DACO SEMICONDUCTOR

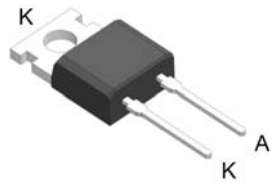
# CSR010-065C1

## SiC SCHOTTKY DIODE TYPE 10A

## Features

- Low conduction and switching loss
- Zero reverse recovery
- High surge current capability
- Positive temperature coefficient device
- RoHS compliant and halogen free
- Temperature independent switching behavior
- Suitable for high power application
- $V_{DC}$ 650 V
- $I_F$ ($T_c$=135/153 °C) 14A/10A

TO-220-2L Package



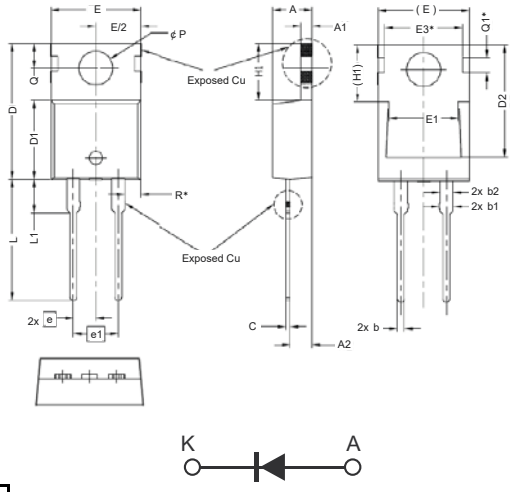

## Benefits

- Increase parallel device convenience
- Enable high temperature application
- Realize compact and lightweight systems
- Allow high frequency operation
- Higher system efficiency
- High reliability

## Applications

- Switching mode power supply
- PFC
- UPS
- Motor drives
- Flywheel diode in power inverters
- Solar/Wind renewable energy

Package Dimensions







## Maximum Ratings

Operating Junction Temperature : -55℃ to +175℃

Storage Temperature : -55℃ to +175℃

| Part Number | Maximum Recurrent Peak Reverse Voltage | Maximum DC Blocking Voltage |
|---|---|---|
| CSR010-065C1 | 650V | 650V |

| Maximum Rating | Symbol | Conditions | Value | Unit |
|---|---|---|---|---|
| Repetitive peak reverse voltage | $V_{RRM}$ | $T_C$=25 °C | 650 | V |
| Continuous forward current | $I_F$ | $T_C$=25 °C | 31 | A |
| | | $T_C$=135 °C | 14 | |
| | | $T_C$=153°C | 10 | |
| Non-repetitive forward sure current | $I_{FSM}$ | $T_C$=25 °C, $t_p$=10 ms Half sine wave | 74 | |
| | | $T_C$=125 °C, $t_p$=10ms Half sine wave | 66 | |
| Repetitive peak forward sure current | $I_{FRM}$ | $T_C$=25 °C, $t_p$=10ms Half sine wave, D=0.1 | 55 | |
| $I^2t$ value | $\int i^2dt$ | $T_C$=25 °C, $t_p$=10ms | 27 | $A^2s$ |
| Power Dissipation | $P_D$ | $T_C$=25 °C | 107 | W |
| | | $T_C$=125 °C | 35 | |

| Symbol | mm | | |
|---|---|---|---|
| | Min. | Typ. | Max. |
| A | 4.24 | 4.44 | 4.64 |
| A1 | 1.15 | 1.27 | 1.40 |
| A2 | 2.30 | 2.48 | 2.70 |
| b | 0.70 | 0.80 | 0.90 |
| b1 | 1.20 | 1.55 | 1.75 |
| b2 | 1.20 | 1.45 | 1.70 |
| c | 0.40 | 0.50 | 0.60 |
| D | 14.70 | 15.37 | 16.00 |
| D1 | 8.82 | 8.92 | 9.02 |
| D2 | 12.63 | 12.73 | 12.83 |
| E | 9.96 | 10.16 | 10.36 |
| E1 | 6.86 | 7.77 | 8.89 |
| E3* | 8.70 REF | | |
| e | 2.54 BSC | | |
| e1 | 5.08 BSC | | |
| H1 | 6.30 | 6.45 | 6.60 |
| L | 13.47 | 13.72 | 13.97 |
| L1 | 3.60 | 3.80 | 4.00 |
| ϕP | 3.75 | 3.84 | 3.93 |
| Q | 2.60 | 2.80 | 3.00 |
| Q1* | 1.73 REF | | |
| R* | 1.82 REF | | |

NOTE：

1.These Dimension Do Not Include Mold protrusion

**Electrical Characteristics**, at $T_C$ =25 °C, unless otherwise specified.

| Static Characteristics | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| DC blocking voltage | $V_{DC}$ | $I_R$ =100 μA, $T_J$ =25°C | 650 | - | - | V |
| Diode forward voltage | $V_F$ | $I_F$ =10A, $T_J$ =25°C | - | 1.27 | 1.5 | |
| | | $I_F$ =10A, $T_J$ =175°C | - | 1.55 | 1.8 | |
| Reverse current | $I_R$ | $V_R$ =650V, $T_J$ =25°C | - | 3 | 50 | μA |
| | | $V_R$ =650V, $T_J$ =175°C | - | 200 | - | |

## AC Characteristics

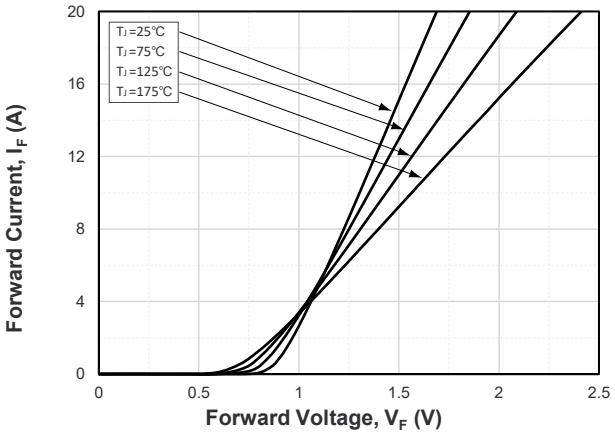
| Static Characteristics | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| Total capacitive charge | $Q_C$ | $I_F$=10A, di/dt=300A/μs<br>$V_R$=400V, $T_J$ =25°C | - | 26 | - | nC |
| Total capacitance | $C_j$ | $V_R$=0.1V, f=1 MHz<br>$T_J$ =25°C | - | 557 | - | pF |
| | | $V_R$=200V, f=1 MHz<br>$T_J$ =25°C | - | 51 | - | |
| | | $V_R$=400V, f=1 MHz<br>$T_J$ =25°C | - | 44 | - | |
| Capacitance stored energy | $E_C$ | $V_R$=400V | - | 5.0 | - | μJ |

## Thermal Characteristics

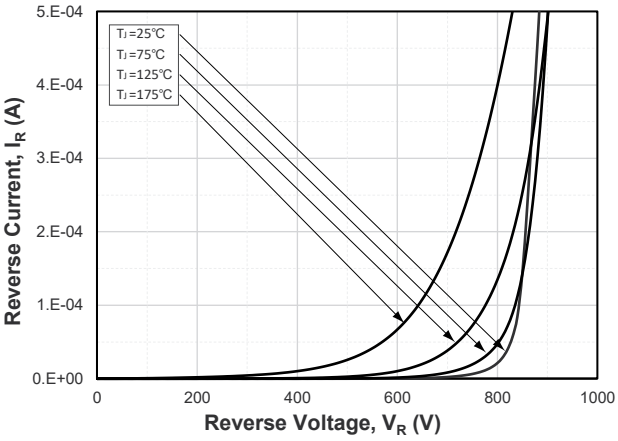
| Static Characteristics | Symbol | Values | Unit |
|---|---|---|---|
| | | typ. | |
| Thermal resistance from junction to case | $R_{\theta JC}$ | 1.4 | °C/W |

## Typical Device Performance

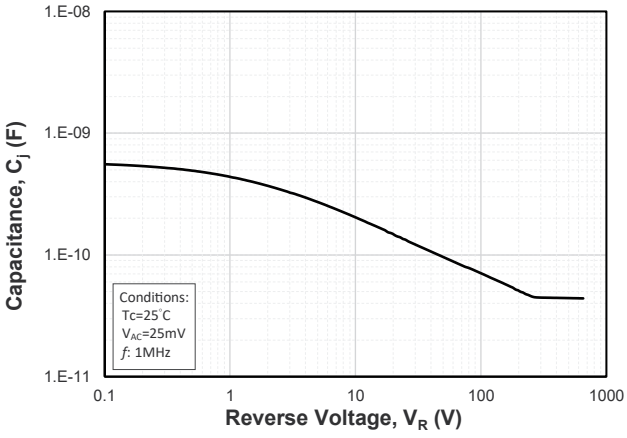
### Fig.1 Forward Characteristics



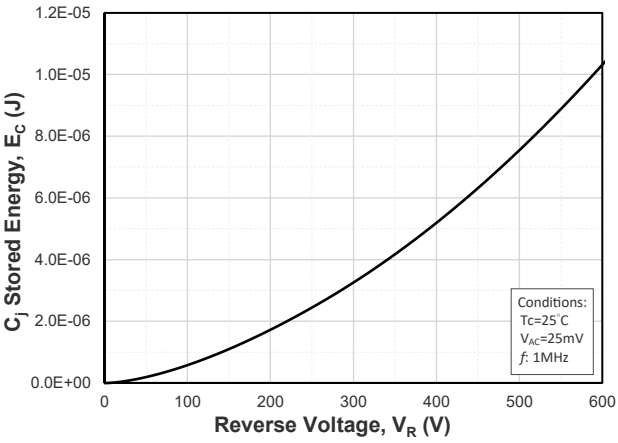

### Fig.2 Reverse Characteristics



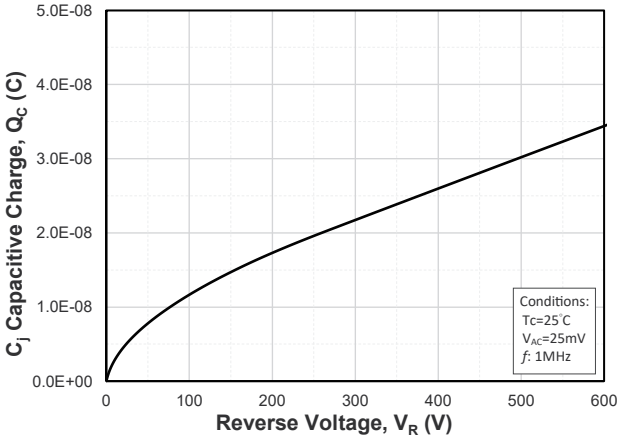

### Fig.3 Junction Capacitance vs. Reverse Voltage



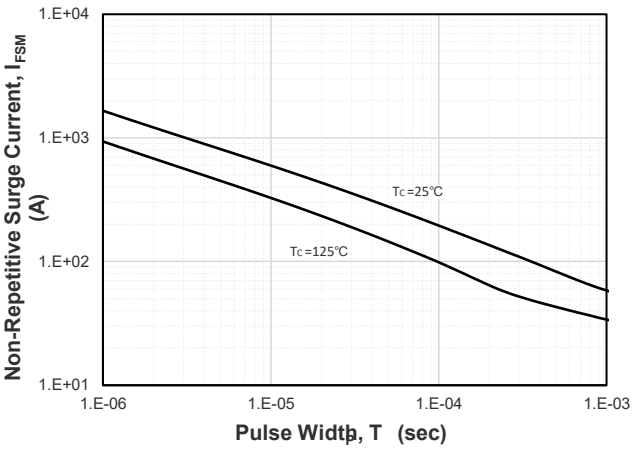

### Fig.4 Capacitance Stored Energy




### Fig.5 Recovery Charge vs. Reverse Voltage




### Fig.6 Non-Repetitive Peak Forward Surge Current (Pulse Mode)



## Typical Device Performance

**Fig.7 Maximum Forward Current Derating vs. Case Temperature**

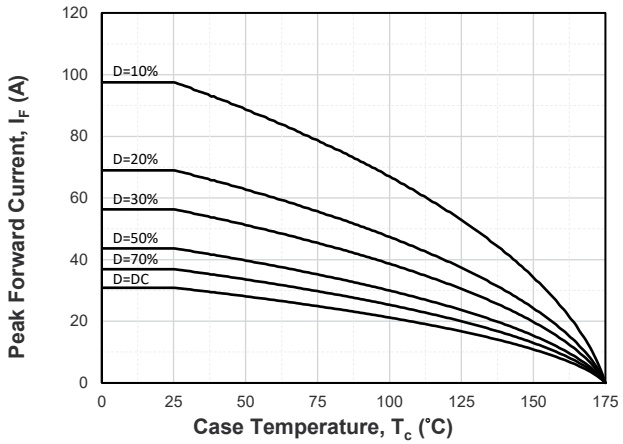



**Fig.8 Maximum Power Dissipation Derating vs. Case Temperature**

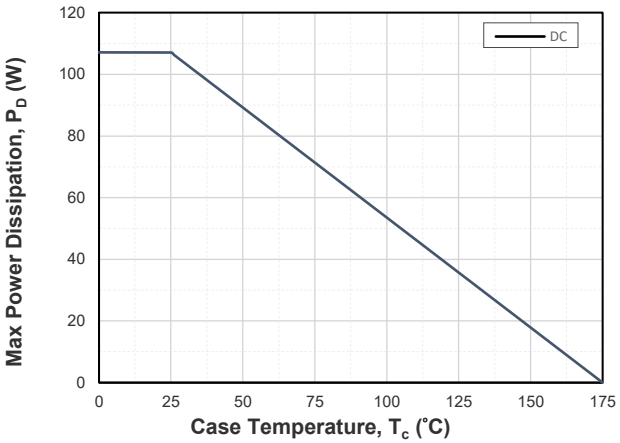
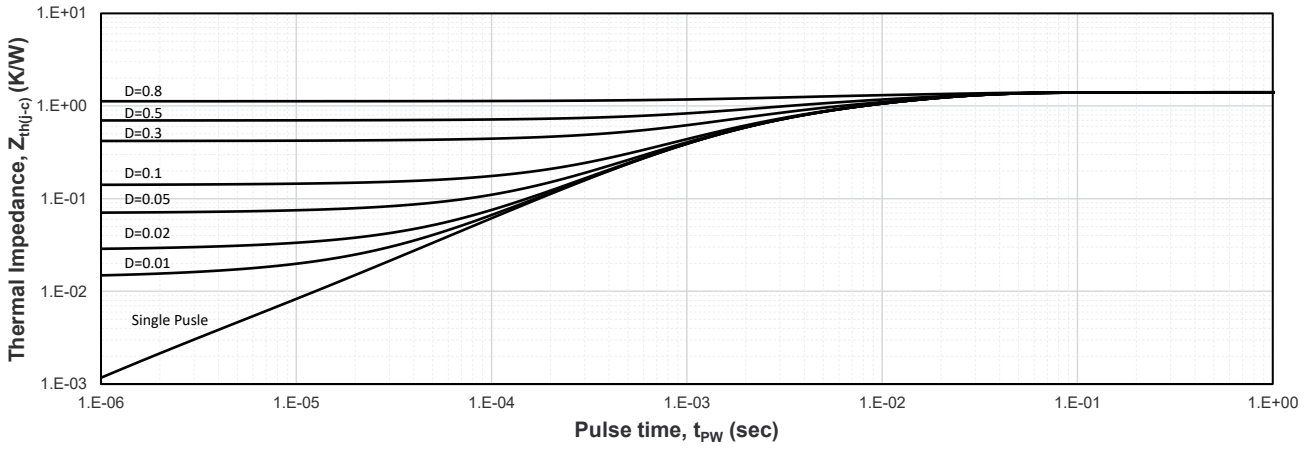



**Fig.9 Transient Junction to Case Thermal Impedance**



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