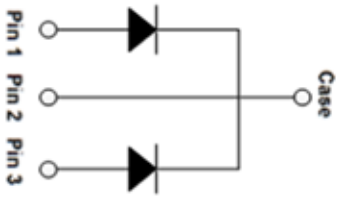
# 5th Generation 1200V/20A SiC Schottky Barrier Diode

## Features

- Revolutionary semiconductor material - Silicon Carbide (SiC)
- No reverse recovery
- High-speed switching performance
- Temperature-independent switching behavior
- System cost / size savings due to reduced cooling requirements
- Junction temperature range from -55℃ to 175℃
- RoHS compliant


**Package Type: TO-247-3L**

## Potential Applications

- Industrial power supplies: Industrial UPS
- Battery chargers
- Solar inverters
- Switch mode power supplies

## Description

The SDS120J020G5 SiC Schottky Barrier Diode (SBD) has been developed using Sanan's advanced 5th generation SiC SBD technology with the highest performance and reliability. It registers higher efficiency, higher operation temperature and lower loss and can be operated at higher frequency than Si-based solutions. As to the Schottky structure, it shows no recovery at turn-off and allows a low leakage current with reverse voltage up to 1200V. It can contribute to system miniaturization and achieve lightweight system design. Using RoHS compliant components, it is qualified for use in industrial application.

## Product Specifications

| Device | $V_{RRM}$ | $I_F$ (135℃) | $V_F$ (25℃) | $Q_C$ | Marking |
|---|---|---|---|---|---|
| SDS120J020G5 | 1200V | 30A** | 1.40V | 48nC* | DS120020G5 |

**Note: * per leg, ** per device**

## Table 3. Static Electrical Characteristics (Per Leg)

**($T_j$ = 25℃, unless otherwise specified)**

| Parameter | Symbol | Values | | | Unit | Test conditions |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| DC blocking voltage | $V_{DC}$ | 1200 | / | / | V | $I_R$ = 100 μA |
| Forward voltage | $V_F$ | / | 1.40 | 1.60 | V | $I_F$ = 10A, $T_j$ = 25℃ |
| | | / | 2.00 | 2.40 | | $I_F$ = 10A, $T_j$ = 175℃ |
| Reverse current | $I_R$ | / | 5 | 40 | μA | $V_R$ = 1200V, $T_j$ = 25℃ |
| | | / | 15 | 160 | | $V_R$ = 1200V, $T_j$ = 175℃ |

## Table 4. Dynamic Electrical Characteristics (Per Leg)

**($T_j$ = 25℃, unless otherwise specified)**

| Parameter | Symbol | Values | | | Unit | Test conditions |
|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | | |
| Total capacitance | C | / | 690 | / | pF | $V_R$ = 0V, f = 1MHz |
| | | / | 45 | / | | $V_R$ = 400V, f = 1MHz |
| | | / | 32 | / | | $V_R$ = 800V, f = 1MHz |
| Total capacitive charge | $Q_C$ | / | 48 | / | nC | $V_R$ = 800V |
| Capacitance stored energy | $E_C$ | / | 13.6 | / | μJ | $V_R$ = 800V |

## Electrical Characteristic Diagrams (Per Leg)

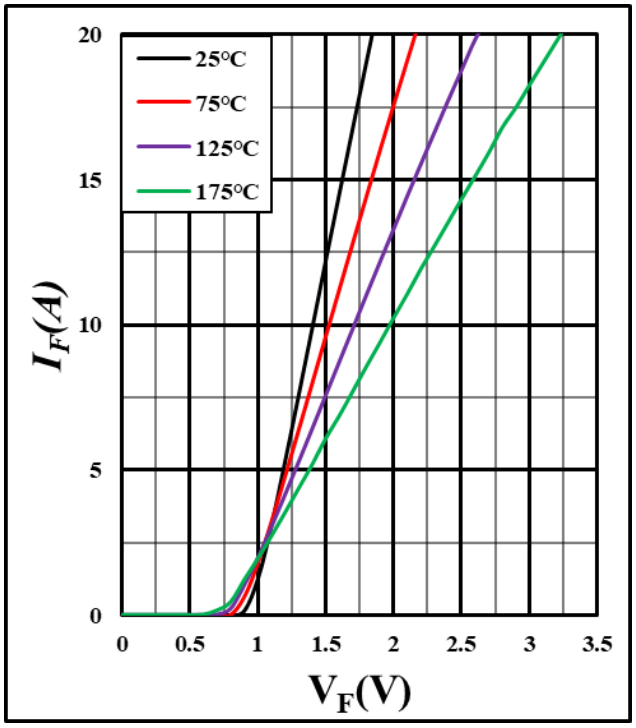



Figure 1. Forward characteristics

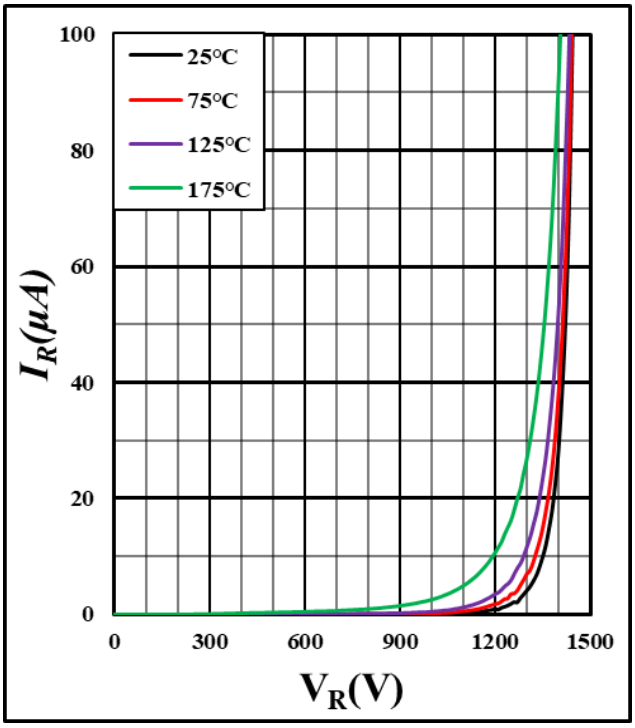



Figure 2. Reverse characteristics

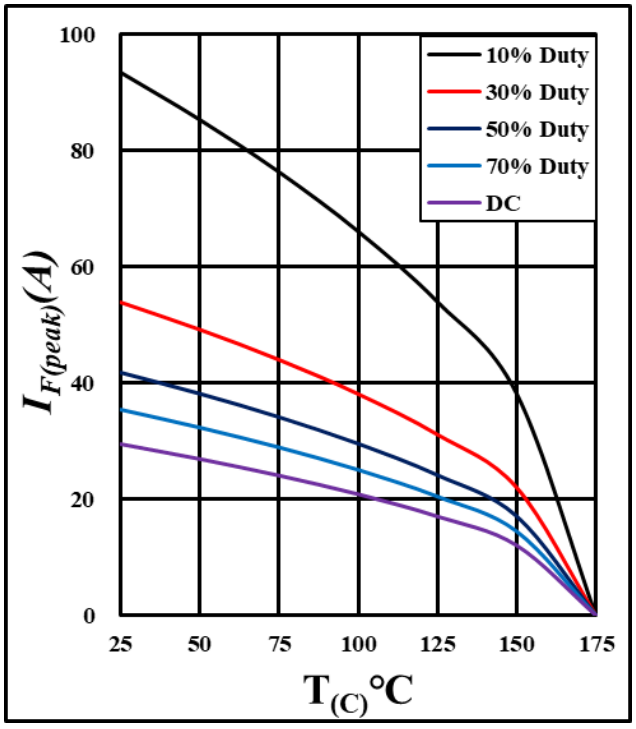



Figure 3. Current derating

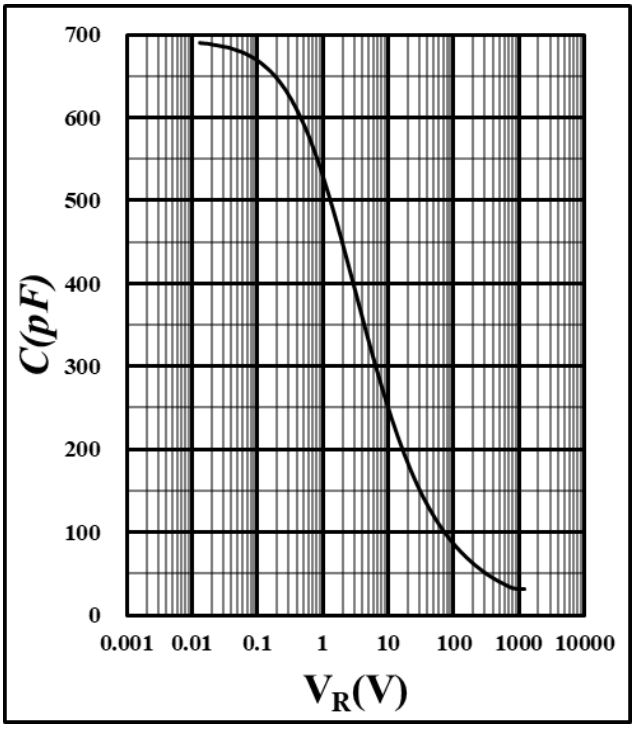



Figure 4. Capacitance vs. reverse voltage

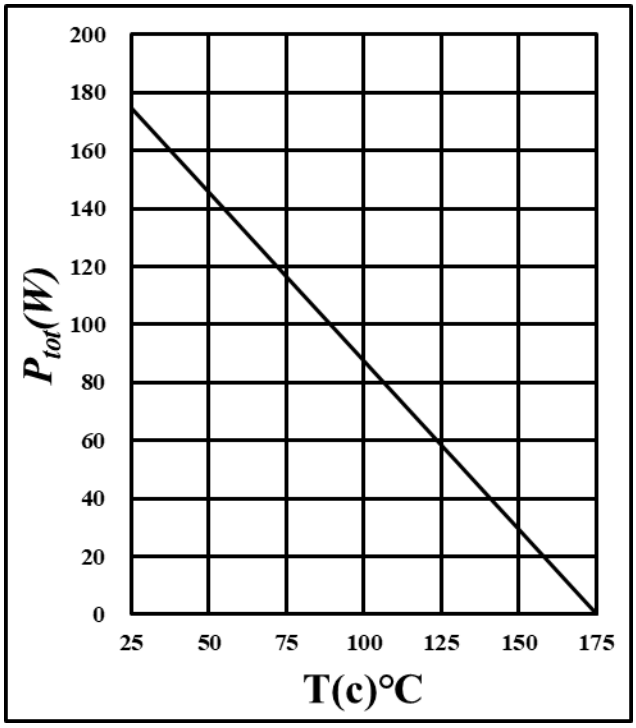



Figure 5. Power derating

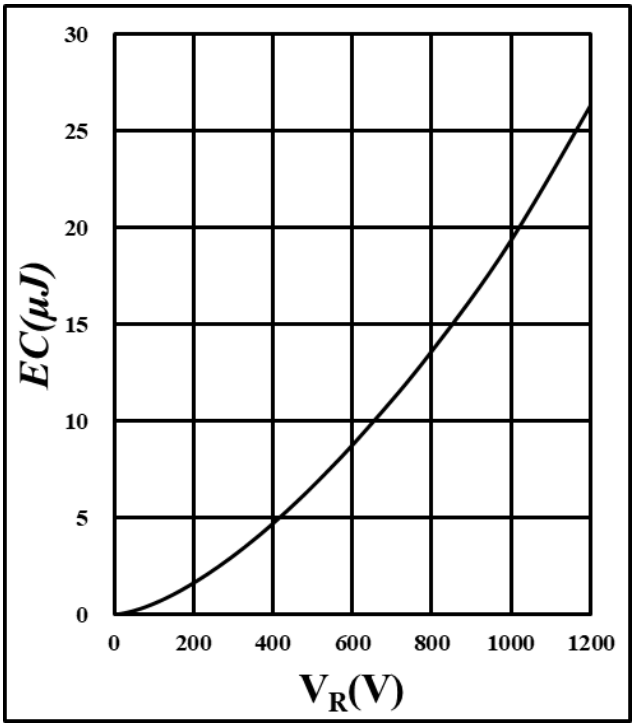



Figure 6. Capacitance stored energy

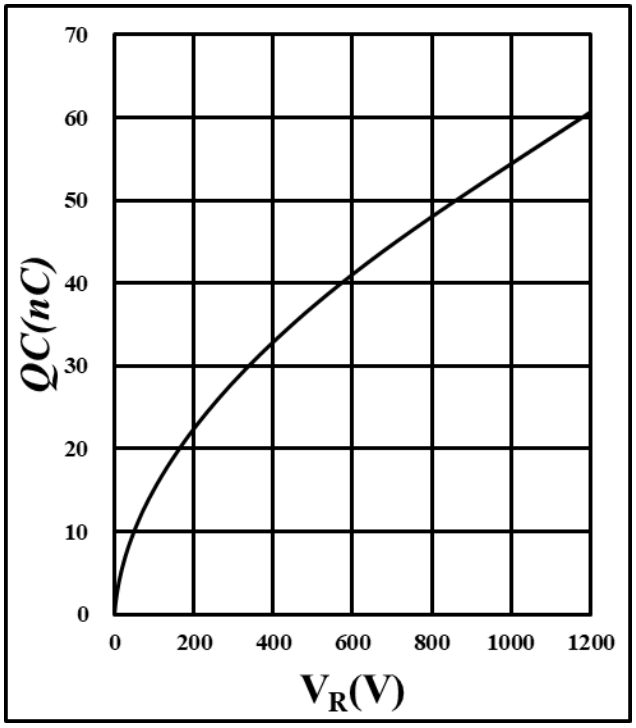



Figure 7. Total capacitance charge vs. reverse voltage

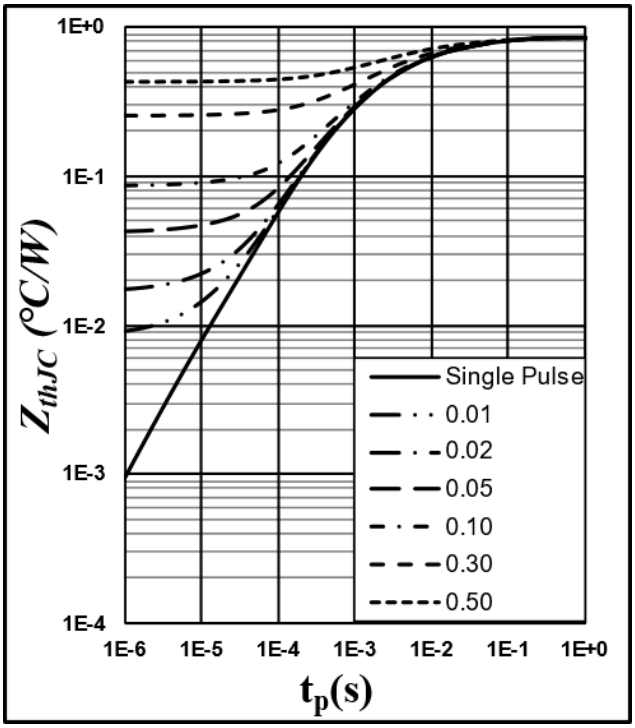
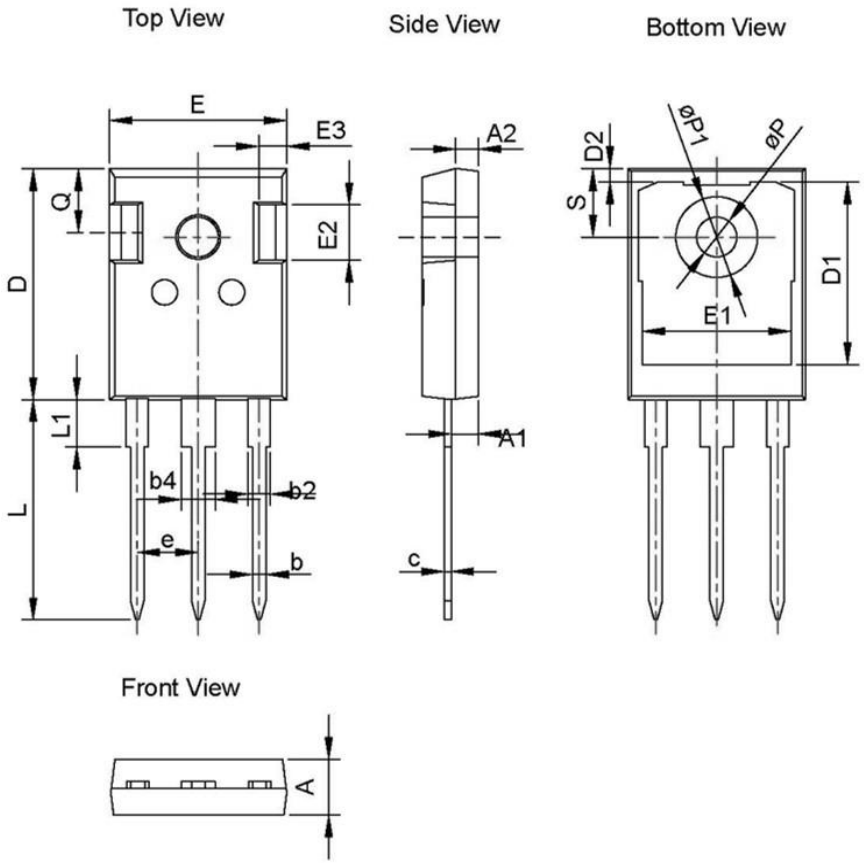



Figure 8. Transient Thermal Impedance
(Junction - Case)

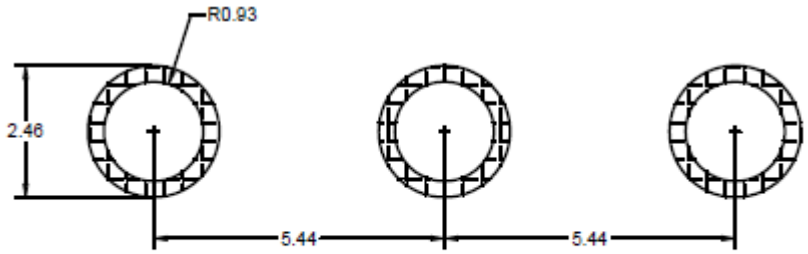
## Package Information




| Dimension unit: [mm] | | | |
|---|---|---|---|
| Symbol | Min | Nom | Max |
| A | 4.80 | 5.00 | 5.20 |
| A1 | 2.21 | 2.41 | 2.61 |
| A2 | 1.85 | 2.00 | 2.15 |
| b | 1.11 | 1.21 | 1.36 |
| b2 | 1.91 | 2.01 | 2.21 |
| b4 | 2.91 | 3.01 | 3.21 |
| c | 0.51 | 0.60 | 0.75 |
| D | 20.70 | 21.00 | 21.30 |
| D1 | 16.25 | 16.55 | 16.85 |
| D2 | 1.00 | 1.20 | 1.35 |
| E | 15.50 | 15.80 | 16.10 |
| E1 | 13.00 | 13.30 | 13.60 |
| E2 | 4.80 | 5.00 | 5.20 |
| E3 | 2.30 | 2.50 | 2.70 |
| e | 5.44 BSC | | |
| L | 19.62 | 19.92 | 20.22 |
| L1 | - | - | 4.30 |
| øP | 3.40 | 3.60 | 3.80 |
| øP1 | - | - | 7.30 |
| Q | 5.40 | 5.80 | 6.20 |
| S | 6.20 BSC | | |

## Recommended Solder Pad Layout

**Note: All dimensions are in mm**




TO-247-3L

## Ordering Information

| | |
|---|---|
| Part number | SDS120J020G5-ISATH |
| Package | TO-247-3L |
| Unit quantity | 300 EA |
| Packing type | Tube |

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