



NC1D120C30KT

NovuSiC® 1200V 30A SiC EJBST™

SiC Schottky Diode

| | | |
|--------------------------------|---|-------|
| V_{RRM} | = | 1200V |
| $I_F(T_c=152^{\circ}\text{C})$ | = | 30A |
| $T_{j,max}$ | = | 175°C |

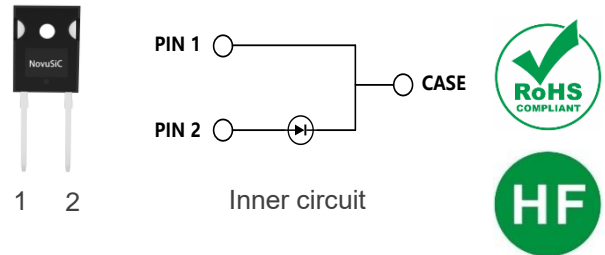
Features

- Zero reverse recovery current / forward recovery voltage
- Low forward voltage (V_F) drop with positive temperature coefficient
- Temperature-Independent switching Behavior

Applications

- PV Inverters
- Charging Piles
- Energy storage systems
- Industrial power supply
- Industrial Motors
- Automotive electronics

Package



Marking

| | | | |
|-------------|------------|---|-------------------|
| C1D120C30KT | C1D120C30K | = | Specific device |
| YYWW | T | = | Year |
| XXXB | YY | = | Work week |
| | WW | = | Wafer code |
| | XXX | = | Assembly location |
| | B | | |

Maximum Ratings @Tc=25°C (unless otherwise specified)

| Parameter | Symbol | Test Conditions | Values | Unit |
|---------------------------------------|---------------|--|-------------|------------------|
| Repetitive Peak Reverse Voltage | V_{RRM} | | 1200 | V |
| DC Peak Reverse Voltage | V_R | | 1200 | V |
| Continuous Forward Current | I_F | $T_C=25^{\circ}\text{C}$ | 89 | A |
| | | $T_C=135^{\circ}\text{C}$ | 42 | |
| | | $T_C=152^{\circ}\text{C}$ | 30 | |
| Repetitive Peak Forward Surge Current | I_{FRM} | $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, half sine wave, 0.1Hz | 250 | A |
| Non-Repetitive Forward Surge Current | I_{FSM} | $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, half sine wave | 270 | A |
| Power Dissipation | P_{tot} | $T_C=25^{\circ}\text{C}$ | 405 | W |
| | | $T_C=110^{\circ}\text{C}$ | 176 | |
| i^2t Value | $\int i^2 dt$ | $T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$ | 362 | A ² s |
| Operating Junction Range | T_j | | -55 to +175 | °C |
| Storage Temperature Range | T_{stg} | | -55 to +175 | °C |

Electrical Characteristics @Tc=25°C (unless otherwise specified)

| Parameter | Symbol | Conditions | Values | | | Unit |
|---------------------------|--------|-------------------------------|--------|------|------|---------|
| | | | min. | typ. | max. | |
| Forward Voltage | V_F | $I_F=20A, T_j=25^{\circ}C$ | - | 1.41 | 1.6 | V |
| | | $I_F=20A, T_j=175^{\circ}C$ | - | 2.00 | 2.5 | |
| Reverse Current | I_R | $V_R=1200V, T_j=25^{\circ}C$ | - | 11 | 85 | μA |
| | | $V_R=1200V, T_j=175^{\circ}C$ | - | 55 | 300 | |
| Total Capacitance | C | $V_R=0.1V, f=1MHz$ | - | 2125 | - | pF |
| | | $V_R=400V, f=1MHz$ | - | 146 | - | |
| | | $V_R=800V, f=1MHz$ | - | 116 | - | |
| Total Capacitive Charge | Q_c | $V_R=800V, T_j=25^{\circ}C$ | - | 160 | - | nC |
| Capacitance Stored Energy | E_c | $V_R=800V$ | - | 65 | - | μJ |

Thermal Characteristics

| Parameter | Symbol | Typ. | Unit |
|--|-----------------|------|---------------|
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ | 0.37 | $^{\circ}C/W$ |



Typical Performance

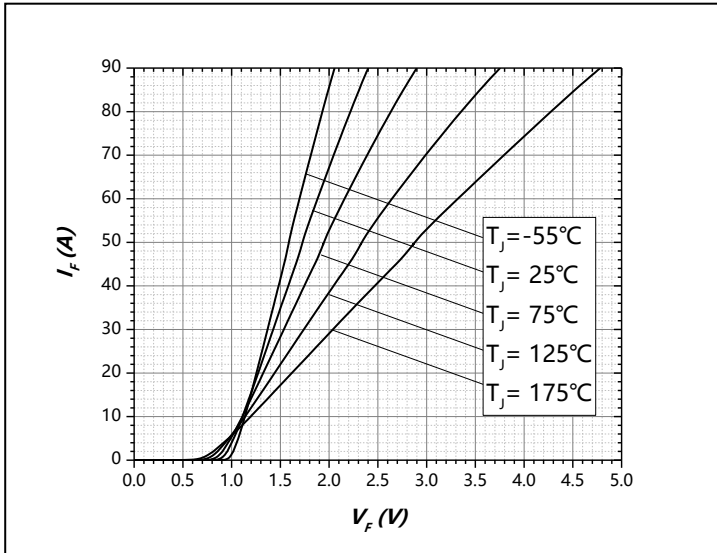


Figure 1. Forward Characteristics

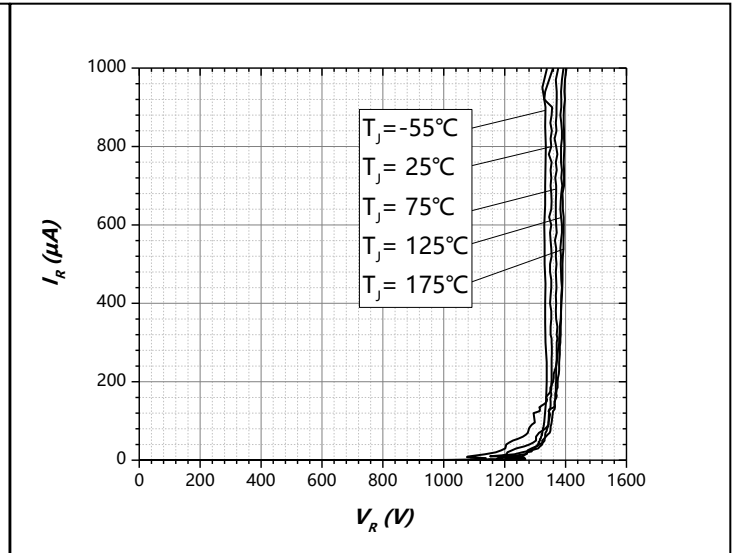


Figure 2. Reverse Characteristics

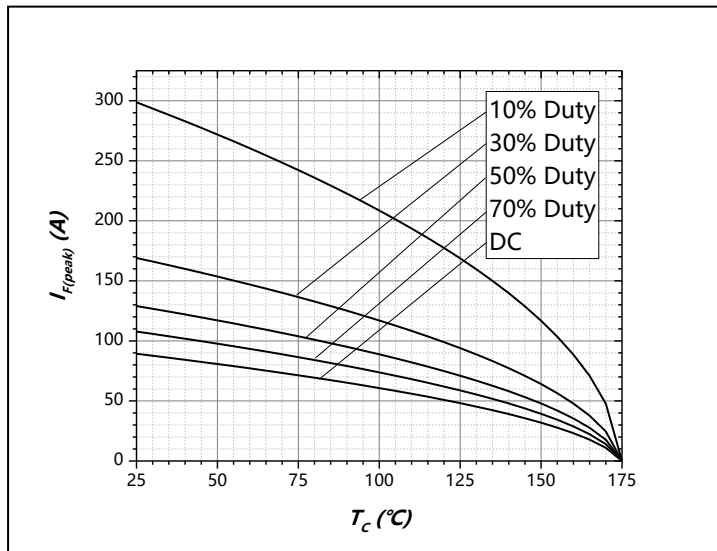


Figure 3. Current Derating

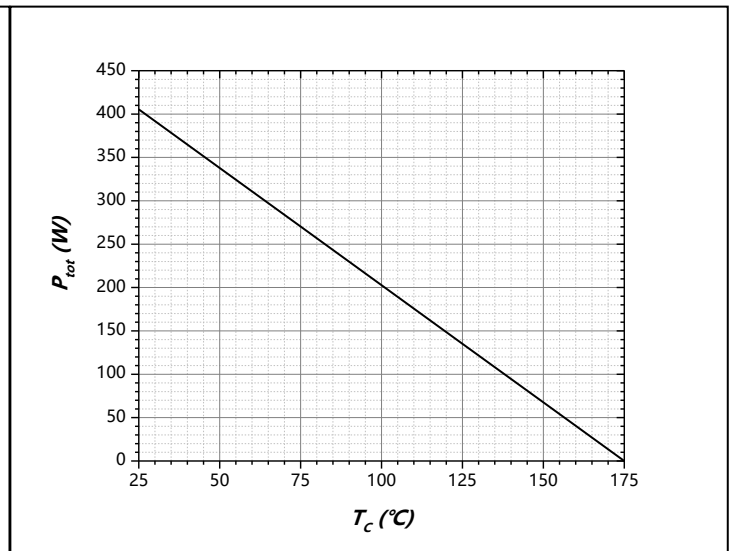


Figure 4. Power Derating



Typical Performance

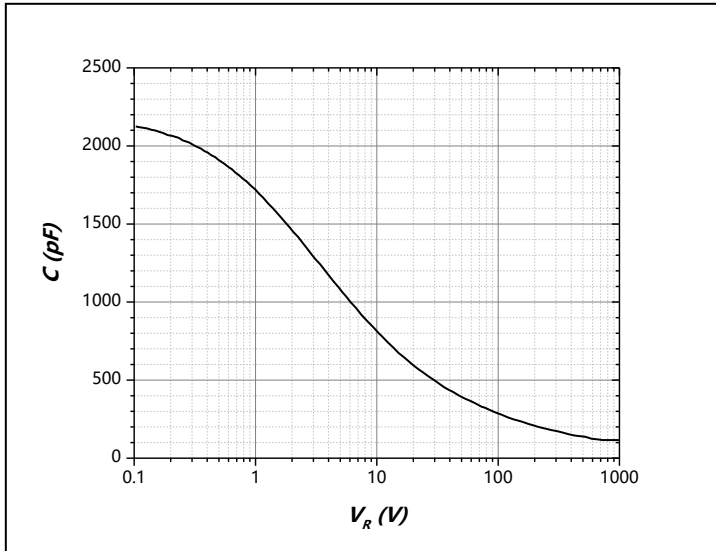


Figure 5. Capacitance vs. Reverse Voltage

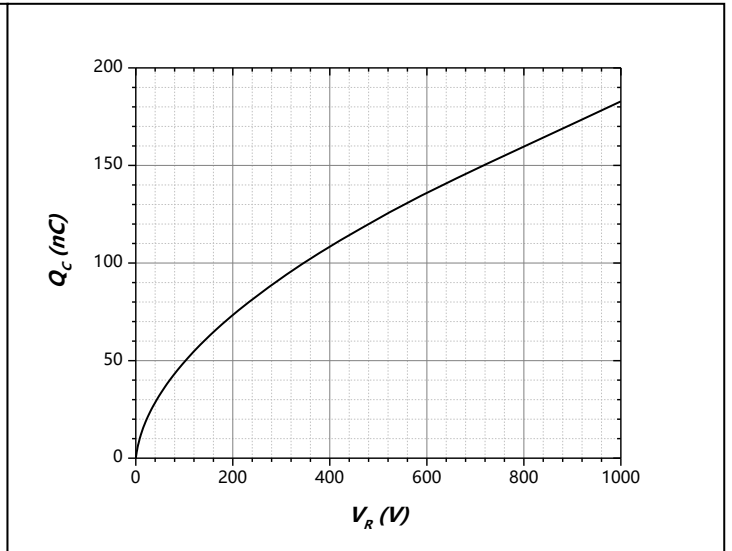


Figure 6. Total Capacitance Charge vs. Reverse Voltage

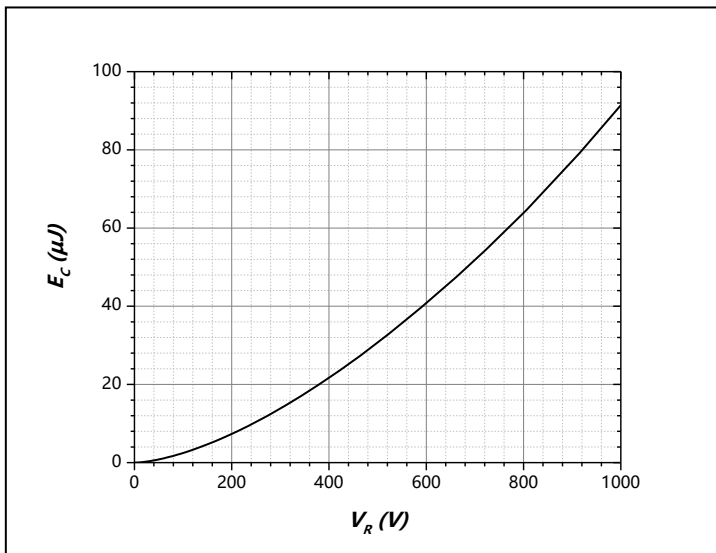


Figure 7. Capacitance Stored Energy

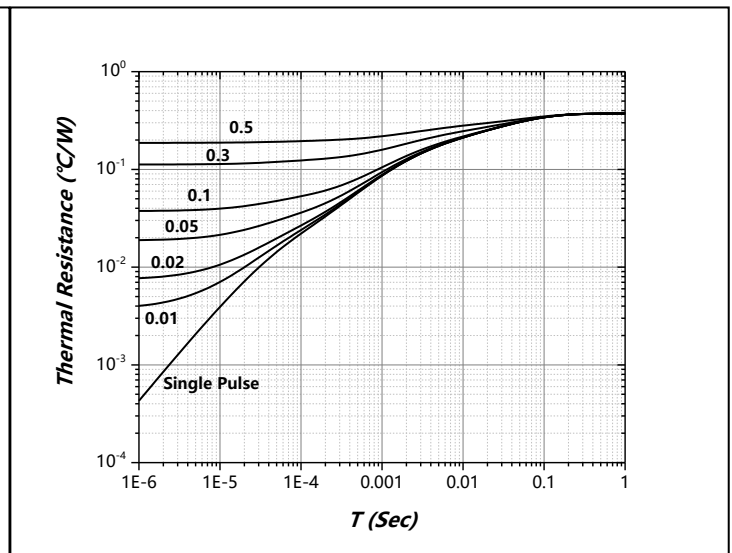
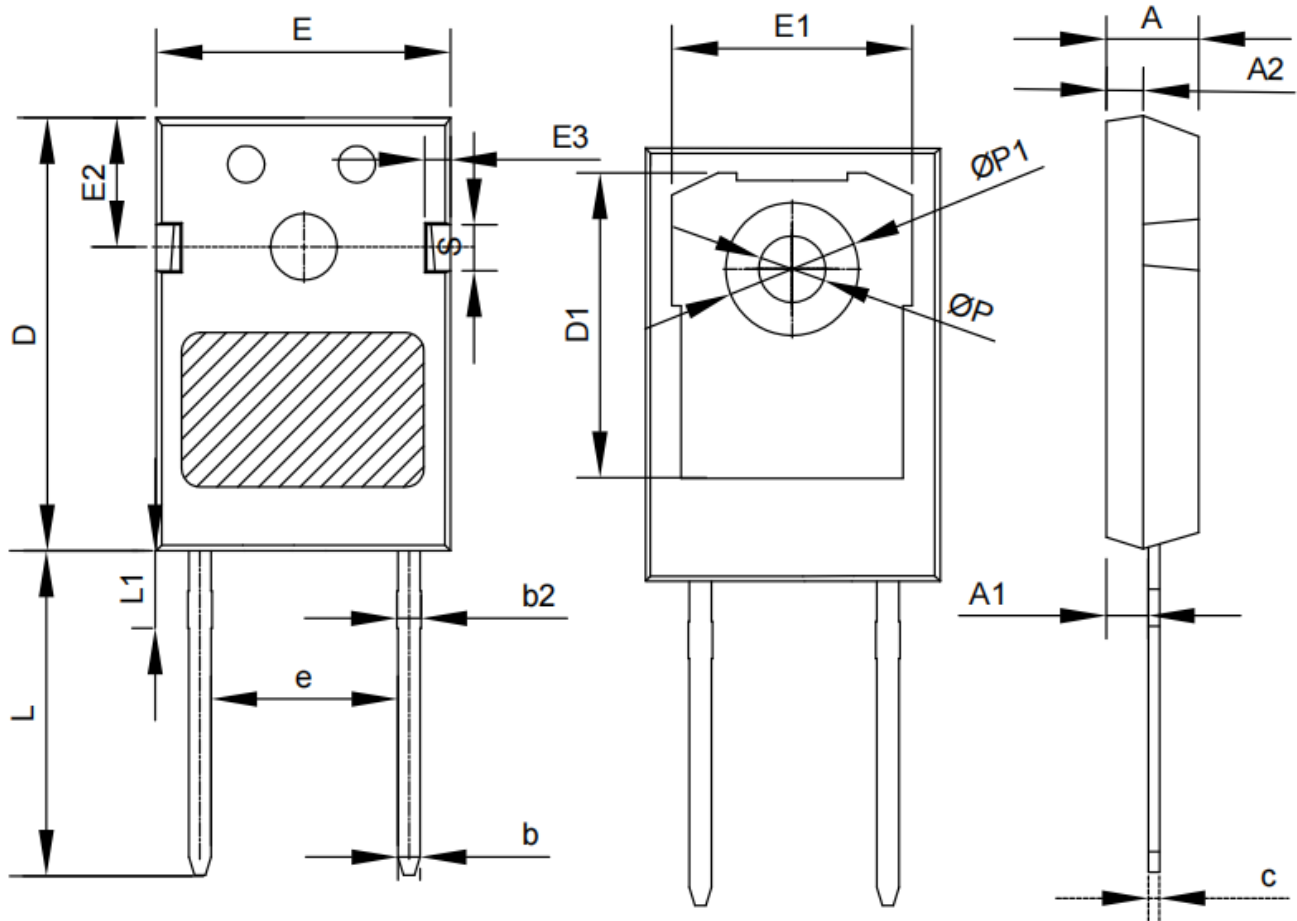


Figure 8. Transient Thermal Impedance



Package Outline: TO-247-2L



| SYMBOL | MILLIMETERS | | |
|--------|-------------|-------|-------|
| | 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 |
| c | 0.51 | 0.61 | 0.75 |
| D | 20.70 | 21.00 | 21.20 |
| D1 | 16.25 | 16.55 | 16.85 |
| E | 15.50 | 15.80 | 16.10 |
| E1 | 13.00 | 13.30 | 13.60 |
| E2 | 4.08 | 5.00 | 5.20 |
| E3 | 2.30 | 2.50 | 2.70 |
| e | 10.88 BSC | | |
| L | 19.62 | 19.92 | 20.22 |
| L1 | - | - | 4.30 |
| S | 6.15 BSC | | |
| ØP | 3.40 | 3.60 | 3.80 |
| ØP1 | - | - | 7.30 |

NOTE:

1. ALL DIMENSIONS ARE LISTED IN MILLIMETERS, ANGLES ARE IN DEGREES.
2. ALL METAL SURFACES ARE TIN PLATED (MATTE), EXCEPT AREA OF CUT.



Product Ordering Information

| Order Number | Packing Type |
|--------------|--------------|
| NC1D120C30KT | Tube |



Revision History

| Revision | Date | Subjects (major changes since last revision) |
|----------|--------------|--|
| 1.0 | 29 Mar. 2023 | Official first release |

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