# 20A 650V SiC Schottky Barrier Diode

$V_{BRM}$=650V

$I_F$（$T_C$≤135℃）=30A

$Q_C$ =41nC

## 1 Description

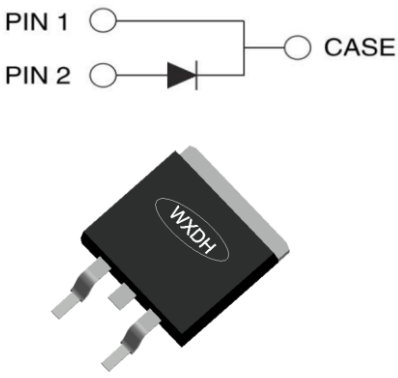
SiC Series products family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

## 2 Features

- high voltage
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on VF
- 175°C Operating Junction Temperature

## 3 Applications

- Switching Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station




TO-263

## 4 Electrical Characteristics

### 4.1 Absolute Maximum Ratings（Tc=25℃,unless otherwise noted）

| PARAMETER | | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage | | $V_{RRM}$ | 650 | V |
| Working Peak Reverse Voltage | | $V_{RWM}$ | 650 | V |
| DC Blocking Voltage | | $V_R$ | 650 | V |
| Forward Current | (Tc≤135℃) | $I_F$ | 30 | A |
| | (Tc≤154℃) | | 20 | |
| Nonrepetitive Peak Surge Current(t=8.3ms) | | $I_{FSM}$ | 160 | A |
| Power dissipation | | $P_{tot}$ | 214 | W |
| Operating Junction Temperature Range | | $T_j$ | -55～175 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -55～175 | ℃ |
| Soldering Temperature | | $T_{sold}$ | 260 | ℃ |

### 4.2 Thermal Characteristics

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Thermal Resistance from Junction to Case | $R_{thJC}$ | 0.7 | ℃/W |
| Thermal Resistance from Junction to Ambient | $R_{thJA}$ | 80 | ℃/W |

### 4.3 Electrical Characteristics （Tc=25℃,unless otherwise noted）

| PARAMETER | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage | $V_F$ | $I_F$ = 20A | - | 1.3 | 1.5 | V |
| | | $I_F$ = 20A，$T_J$=175℃ | - | 1.4 | 1.7 | V |
| Maximum Instantaneous Reverse | $I_R$ | $V_R$ = 650V | - | 10 | 100 | uA |
| | | $V_R$ = 650V，$T_a$=175℃ | - | 40 | 400 | uA |
| Total capacitance | $C_{tot}$ | $V_R$=0V，f=1MHz | - | 1210 | - | pF |
| | | $V_R$=200V，f=1MHz | - | 124 | - | |
| | | $V_R$=400V，f=1MHz | - | 90 | - | |
| Total capacitive Charge | $Q_C$ | $V_R$=400V,$I_F$=20A,di/dt=200A/us | - | 41 | - | nC |

DEFINITIONS

VF = Instantaneous forward voltage (pw = 300μs, D = 2%).

IR = Instantaneous reverse current.

RθJC = Thermal resistance junction to case.

pw = pulse width.

D = duty cycle.

## 5 Typical characteristics diagrams

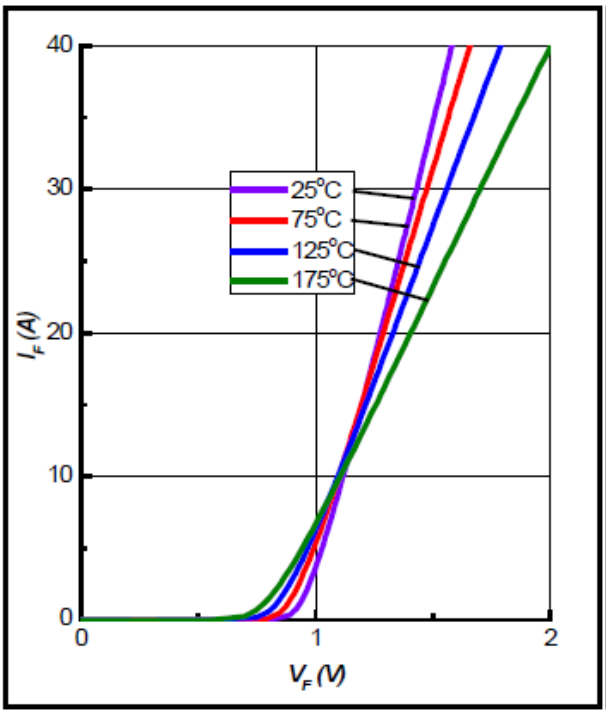



Figure 1. Forward Characteristics

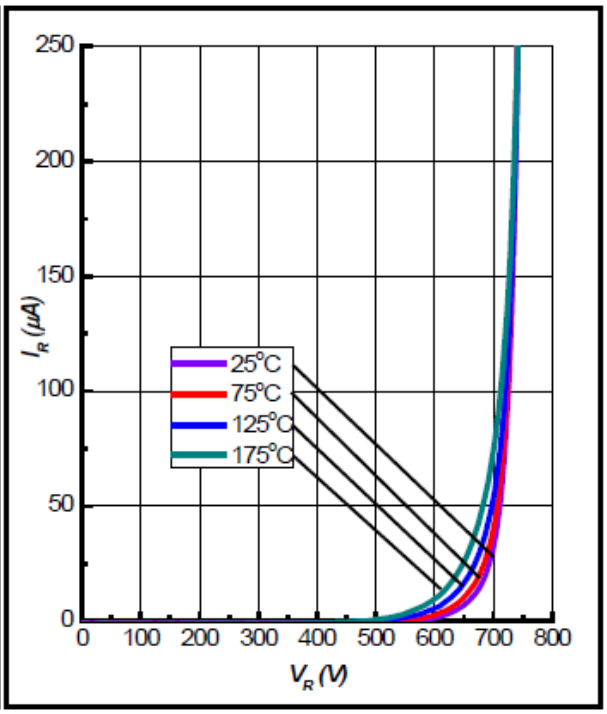



Figure 2. Reverse Characteristics

## 5 Typical characteristics diagrams

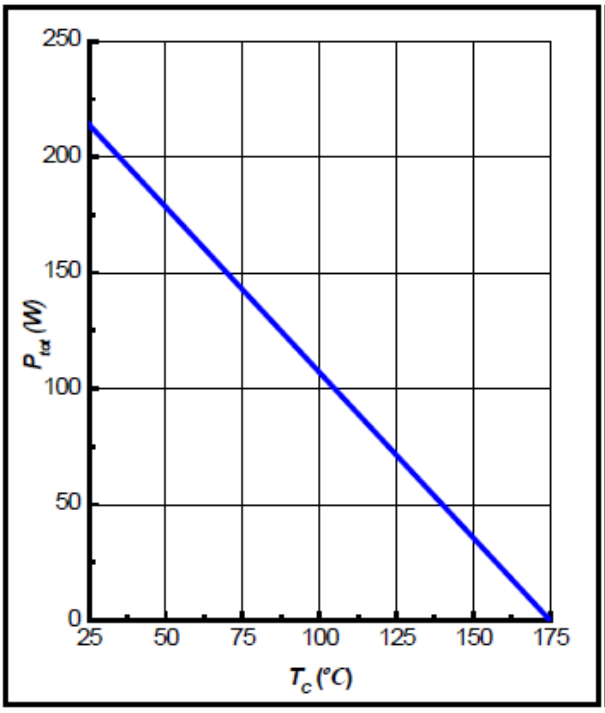



Figure 3. Power Derating

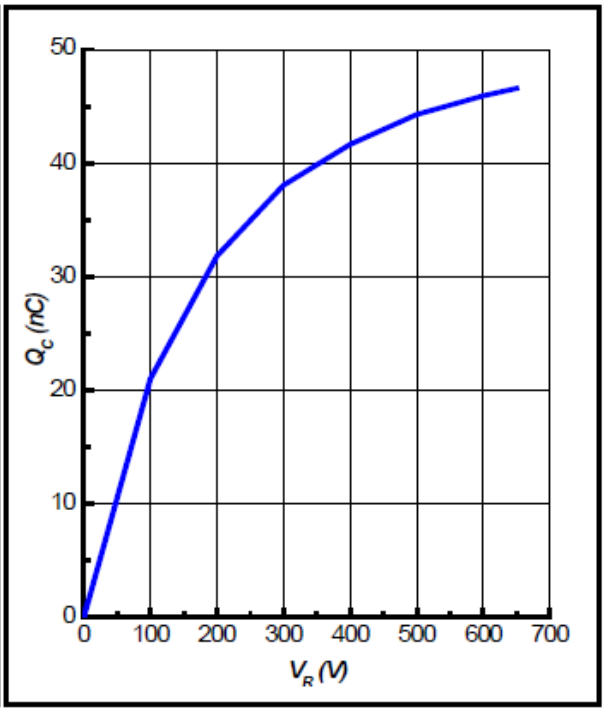



Figure 4. Total Capacitive Charge vs. Reverse Voltage

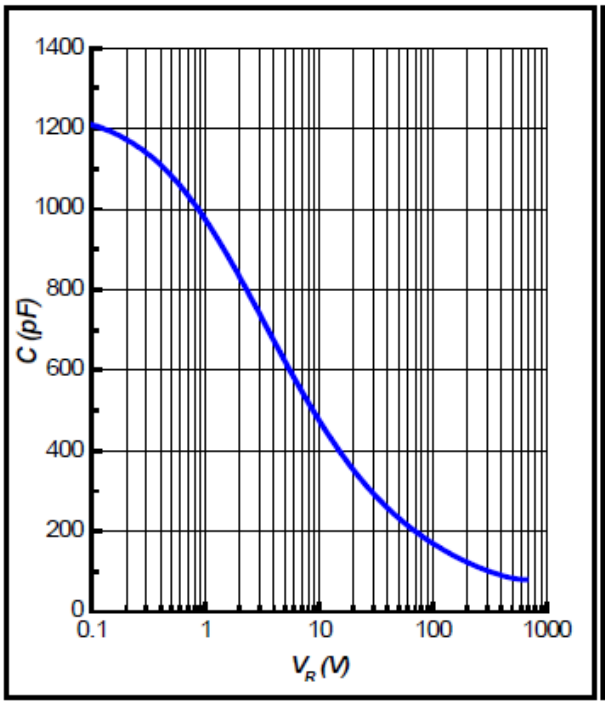



Figure 5. Total Capacitance vs. Reverse Voltage

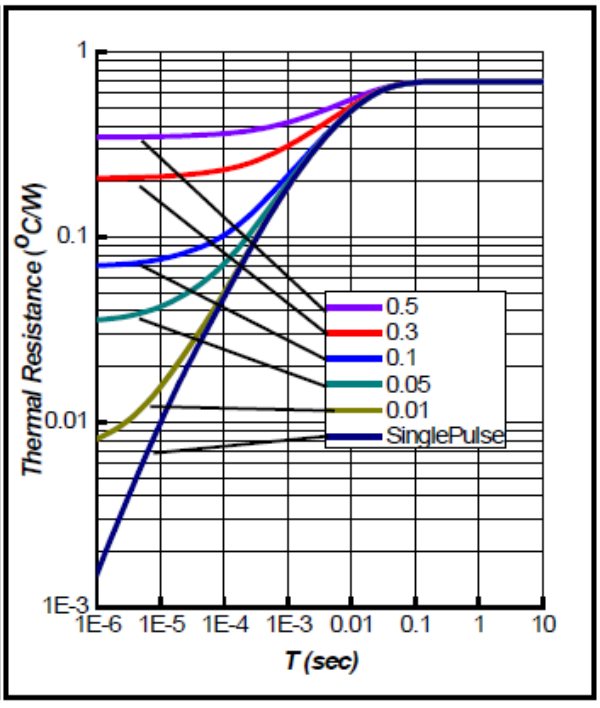


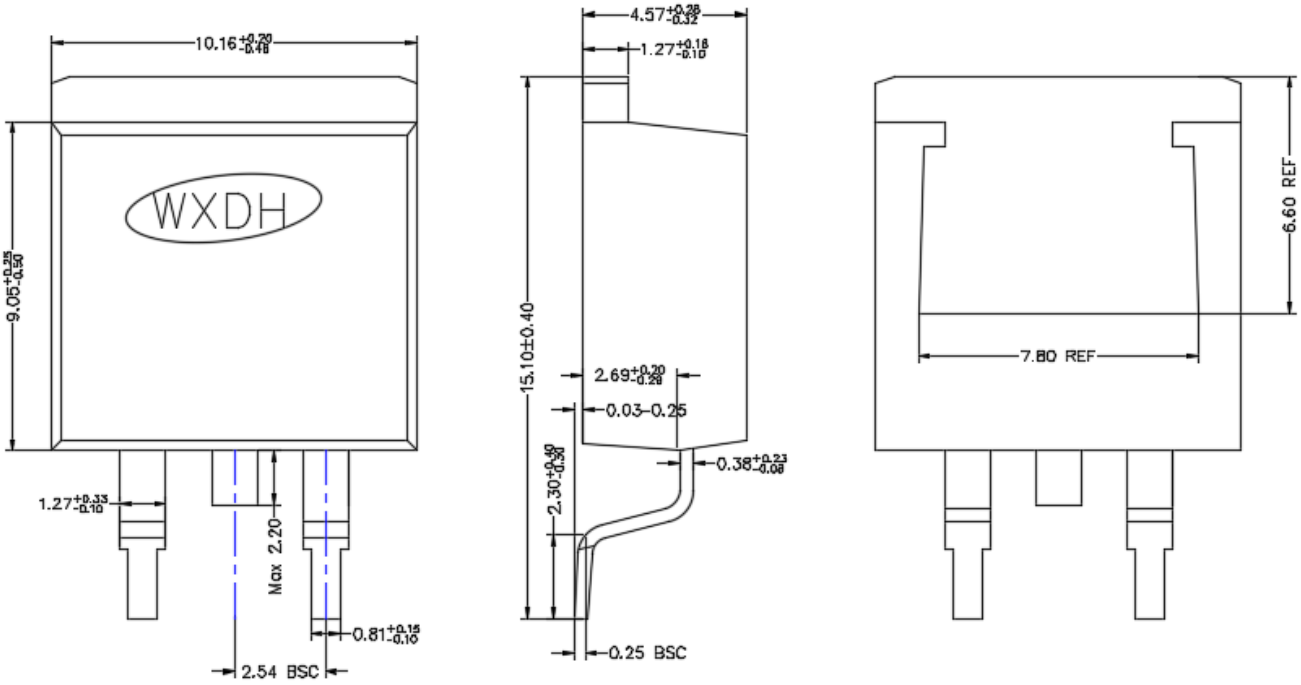

Figure 6. Transient Thermal Impedance

## 6 Product Specifications and Packaging Models

| Product Model | Package Type | Mark Name |
|---|---|---|
| DCE20D65G4 | TO-263 | DCE20D65G4 |

## 7 Dimensions

TO-263 PACK OUTLINE DIMENSIONS




## 8 Attentions

- Jiangsu Donghai Semiconductor Co.,Ltd. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of Jiangsu Donghai Semiconductor Co.,Ltd. products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

## 9 Appendix

Revision history:

| Date | REV. | Description | Page |
|---|---|---|---|
| 2022.03.25 | 1.0 | Original | 4 |