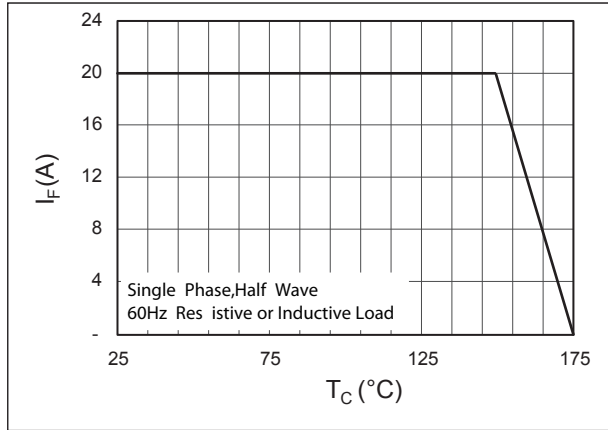
Reverse Characteristics (parameterized on  $T_j$ )



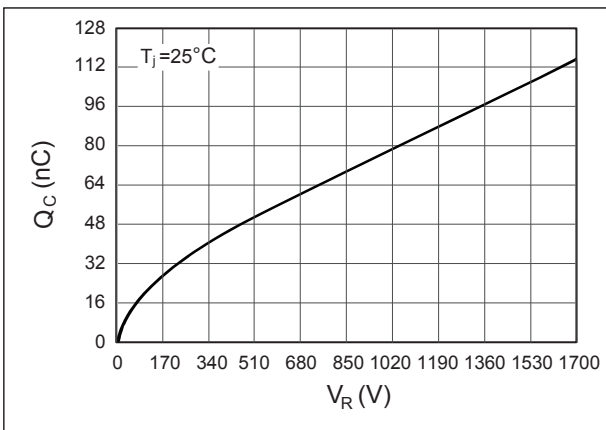
Capacitance



Current Derating



Recovery Charge



Forward Surge Current

