# SG2M018120BJ

**TriQSiC™ 1200V Silicon Carbide Power MOSFET G2** N Channel Enhancement

## Features

- High speed switching
- Very low switching losses
- Fully controllable dv/dt
- High blocking

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**F**

# 1 Maximum ratings

**Table 2 Maximum rating** (Tc = 25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|---|---|---|---|---|---|
| V (v | | | | | |

# 2 Electrical characteristics

## 2.1 Static characteristics

**Table 4 Static characteristics** (Tc = 25°C unless otherwise specified)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $Q_{gs}$ | Gate source charge | - | 34 | - | nC | $V_{DS}$ = 800V, $V_{GS}$ = -4/+18V<br>$I_D$ = 64A | Fig.12 |
| $Q_{gd}$ | Gate drain charge | - | 32 | - | | | |
| $Q_g$ | Gate charge | - | 106 | - | | | |

## 2.3 Switching characteristics

**Table 6 Dynamic characteristics**(Tc = 25°C unless otherwise specified,the data comes from TO-247-4L)

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|---|
| $E_{on}$ | Turn on switching energy | - | 740 | - | | | |

# 3 Electrical characteristic diagrams

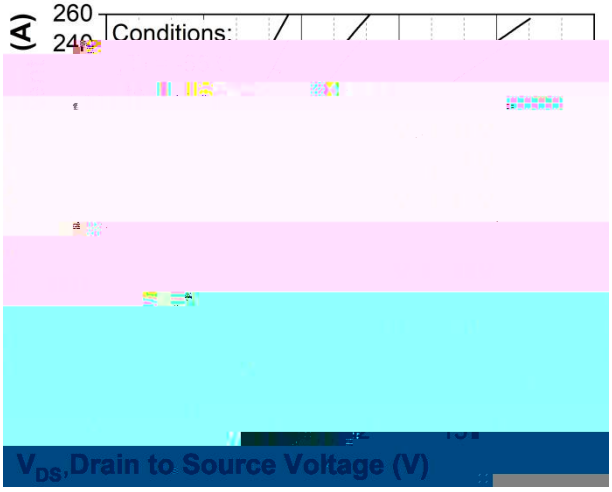



Figure 1. Output characteristics $T_J$ = -55 ºC

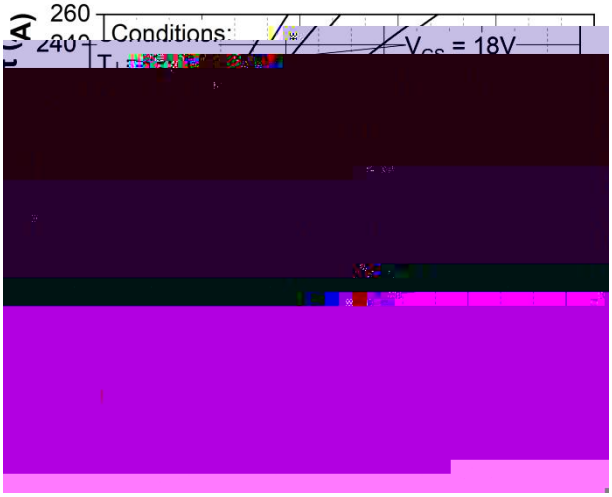



Figure 2. Output characteristics $T_J$ = 25 ºC

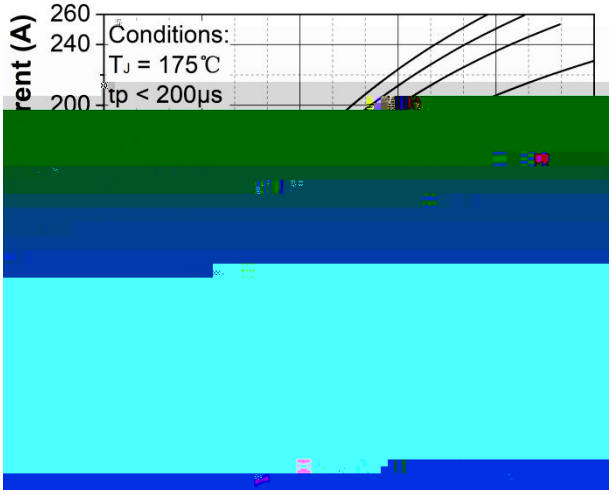



Figure 3. Output characteristics $T_J$ = 175 ºC

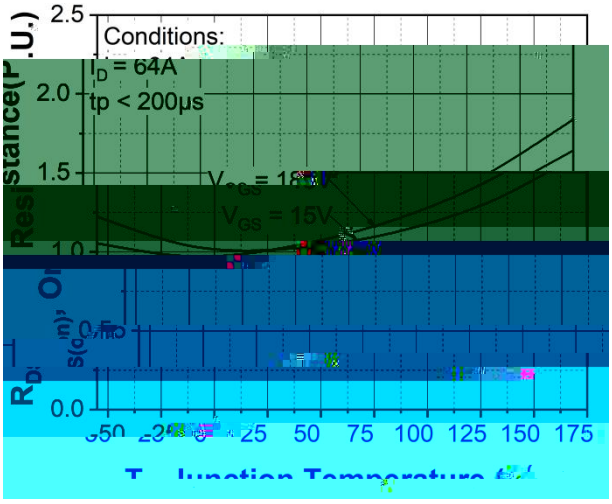



Figure 4. Normalized on-resistance vs. temperature

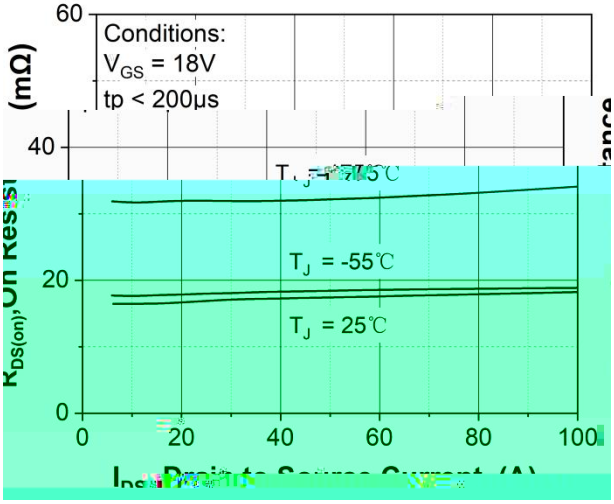



Figure 5. On-resistance vs. drain current for various temperatures

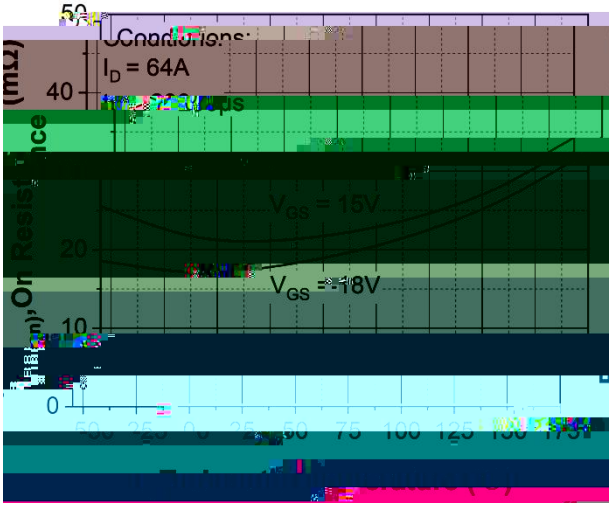



Figure 6. On-resistance vs. temperature for various gate voltages

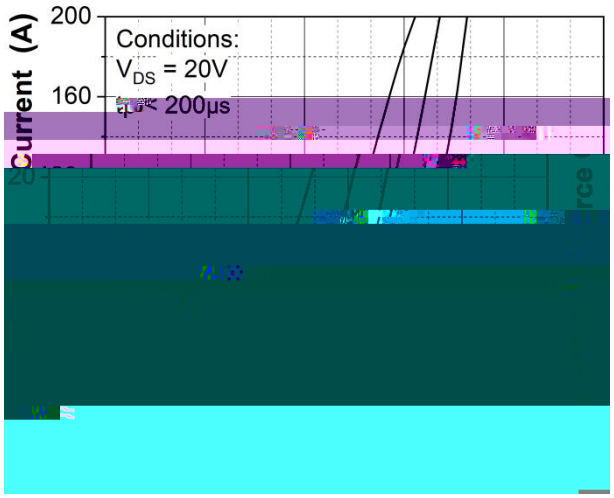



Figure 7. Transfer characteristic for various junction temperatures

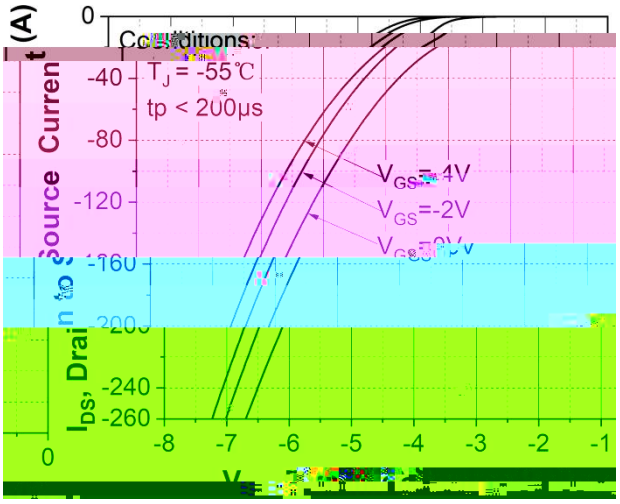



Figure 8. Body diode characteristic at $T_J$ = -55 ºC

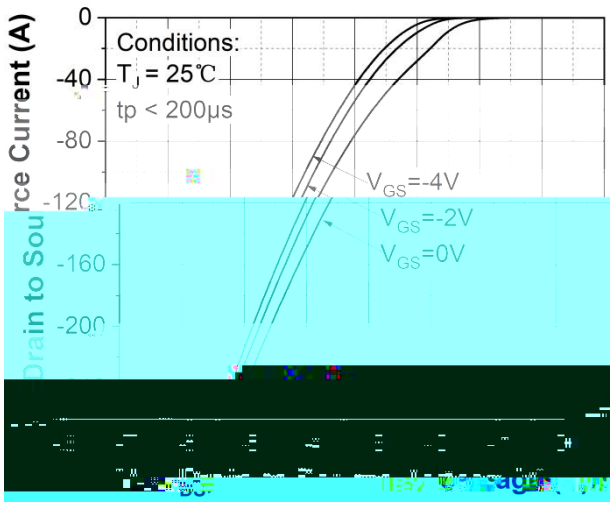



Figure 9. Body diode characteristic at $T_J$ = 25 ºC

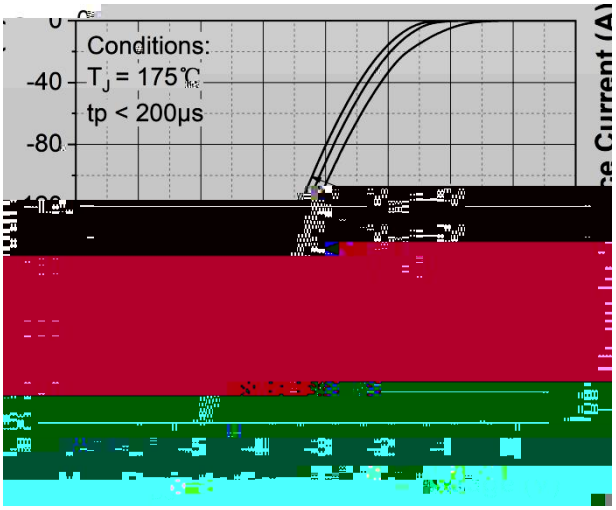



Figure 10. Body diode characteristic at $T_J$ = 175ºC

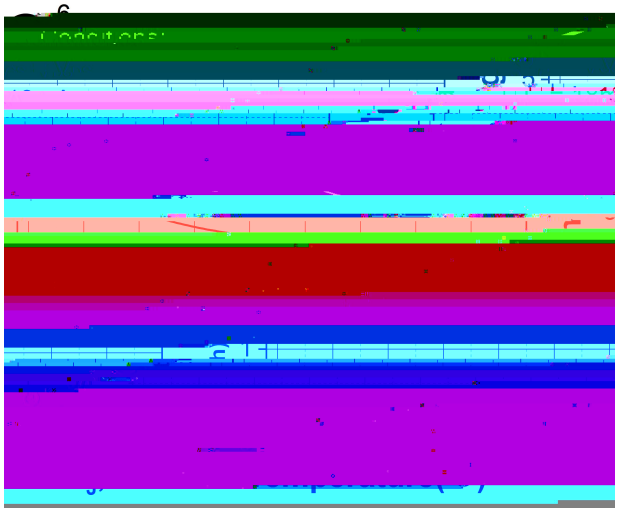


Figure 11. Threshold voltage vs. temperature

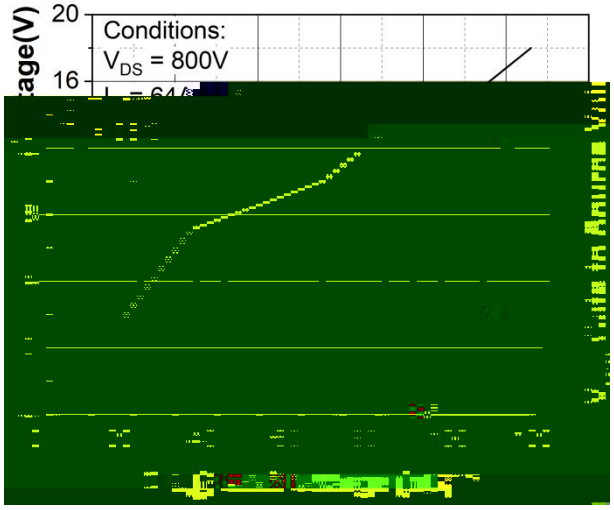



Figure 12. Gate charge characteristic

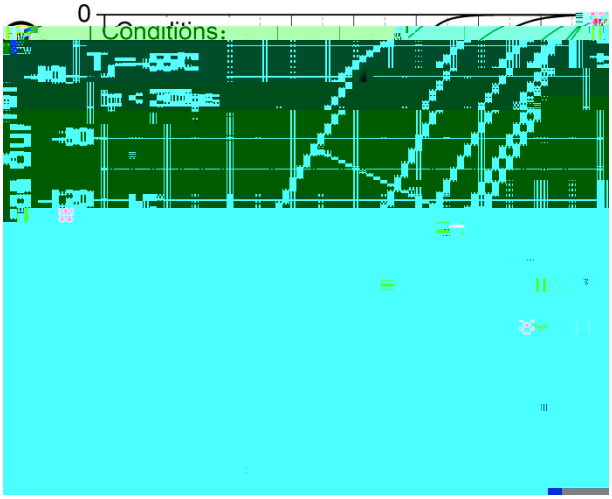



Figure 13. 3rd quadrant characteristic at $T_J$ = -55 ºC

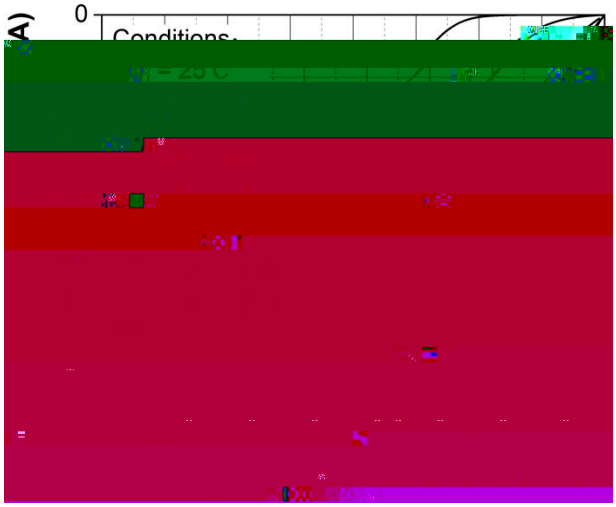



Figure 14. 3rd quadrant characteristic at $T_J$ = 25 ºC

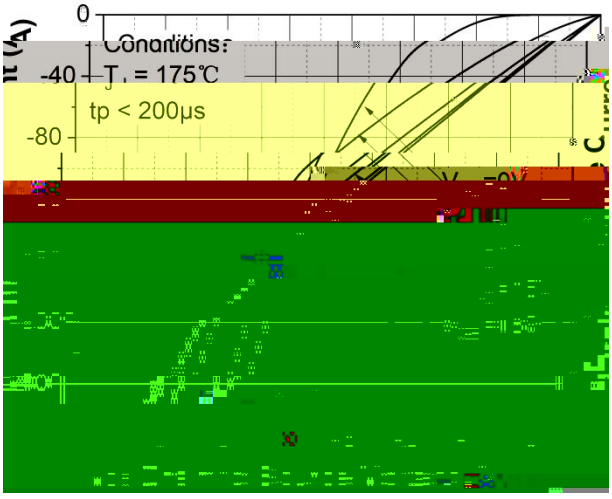



Figure 15. 3rd quadrant characteristic at $T_J$ = 175 ºC

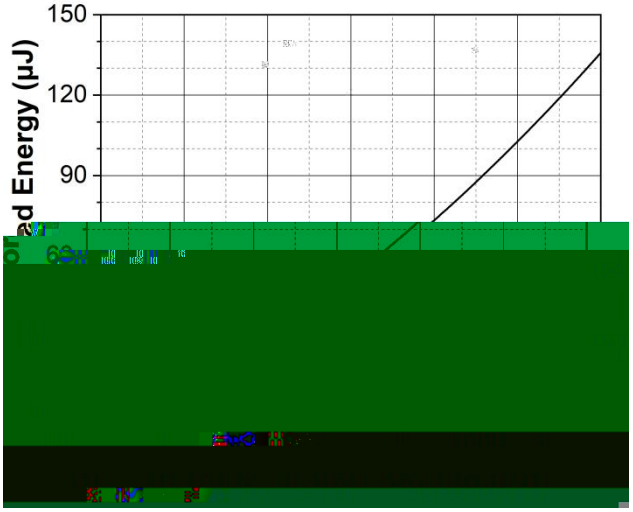



Figure 16. Output capacitor stored energy




Figure 17. Capacitances vs. drain-source voltage (0 - 200V)

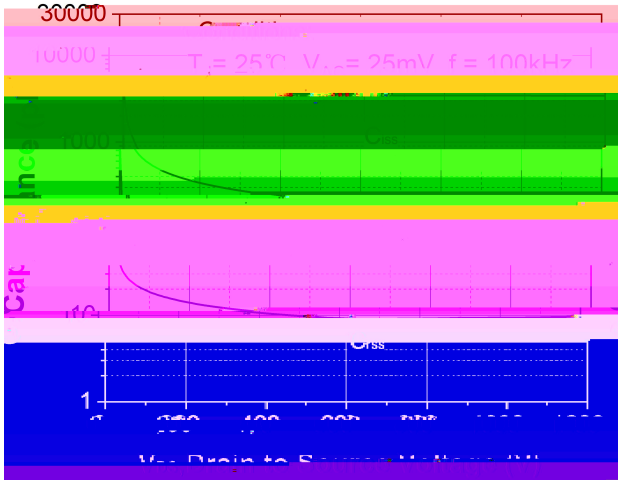



Figure 18. Capacitances vs. drain-source voltage (0 - 1200V)

# 4 Mechanical parameters

## 4.1 Dimensions and metallization

| Parameter | Typical value | Unit | Metallization |
|---|---|---|---|
| Die size W x L | 4.46*5.02 | mm | |
| Gate pad size W x L | 0.80*0.80 | mm | |
| Die thickness | 175 | μm | |

To

# 5 Test conditions

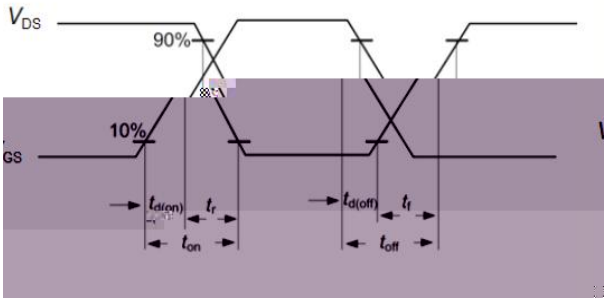



Figure A. Definition of switching times

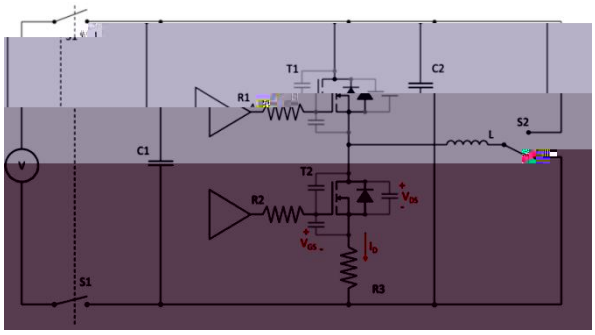



Figure B. Dynamic test cwes

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