# 6A,200V Superfast Rectifier

## Features

- Low leakage current
- Low forward voltage drop
- Glass passivated chip junction
- Moisture sensitivity: level 1, per J-STD-020
- Halogen-free according to IEC 61249-2-21 definition
- High temperature soldering guaranteed: 260℃/10 seconds

RoHS COMPLIANT

eSGC (TO-277B)

## Applications

For use in secondary rectification and freewheeling for superfast switching speeds of converters in consumer applications.

## Maximum Ratings & Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | SGC0603U | Unit |
|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 200 | V |
| Maximum RMS voltage | $V_{RMS}$ | 140 | V |
| Maximum DC blocking voltage | $V_{DC}$ | 200 | V |
| Maximum average forward rectified current | $I_{F(AV)}$ | 6 | A |
| Peak forward surge current,8.3ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$ | 150 | A |
| Operating junction temperature range | $T_J$ | -55 to +150 | °C |
| Storage temperature range | $T_{STG}$ | -55 to +150 | °C |

## Thermal-Mechanical Specifications ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Typ | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 40 | °C /W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 15 | °C /W |
| Thermal Resistance, Junction to Lead | $R_{\theta JL}$ | 7 | °C /W |

| **Electrical Specifications**($T_A$=25℃ unless otherwise noted) | | | | |
|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **SGC0603U** | **Unit** |
| Forward Drop Voltage | $V_F$ | $I_F$=6A<br>$T_A$=25℃ | 0.94 | V |
| | | $I_F$=6A<br>$T_A$=125℃ | 0.80 | |
| Reverse leakage current @$V_R$ | $I_R$ | $T_J$ =25℃ | 2 | uA |
| | | $T_J$ =125℃ | 50 | |
| Typical junction capacitance | $C_J$ | 4.0 V<br>1 MHZ | 60 | pF |
| Maximum reverse recovery time | trr | $I_F$=0.5A,<br>$I_R$=1.0A,<br>$I_{RR}$=0.25A | 35 | nS |

Note：

1. Mounted on copper pad area of 30 x 30mm to each terminal.

## Ratings and Characteristics Curves

($T_A$ = 25℃ unless otherwise noted)

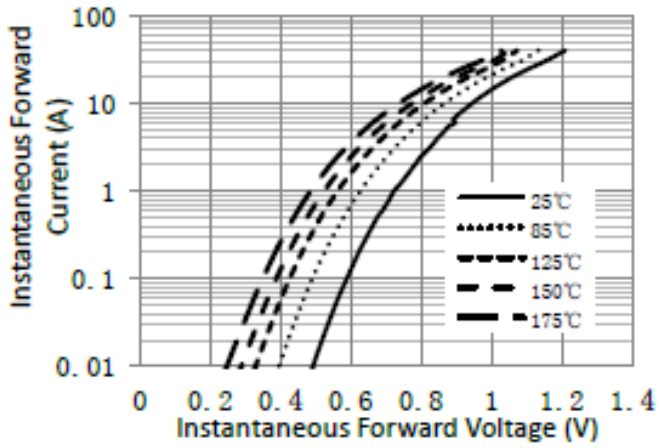



Figure 1. Typical Instantaneous Forward Characteristics

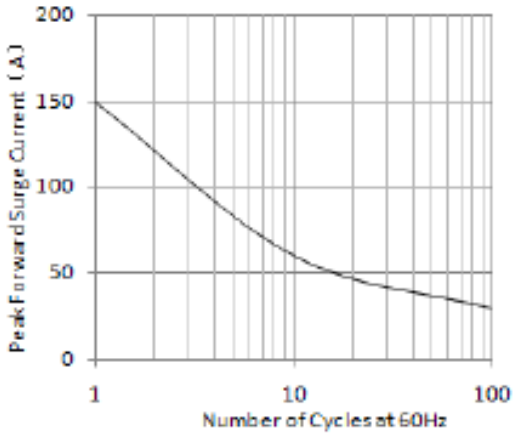



Figure 2.Maximum Non-Repetitive Peak Forward Surge Current

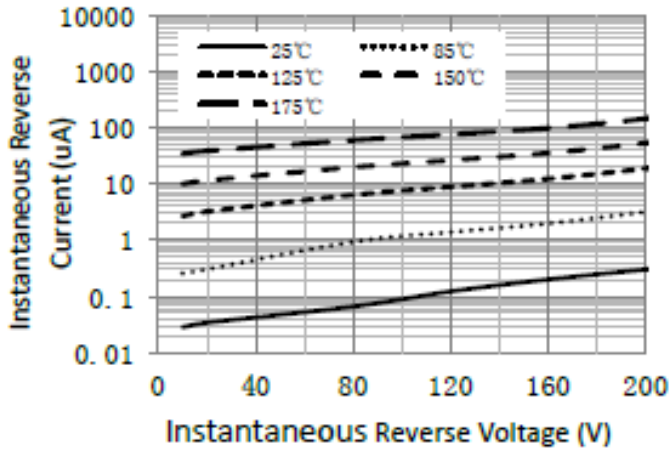



Figure 3. Typical Instantaneous Reverse Characteristics

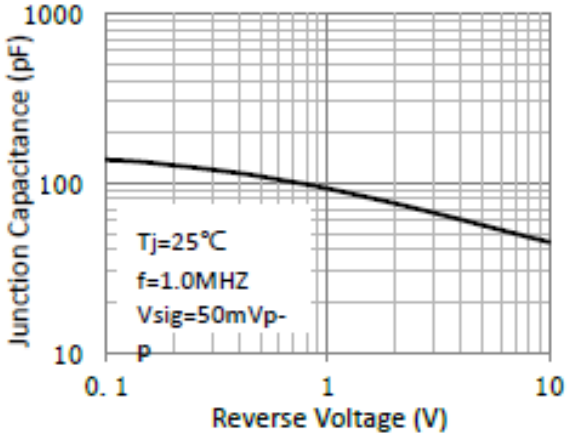



Figure 4. Typical Junction Capacitance

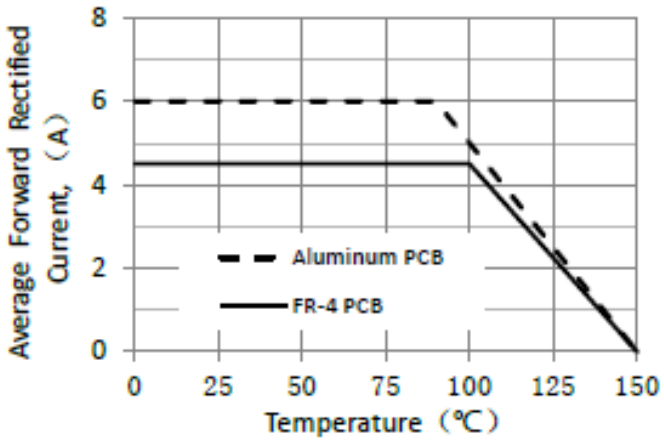
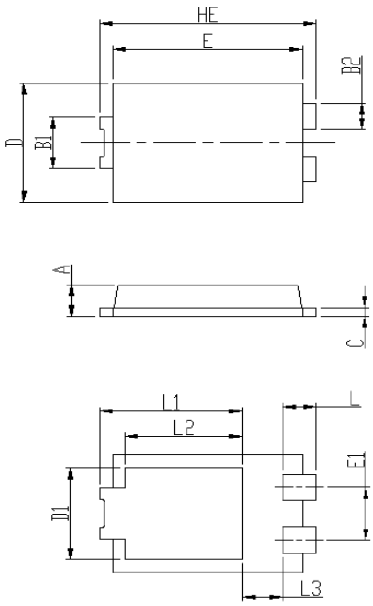



Figure 5.Forward Current Derating Curve

## Package Outline Dimensions

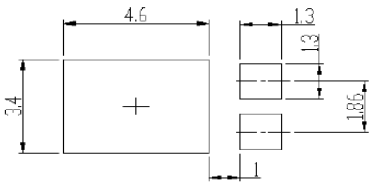
in inches (millimeters)

### eSGC (TO-277B)




| DIM | Unit: mm | | Unit: inch | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| HE | 6.4 | 6.6 | 0.252 | 0.260 |
| E | 5.6 | 5.8 | 0.220 | 0.228 |
| D | 4.1 | 4.3 | 0.161 | 0.169 |
| B1 | 1.7 | 1.9 | 0.067 | 0.075 |
| B2 | 0.8 | 1 | 0.031 | 0.039 |
| A | 1.05 | 1.2 | 0.041 | 0.047 |
| C | 0.3 | 0.4 | 0.012 | 0.016 |
| L | 0.85 | 1.1 | 0.033 | 0.043 |
| L1 | 4.2 | 4.4 | 0.165 | 0.173 |
| L2 | 3.52 Typ. | | 0.139 Typ. | |
| L3 | 1.1 | 1.4 | 0.043 | 0.055 |
| D1 | 3 | 3.3 | 0.118 | 0.130 |
| E1 | 1.86 Typ. | | 0.073 Typ. | |

Soldering footprint




## Revision History

| Document Version | Date of release | Description of changes |
|---|---|---|
| Rev.A | 2021.06.01 | Released Datasheet |
| Rev.B | 2023.10.13 | Modify document format |
| Rev.C | 2023.12.29 | Modify package name |

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