# S3M009075NK-A

**TriQSiC™750V Silicon Carbide Power MOSFET G3** N Channel Enhancement witching

## Features

- High speed switching
- Very low switching losses
- High blocking voltage with low on-resistance
- Temperature independent turn-off switching losses
- Halogen free, RoHS compliant

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**2. : .**

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Datasheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $Q_{gs}$ | Gate source charge | - | 60 | - | nC | $V_{DS}$ = 500V, $V_{GS}$ = -4/+18V<br>$I_D$ = 100A | Fig.12 |
| $Q_{gd}$ | Gate drain charge | - | 42 | - | | | |
| $Q_g$ | Gate charge | - | 195 | - | | | |

## 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 | - | 980 | - | μJ | $V_{DS}$ = 500V, $V_{GS}$ = -4/+18V<br>$I_D$ = 100A, Rg = 2.5Ω,<br>L = 16.7μH | |
| $E_{off}$ | Turn off switching energy | - | 831 | - | | | |
| $t_{d\ on}$ | Turn on delay time | - | 36 | - | ns | | |
| $t_r$ | Rise time | - | 43 | - | | | |
| $t_{d\ off}$ | Turn off delay time | - | 83 | - | | | |
| $t_f$ | Fall time | - | 13 | - | | | |

**Table 7 Body î**

# 3 Electrical characteristic diagrams

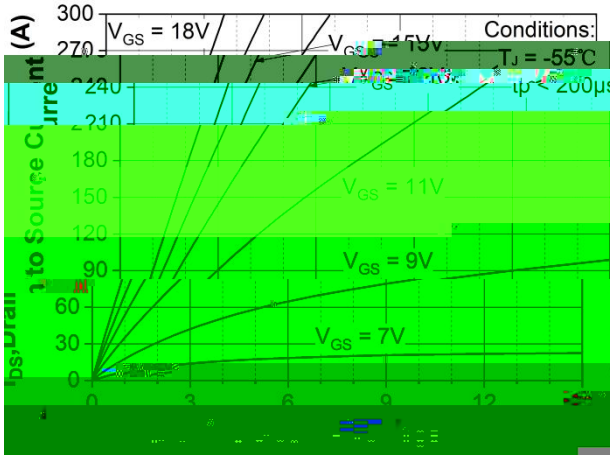



Figure 1. Output characteristics $T_J$ = -55 ºC

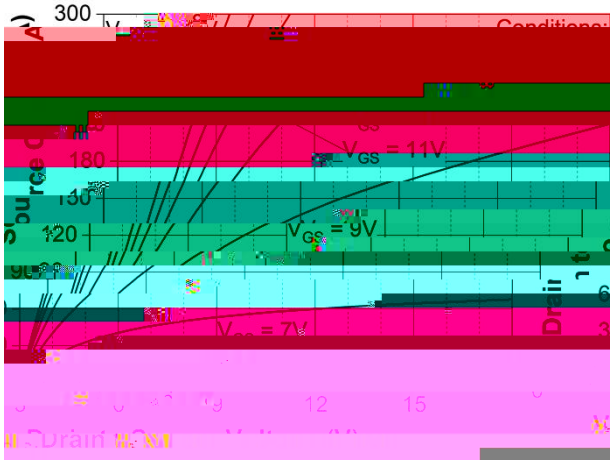



Figure 2. Output characteristics $T_J$ = 25 ºC

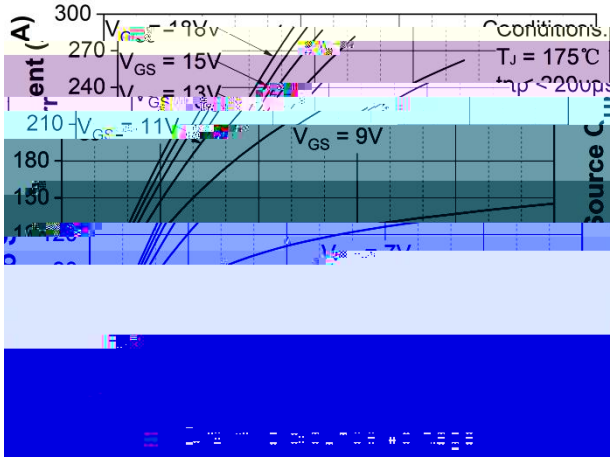



Figure 3. Output characteristics $T_J$ = 175 ºC

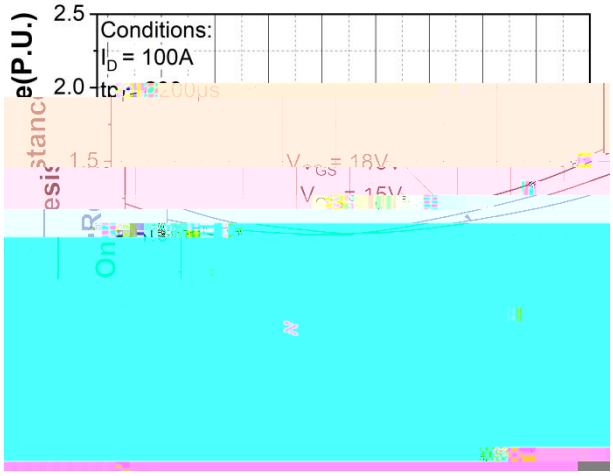



Figure 4. Normalized on-resistance vs. temperature

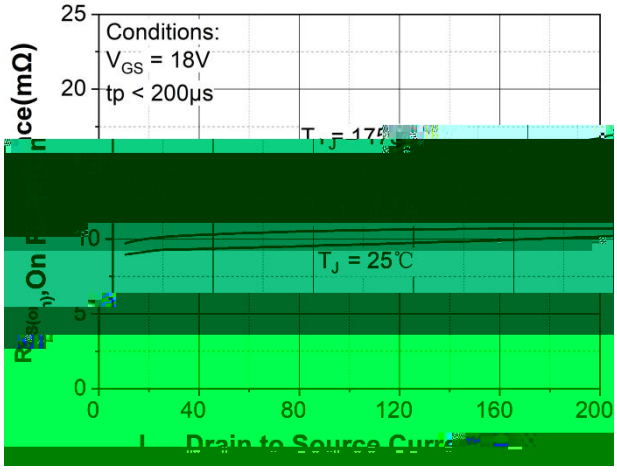



Figure 5. On-resistance vs. drain current for various temperatures

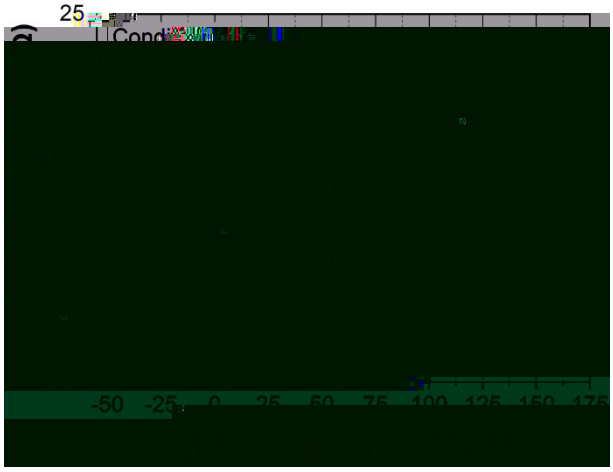


Figure 6. On-resistance vs. temperature for various gate voltages

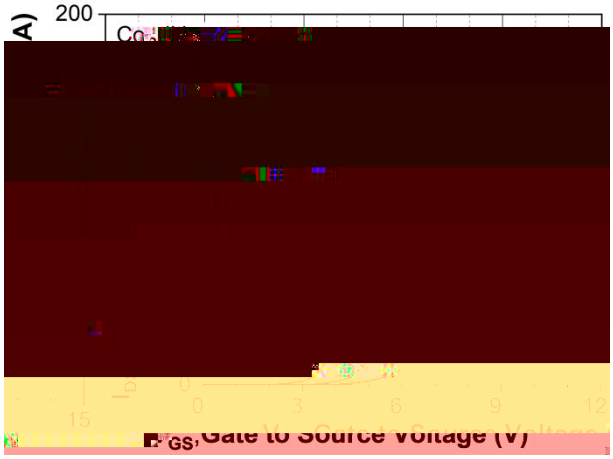


Figure 7. Transfer characteristic for various junction temperatures

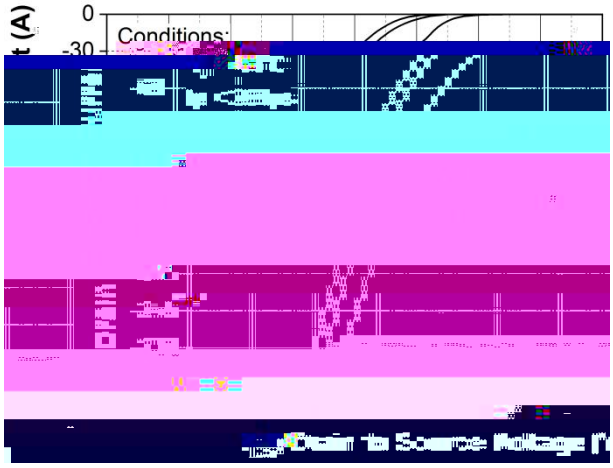


Figure 8. Body diode characteristic at $T_J$ = -55 ºC

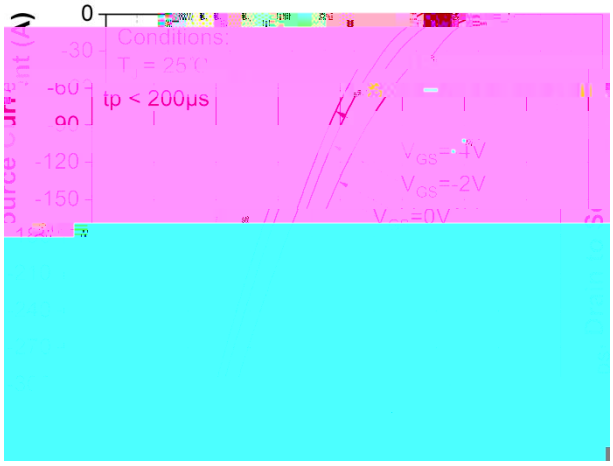



Figure 9. Body diode characteristic at $T_J$ = 25 ºC



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

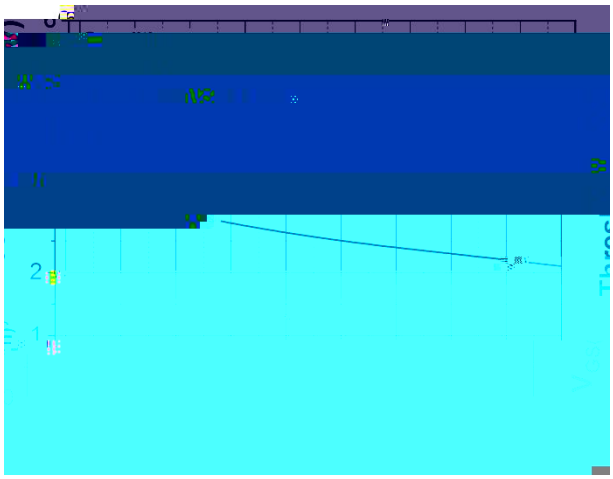


Figure 11. Threshold voltage vs. temperature

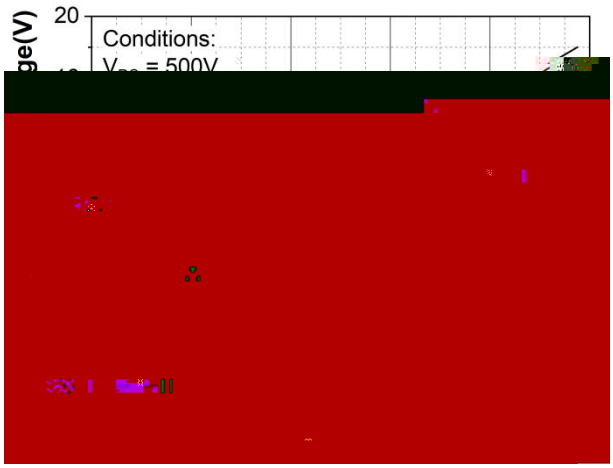



Figure 12. Gate charge characteristic

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Datas

# 4 Mechanical parameters

## 4.1 Dimensions and metallization

| Parameter | Typical value | Unit | Metallization |
|---|---|---|---|
| Die size W x L | 5 * 5 | mm | |
| Gate pad size W x L | 0.78 * 0.68 | mm | |
| Source pad size W x L | 1.9 * 3.1 | mm | |
| Kelvin pad size W x L | 1. | | |

# S3M0 5NK-A

**750V SiC**

## Revision history

| Document version | Date of release | Document stage | Description of changes |
|---|---|---|---|
| V01_00 | 2026-06-26 | Final | —— |
| | | | |
| | | | |
| | | | |
| | | | |

## Attention

1. **RoHS compliance**

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/ EC (RoHS2), as implemented January 2, 2013.

2. **REACH compliance**

REACh substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Sichain representative to insure you get the most up-to-date REACh SVHC Declaration. REACh banned substance information (REACh Article 67) is also available upon request.

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