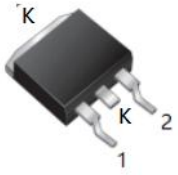
Technical Data
Data Sheet N2617, Rev.-

# S4D15120G
# 15A 1200V SIC POWER SCHOTTKY RECTIFIER




D²PAK(TO-263-2)

## Description

**S4D15120G is single SiC Schottky rectifier packaged in D²PAK(TO-263-2) case. The device is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D15120G is ideal for energy sensitive, high frequency applications in challenging environments.**

## Circuit Diagram


## Features

- **175°C $T_J$ operation**
- **Ultra-low switching loss**
- **Switching speeds independent of operating temperature**
- **Low total conduction losses**
- **High forward surge current capability**
- **High package isolation voltage**
- **Terminals finish: 100% Pure Tin**
- **"-A" is an AEC-Q101 qualified device**
- **Pb − Free Device**
- **All SMC parts are traceable to the wafer lot**
- **Additional electrical and life testing can be performed upon request**

## Applications

- **Alternative energy inverters**
- **Power Factor Correction (PFC)**
- **Free-Wheeling diodes**
- **Switching supply output rectification**
- **Reverse polarity protection**

## Maximum Ratings:

| Characteristics | Symbol | Condition | Max. | Units |
|---|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | - | 1200 | V |
| Average Rectified Forward Current | $I_{F\ (AV)1}$ | Tc =25°C | 46 | A |
| | $I_{F\ (AV)2}$ | Tc =150°C | 15 | A |
| Peak One Cycle Non-Repetitive Surge Current | $I_{FSM}$ | 10ms, Half Sine pulse, Tc = 25 °C | 130 | A |
| Repetitive Peak Forward Surge Current | $I_{FRM}$ | 10ms, Half Sine pulse, Tc = 25 °C | 68 | A |
| Power Dissipation | $P_{tot1}$ | Tc =25℃ | 178.6 | W |
| | $P_{tot2}$ | Tc =110℃ | 77.4 | W |

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## Electrical Characteristics:

| Characteristics | Symbol | Condition | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Forward Voltage Drop * | $V_{F1}$ | @ 15A, Pulse, $T_J$ = 25 °C | 1.5 | 1.8 | V |
| | $V_{F2}$ | @ 15A, Pulse, $T_J$ = 175 °C | 2.2 | 3.0 | V |
| Reverse Current * | $I_{R1}$ | @$V_R$ = rated $V_R$<br>$T_J$ = 25 °C | 3 | 40 | uA |
| | $I_{R2}$ | @$V_R$ = rated $V_R$<br>$T_J$ = 175 °C | 10 | 50 | uA |
| Junction Capacitance | $C_T$ | VR=0V, Tj=25℃, f=1MHz | 990 | - | pF |
| Reverse Recovery Charge | $Q_c$ | $I_F$ = 15A, di/dt = 200A/μs<br>$V_R$ = 800 V, $T_J$ =25°C | 76.32 | - | nC |
| Capacitance Stored Energy | $E_C$ | $V_R$ = 800 V, $T_J$ =25°C | 39.24 | - | μJ |

* Pulse width < 300 μs, duty cycle < 2%

## Thermal-Mechanical Specifications:

| Characteristics | Symbol | Condition | Specification | Units |
|---|---|---|---|---|
| Junction Temperature | $T_J$ | - | -55 to +175 | °C |
| Storage Temperature | $T_{stg}$ | - | -55 to +175 | °C |
| Typical Thermal Resistance Junction to Case | $R_{\theta JC}$ | DC operation | 1.65 | °C/W |

## Ordering Information

| Device | Package | Shipping |
|---|---|---|
| S4D15120G | $D^2$PAK(TO-263-2) | 800pcs / reel |
| S4D15120GTR | $D^2$PAK(TO-263-2) | 800pcs / reel |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

## Marking Diagram


Where XXXXX is YYWWL

S3D = Device Type
G = Package type
15 = Forward Current (15A)
120 = Reverse Voltage (1200V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

**Cautions**: Molding resin
Epoxy resin UL:94V-0

## Ratings and Characteristics Curves

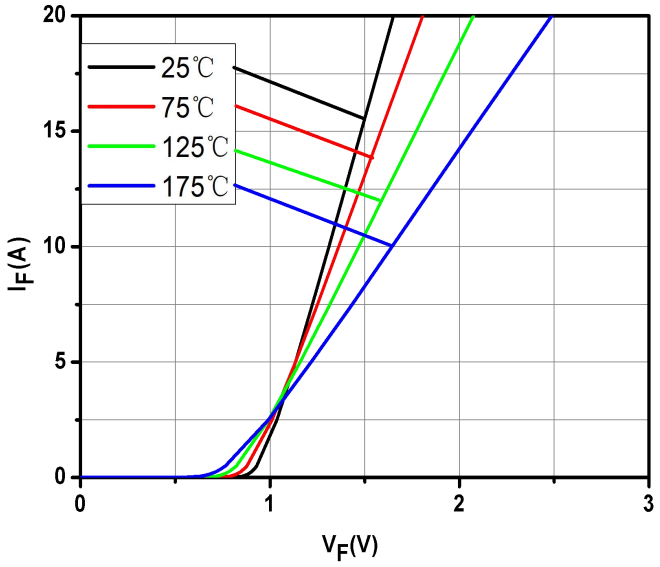



Fig.1-Typical Forward Voltage Characteristics

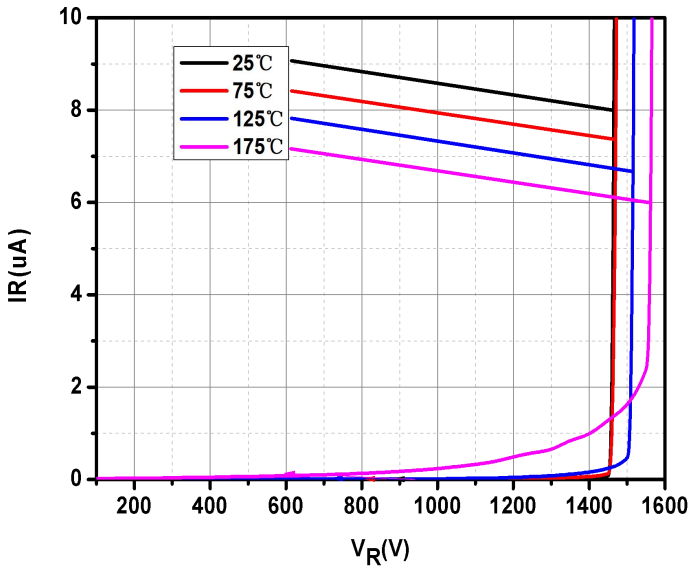



Fig.2-Typical Reverse Characteristics

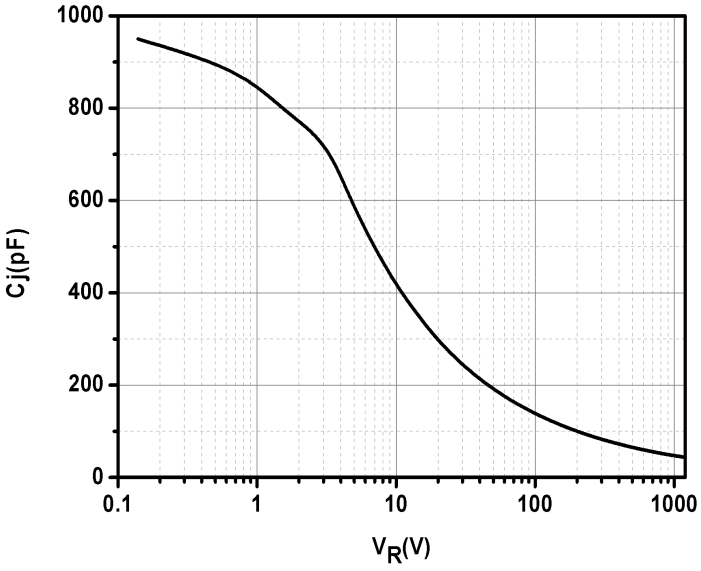



Fig.3-Capacitance vs. Reverse Voltage

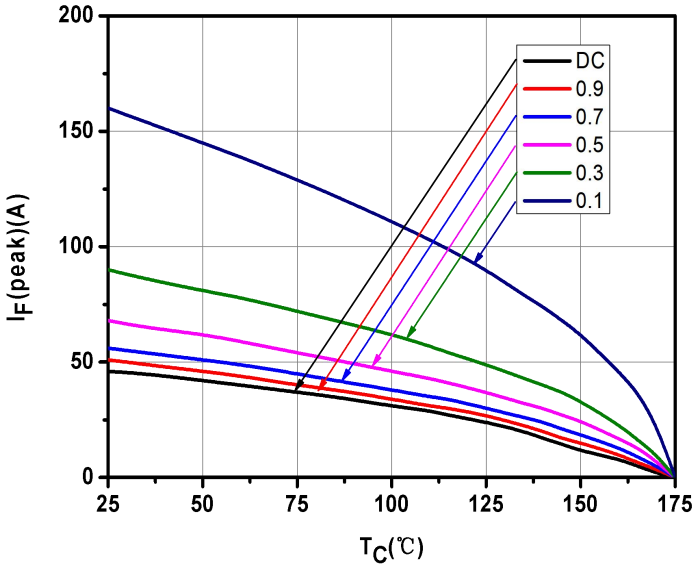



Fig.4-Current Derating

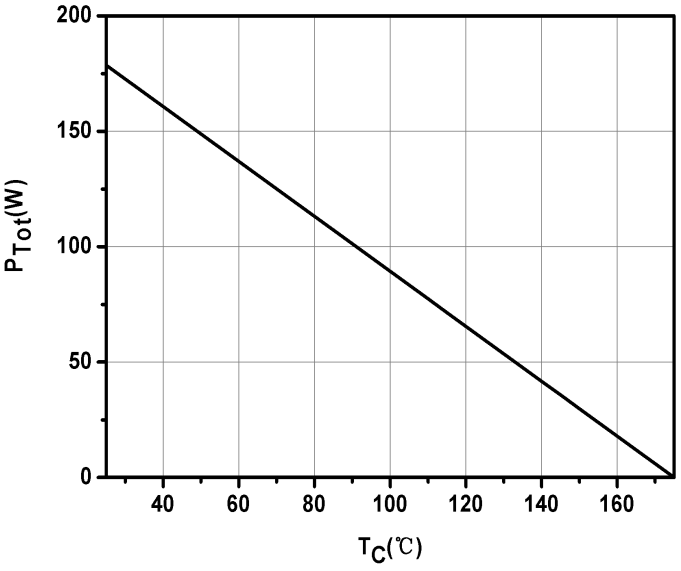



Fig.5-Power Derating

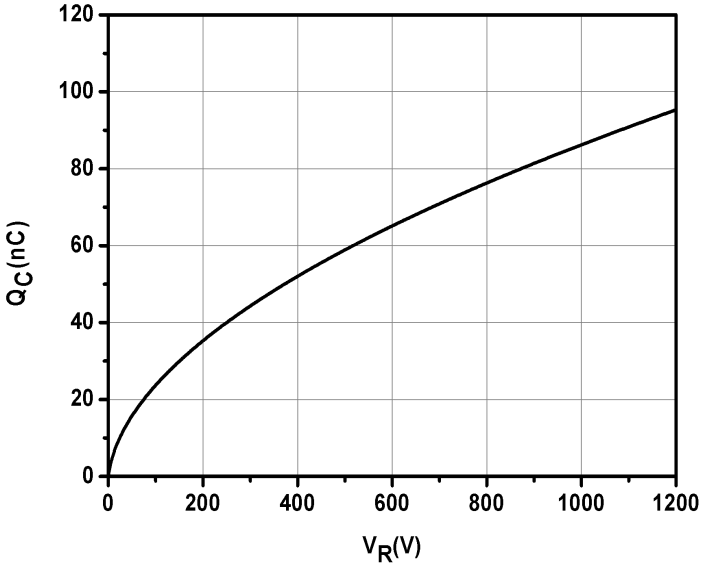



Fig.6-Total Capacitance Charge vs. Reverse Voltage

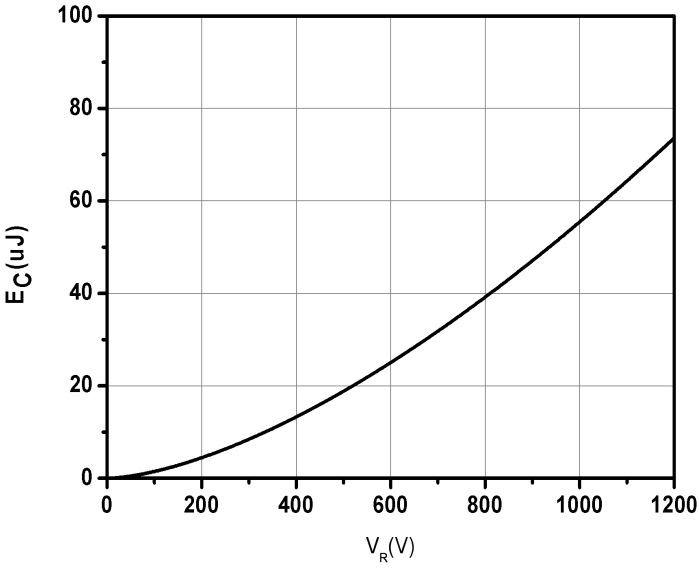
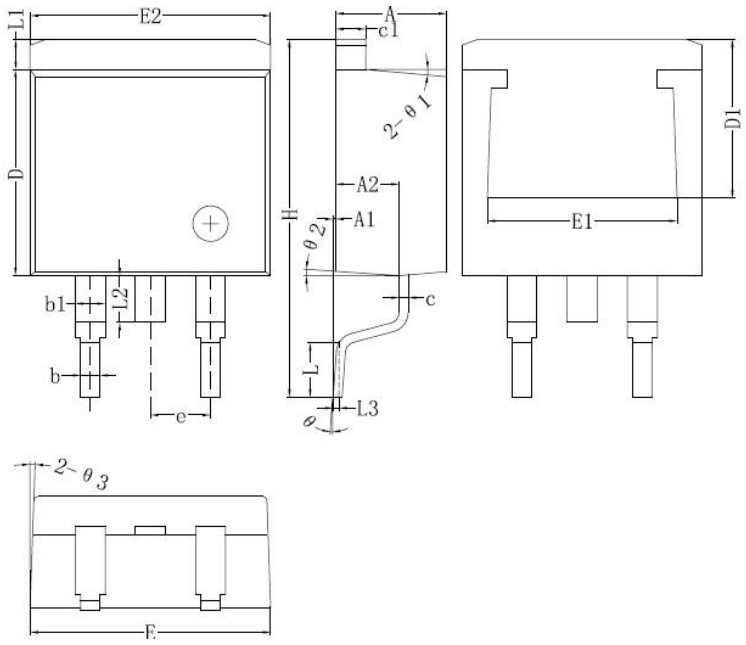


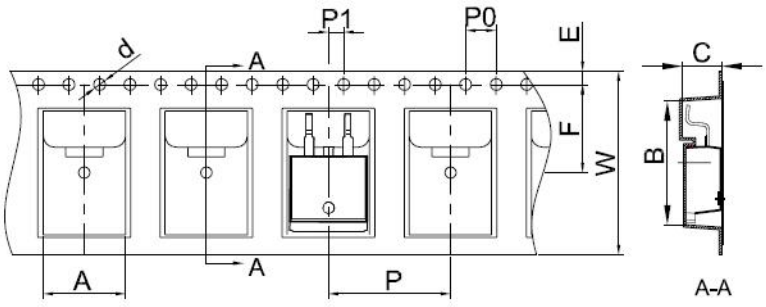

Fig.7-Capacitance Stored Energy

## Mechanical Dimensions D²PAK(TO-263-2)




| Symbol | Dimensions in millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 4.06 | 4.83 |
| A1 | 0 | 0.26 |
| b | 0.51 | 0.99 |
| b1 | 1.14 | 1.78 |
| c | 0.31 | 0.74 |
| c1 | 1.14 | 1.65 |
| D | 8.38 | 8.65 |
| D1 | 6.86 | |
| E1 | 6.22 | |
| E2 | 9.65 | 10.67 |
| e | 2.54BSC | |
| H | 14.60 | 15.88 |
| L | 1.78 | 2.80 |
| L1 | - | 1.68 |
| L2 | - | 1.78 |
| L3 | 0.255BSC | |
| Θ | 0 | 8° |

## Carrier Tape & Reel Specification D²PAK(TO-263-2)




| SYMBOL | Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 10.70 | 10.90 |
| B | 16.03 | 16.23 |
| C | 5.11 | 5.31 |
| d | 1.45 | 1.65 |
| E | 1.65 | 1.85 |
| F | 11.40 | 11.60 |
| P0 | 3.90 | 4.10 |
| P | 15.90 | 16.10 |
| P1 | 1.90 | 2.10 |
| W | 23.90 | 24.30 |

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