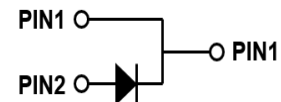


**SMDU40C120K4****40.0A SiC SCHOTTKY BARRIER DIODE****FEATURE**

- . 1200V Schottky Diode,100% avalanche tested\*
- . Zero Reverse Recovery/Zero Forward Recovery
- . High Efficiency Operation
- . Extremely Fast Switching
- . Temperature Independent Switching Behavior

**TYPICAL APPLICATIONS**

- . Switch mode power supply
- . Power factor correction Solar Invertor
- . Solar inverter
- . Uninterruptible power supply



\*20% rating current,5 mH inductance.

**MAXIMUM RATINGS** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

| Parameter                                                                                          | Symbol         | Value       | Units            |
|----------------------------------------------------------------------------------------------------|----------------|-------------|------------------|
| Maximum Recurrent Peak Reverse Voltage                                                             | $V_{RRM}$      | 1200        | V                |
| DC peak blocking Voltage                                                                           | $V_{DC}$       | 1200        | V                |
| Maximum Average Forward Rectified Current<br>at $T_C=150^\circ\text{C}$                            | $I_{F(AV)}$    | 40          | A                |
| Non-Repetitive Peak Forward Surge Current<br>$T_C=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse | $I_{FSM}$      | 265         | A                |
| Total power dissipation $T_C=25^\circ\text{C}$                                                     | $P_D$          | 250         | W                |
| Operation Junction Temperature and Storage Temperature                                             | $T_J, T_{STG}$ | -40 to +175 | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

| Parameter               | Symbol                                                 | Min      | Typ  | Max  | Units         |
|-------------------------|--------------------------------------------------------|----------|------|------|---------------|
| DC blocking voltage     | $I_R=250\mu\text{A}, T_j=25^\circ\text{C}$             | $V_{DC}$ | 1200 |      | V             |
| Forward voltage         | $I_F=40\text{A}, T_j=25^\circ\text{C}$                 | $V_F$    | 1.50 | 1.75 | V             |
|                         | $I_F=40\text{A}, T_j=175^\circ\text{C}$                |          | 2.25 |      |               |
| Reverse current         | $V_R=1200\text{V}, T_j=25^\circ\text{C}$               | $I_R$    | 15   | 300  | $\mu\text{A}$ |
|                         | $V_R=1200\text{V}, T_j=175^\circ\text{C}$              |          | 80   |      |               |
| Total capacitive charge | $V_R=800\text{V}$                                      | $Q_C$    | 149  | ---  | nC            |
| Total capacitance       | $V_R=0\text{V}, T_j=25^\circ\text{C}, f=1\text{MHZ}$   | $C$      | 2589 | ---  | pF            |
|                         | $V_R=400\text{V}, T_j=25^\circ\text{C}, f=1\text{MHZ}$ |          | 139  | ---  |               |
|                         | $V_R=800\text{V}, T_j=25^\circ\text{C}, f=1\text{MHZ}$ |          | 100  | ---  |               |

**THERMAL CHARACTERISTICS** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

| Parameter                                   | Symbol     | Typ | Max | Units              |
|---------------------------------------------|------------|-----|-----|--------------------|
| Typical Thermal Resistance Junction to Case | $R_{(JC)}$ | 0.6 | --- | $^\circ\text{C/W}$ |



## RATING AND CHARACTERISTIC CURVES

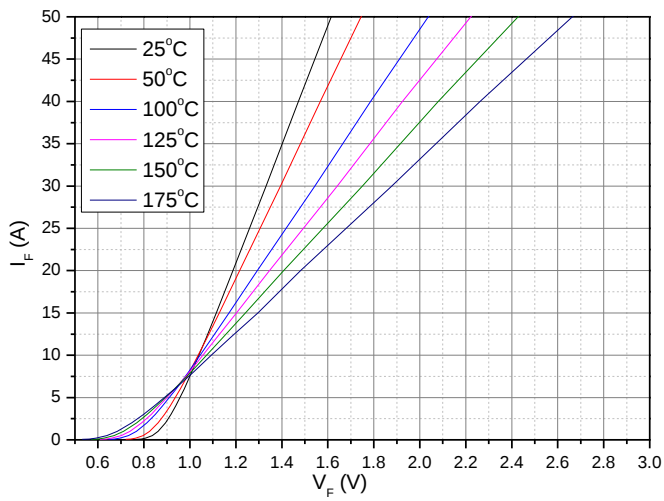


Figure 1. Forward Characteristics

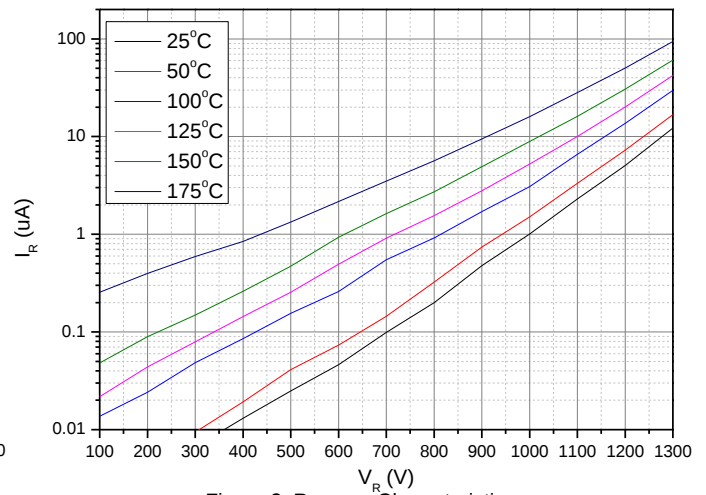


Figure 2. Reverse Characteristics

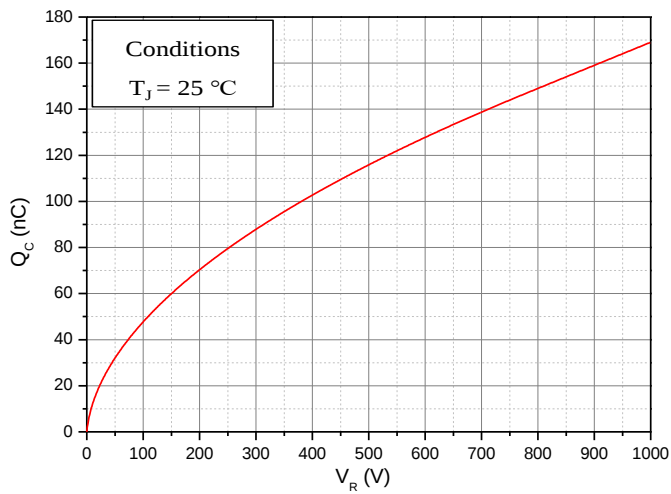


Figure 3. Total Capacitance Charge vs. Reverse Voltage

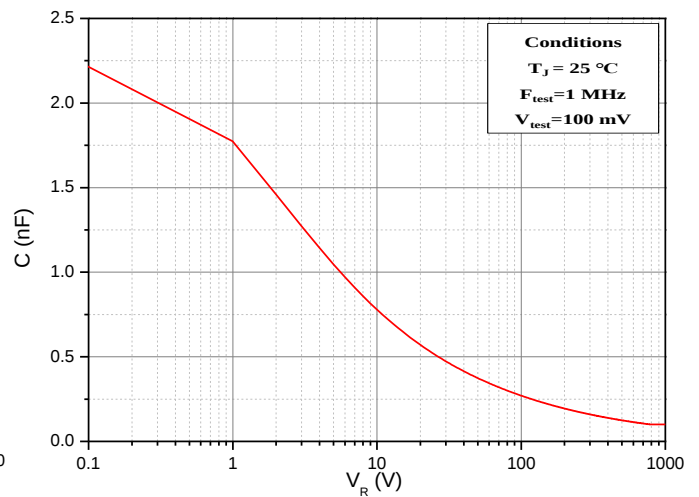
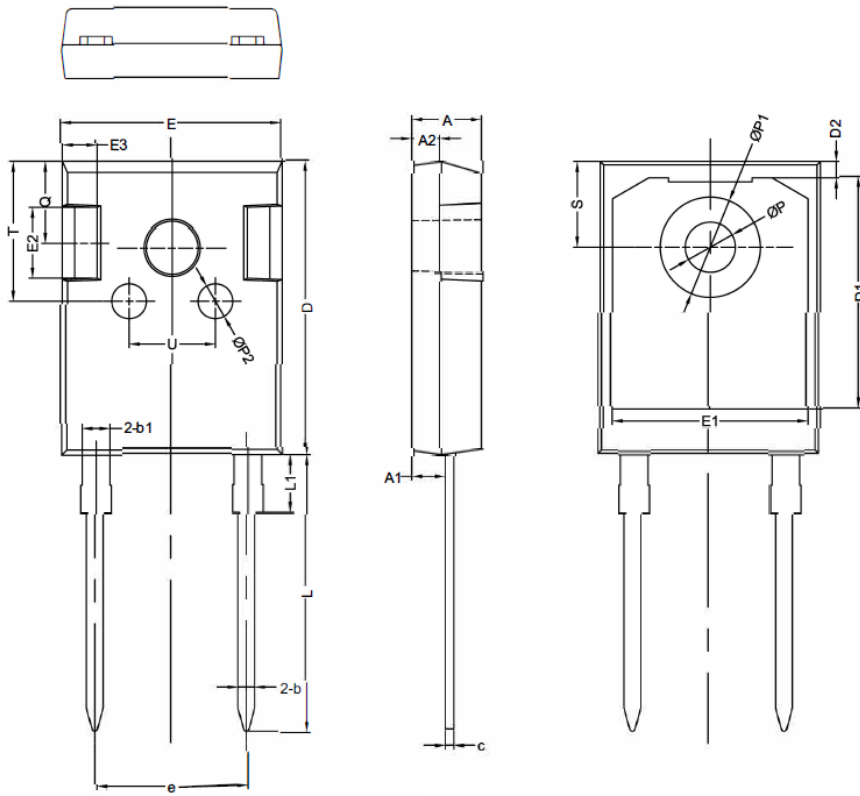


Figure 4. Capacitance vs. Reverse Voltage



## TO-247-2L PACKAGE OUTLINE



|    | MIN   | MON   | MAX   |
|----|-------|-------|-------|
| A  | 4.80  | 5.00  | 5.20  |
| A1 | 2.21  | 2.41  | 2.61  |
| A2 | 1.90  | 2.00  | 2.10  |
| b  | 1.10  | 1.20  | 1.35  |
| b1 |       | 2.00  |       |
| c  | 0.55  | 0.60  | 0.75  |
| D  | 20.80 | 21.00 | 21.20 |
| D1 |       | 16.58 |       |
| D2 |       | 1.17  |       |
| E  | 15.60 | 15.80 | 16.0  |
| E1 |       | 14.02 |       |
| E2 |       | 5.00  |       |
| E3 |       | 2.50  |       |
| e  |       | 10.88 |       |
| L  | 19.42 | 19.92 | 20.42 |
| L1 |       | 4.13  |       |
| P  | 3.50  | 3.60  | 3.70  |
| P1 |       | 7.19  |       |
| P2 |       | 2.50  |       |
| Q  |       | 5.80  |       |
| S  | 6.05  | 6.15  | 6.25  |
| T  |       | 10.00 |       |
| U  |       | 6.20  |       |