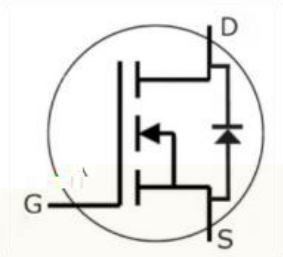
S3M013150NK-A

TriQSiC™1500V Silicon Carbide Power MOSFET G3 N Channel Enhancement

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



Part number	Die size W x L mm
S3M013150NK-A	4.8 * 6.3

Benefits

- Cooling effort reduction
- Efficiency improvement
- Reduced cooling requirements
- Increased power density
- Increased system switching frequency

Applications

- EV motor drive
- PV string inverters
- Solar power optimizer
- Switch mode power supplies

Table 1 Key performance and package parameters

Type	V_{DS}	I_{DS} (T_C=25 , $R_{th\ (j\text{-}c),max}$ ≤ 0.26°C/W)	$R_{DS(on),\ typ}$ (V_{GS} = 18V, I_D = 86A, T_J=25)	$T_{J,max}$
S3M013150NK-A	1500V	149A	13mΩ	175

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1 Maximum ratings 3

2 Electrical ..... [illegible]

1 Maximum ratings

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

2 Electrical characteristics

2.1 Static characteristics

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-source breakdown voltage	1500	-	-	V	V_{GS}	

Q_{gs}	Gate source charge	-	57	-	nC	V_{DS} = 1000V, V_{GS} = -4/+18V I_D = 86A	Fig.12
Q_{gd}	Gate drain charge	-	47	-			
Q_g	Gate charge	-	179	-			

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	-	2407	-	µJ	V_{DS} = 1000V, V_{GS} = -4/+18V I_D = 86A, RG t%ã#'ˆt"ñB ñ0 Sfc 3 -	

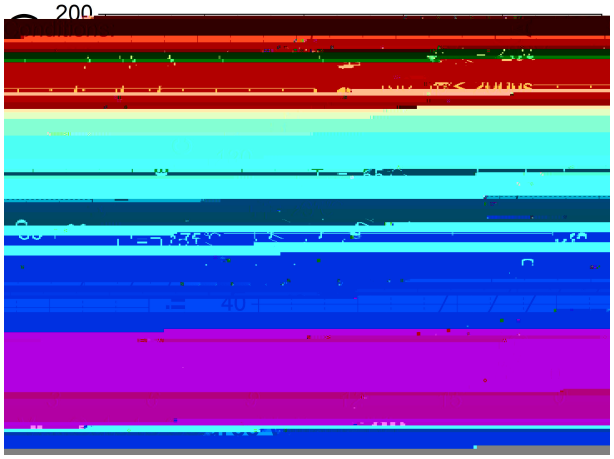


Figure 7. Transfer characteristic for various junction temperatures

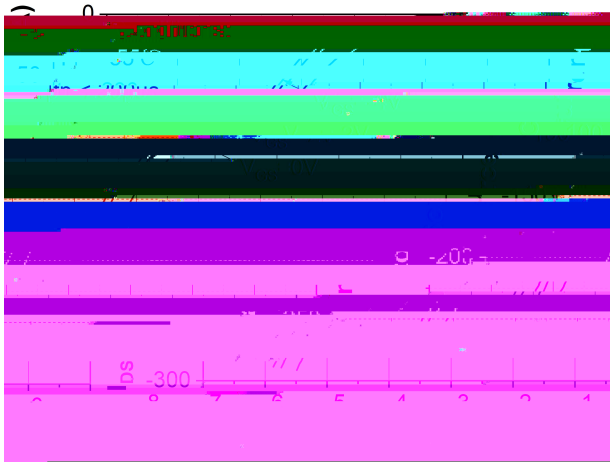


Figure 8. Body diode characteristic at T_J = -55 ºC

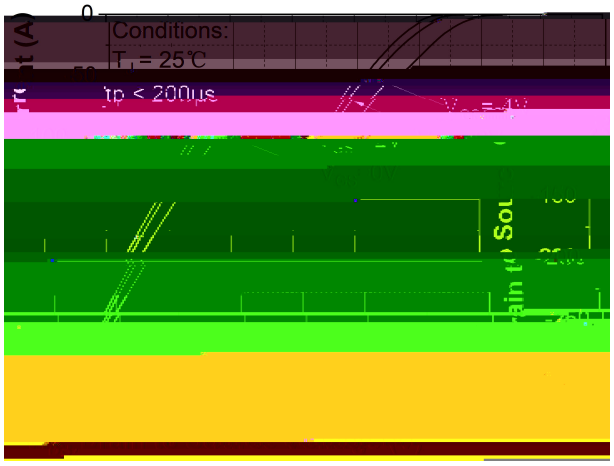


Figure 9. Body diode characteristic at T_J = 25 ºC

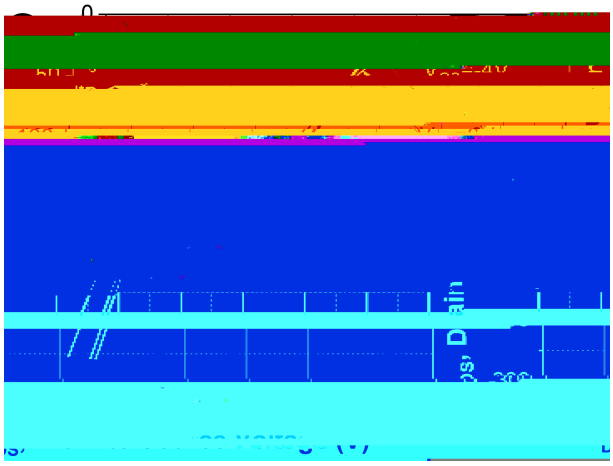


Figure 10. Body diode characteristic at T_J = 175ºC

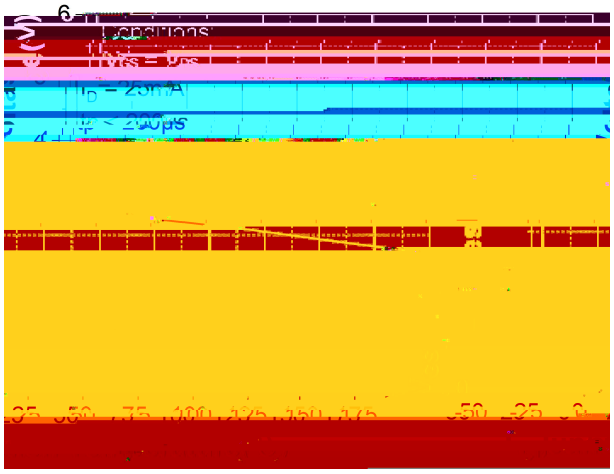


Figure 11. Threshold voltage vs. temperature

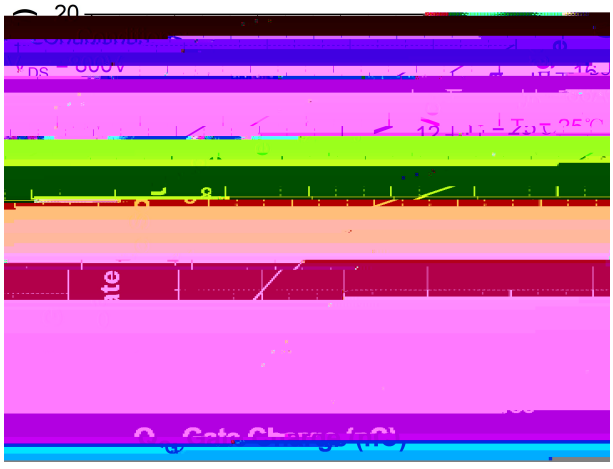


Figure 12. Gate charge characteristic

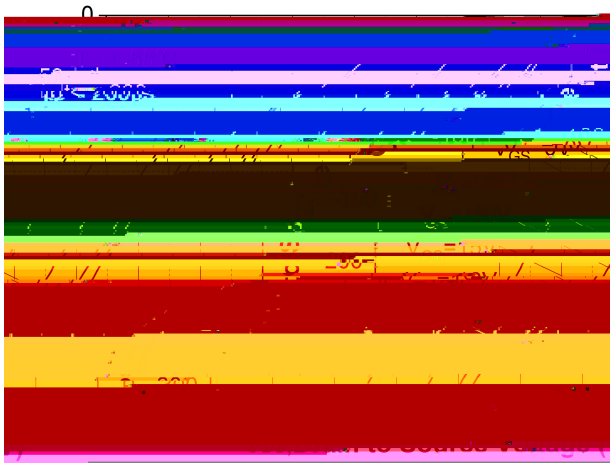


Figure 13. 3rd quadrant characteristic at T_J = -55 ºC

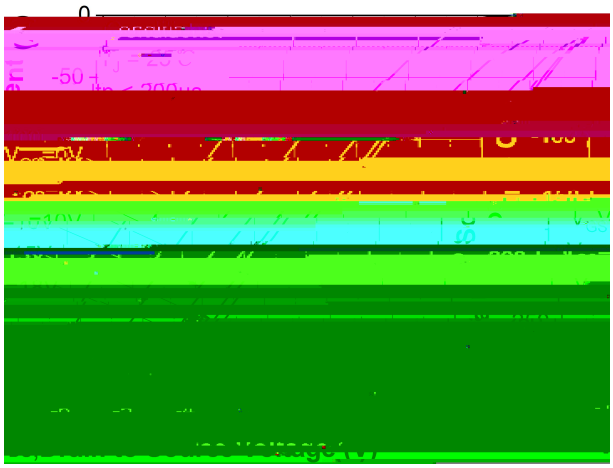


Figure 14. 3rd quadrant characteristic at T_J = 25 ºC

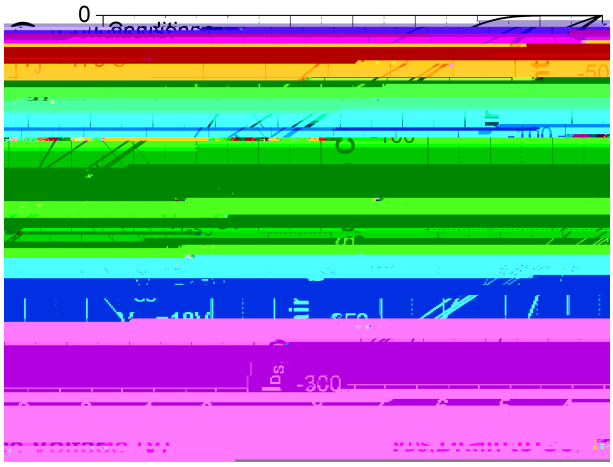


Figure 15. 3rd quadrant characteristic at T_J = 175 ºC

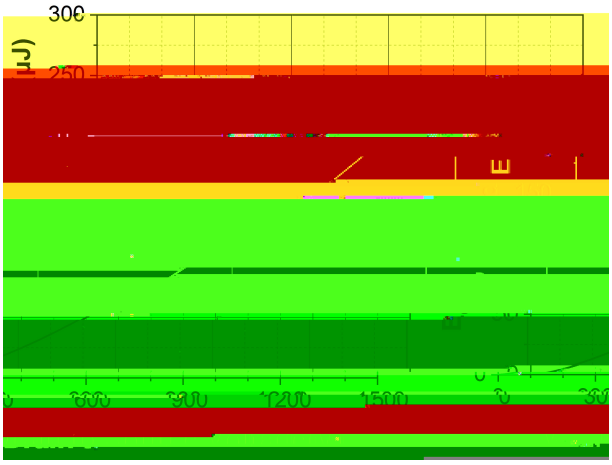


Figure 16. Output capacitor stored energy

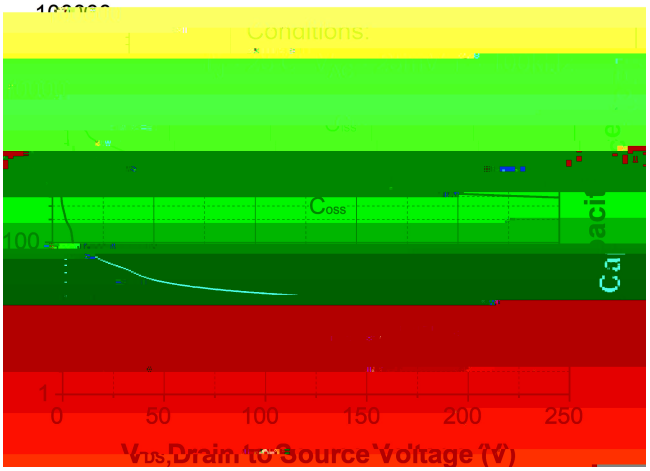


Figure 17. Capacitances vs. drain-source voltage (0 - 250V)

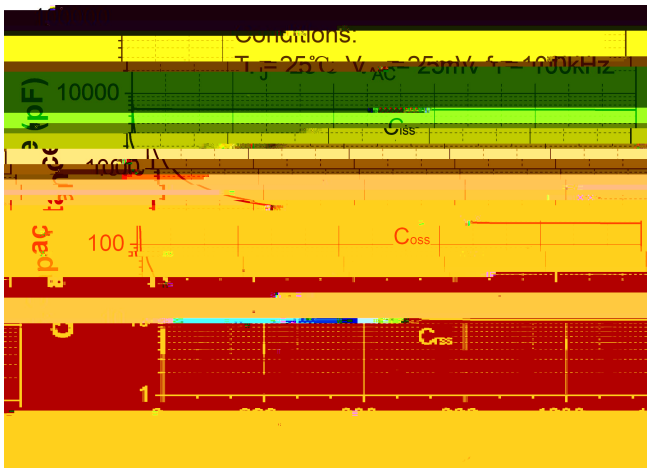


Figure 18. Capacitances vs. drain-source voltage (0 - 1500V)

4 Mechanical parameters

4.1 Dimensions and metallization

Parameter	Value
[redacted]	

5 Test conditions

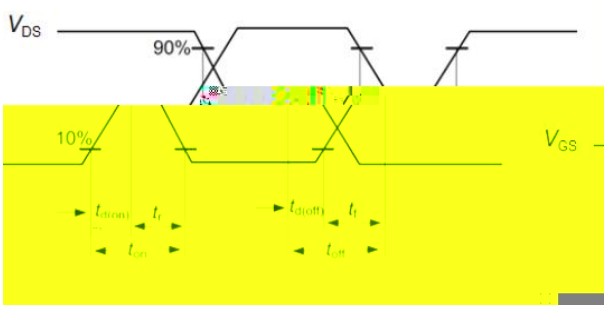


Figure A. Definition of switching times

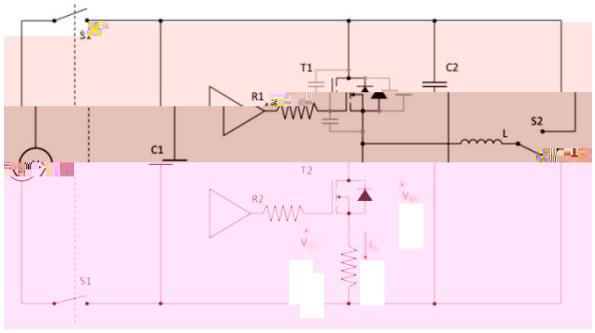


Figure B. Dynamic test circuit

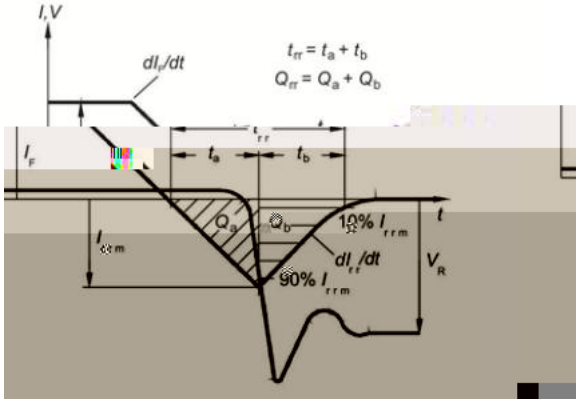


Figure C. Definition of body diode switching characteristics

S3M[illegible]K-A

[illegible]

Revision history

Document version	Date of release	Document stage	Description of changes
V01_00	2026-06-29	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 noti[illegible]

6. Due to technical requirements products may contain dangerous substances. For information on the
please contact Sichain office.

7. Except as otherwise explicitly approved by Sichain in a written document signed by authorized re
Sichain, Sichain' products may not be used in any applications where a failure of the product or any c
thereof can reasonably be expected to result in personal injury.

8. For use of our products in applications requiring a hig