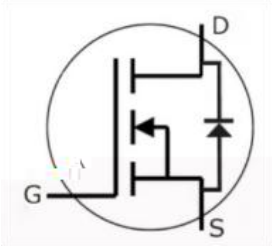
N Channel Enhancement




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

| | |
|---|---|
| S3M010120RK-A | 4.8 * 6.3 |

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

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

| | | ($T_C$=25 , $R_{th\ (j\text{-}c),max}$ ≤ 0.26 °C/W) | ($V_{GS}$ = 18V, $I_D$ = 86A, $T_J$=25 ) | |
|---|---|---|---|---|
| S3M010120RK-A | 1200V | 179A | 10mΩ | 175 |

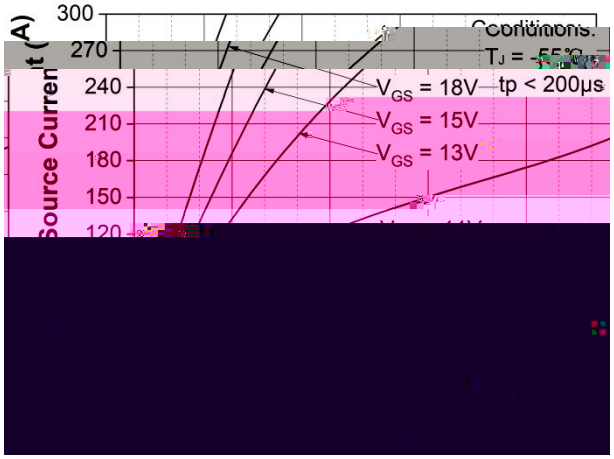



Figure 1. Output characteristics $T_J$ = -55 ºC

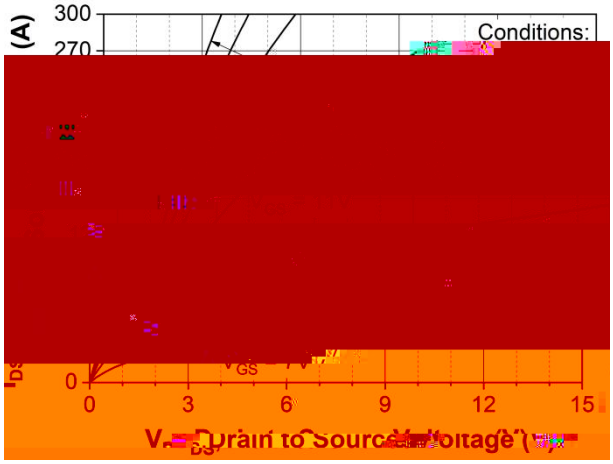



Figure 2. Output characteristics $T_J$ = 25 ºC

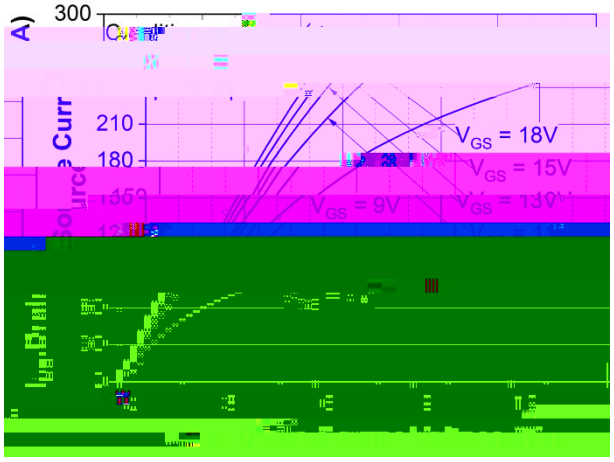



Figure 3. Output characteristics $T_J$ = 175 ºC

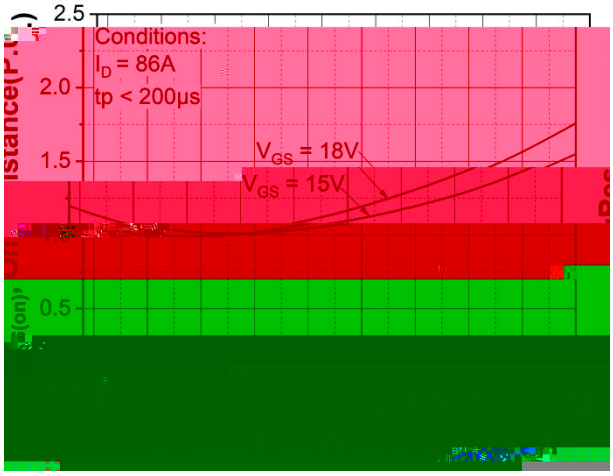



Figure 4. Normalized on-resistance vs. temperature

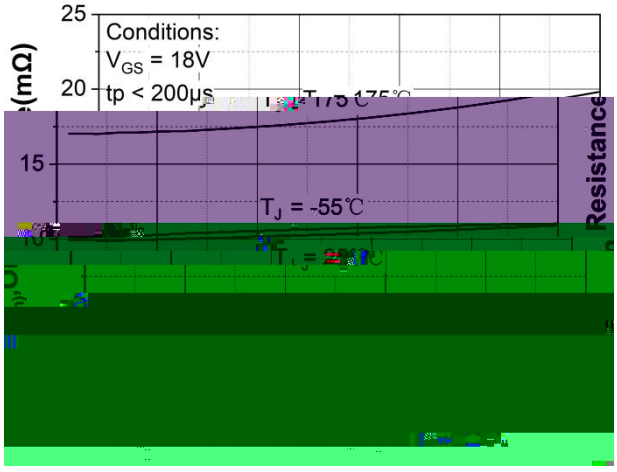



Figure 5. On-resistance vs. drain current for various temperatures

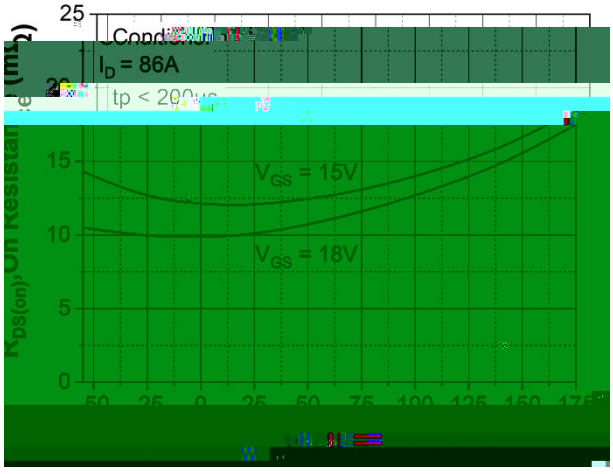



Figure 6. On-resistance vs. temperature for various gate voltages

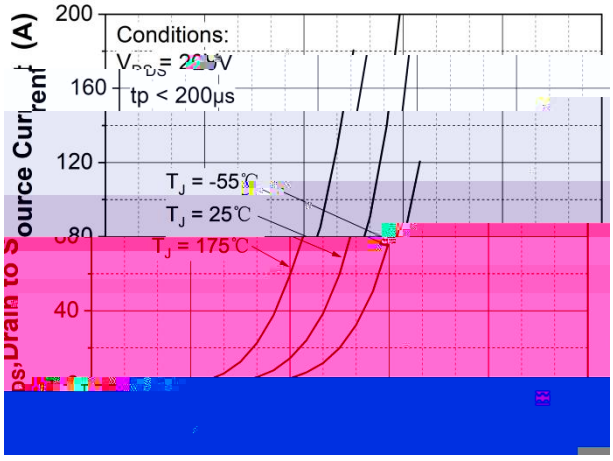



Figure 7. Transfer characteristic for various junction temperatures

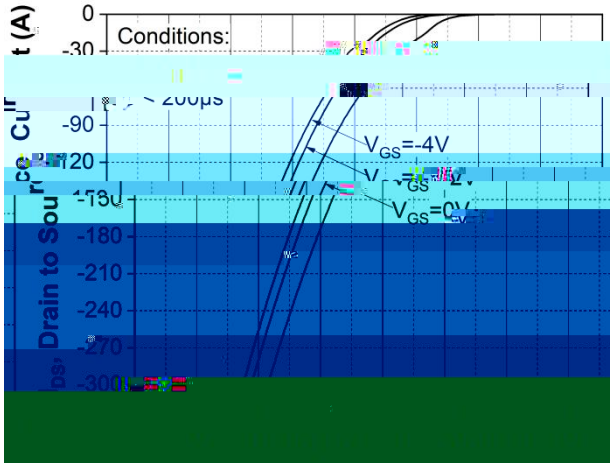



Figure 8. Body diode characteristic at $T_J$ = -55 ºC

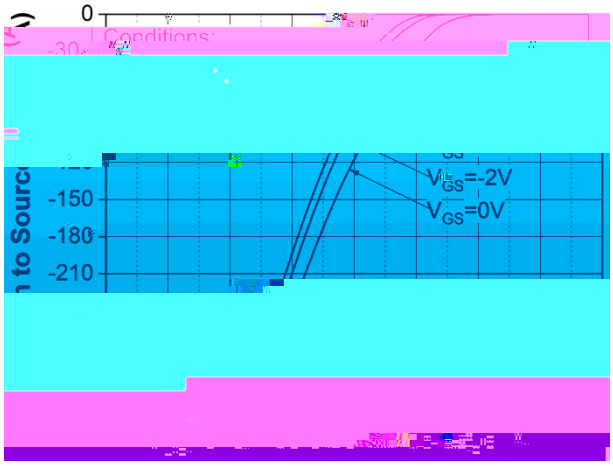



Figure 9. Body diode characteristic at $T_J$ = 25 ºC

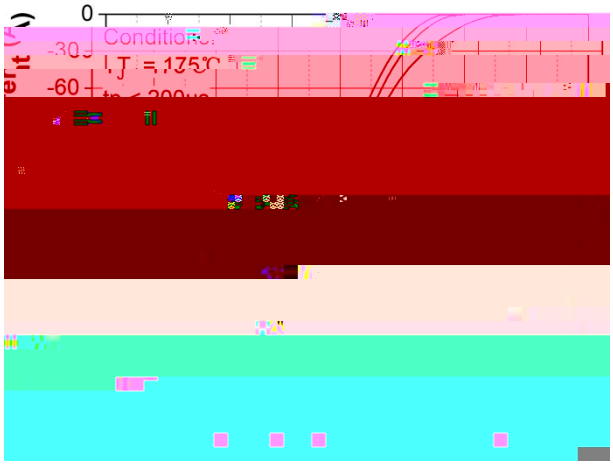


Figure 10. Body diode characteristic at $T_J$ = 175ºC

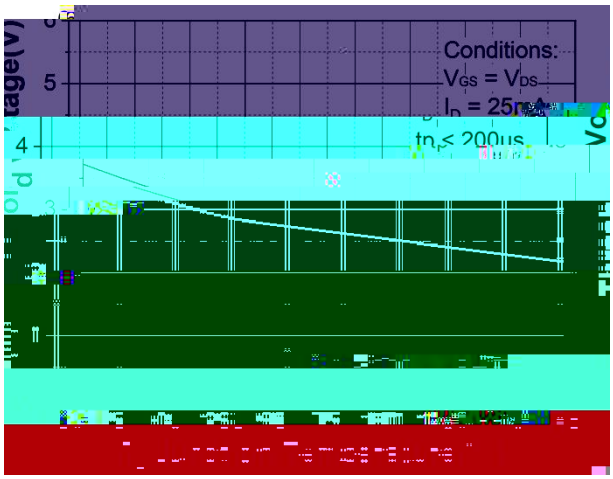



Figure 11. Threshold voltage vs. temperature

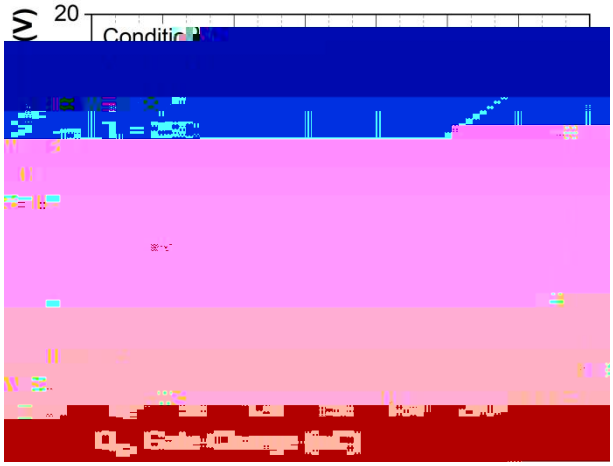


Figure 12. Gate charge characteristic

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

| | | | | |
|---|---|---|---|---|
| Die size W x L | | 4.80 * 6.30 | mm | |
| Gate pad size W x L | | 0.78 * 0.67 | mm | |
| Source pad size W x L | | 1.75 *4.30 | mm | |
| Kelvin pad size W x L | | 1.10 * 0.70 | mm | |
| Die thickness | | 150 ± 20 | μm | |
| Top side | gate & kelvin source metallization | 4 | μm | AlCu |

Top side

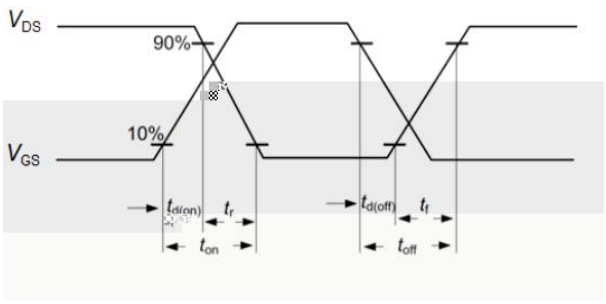



Figure A. Definition of switching times

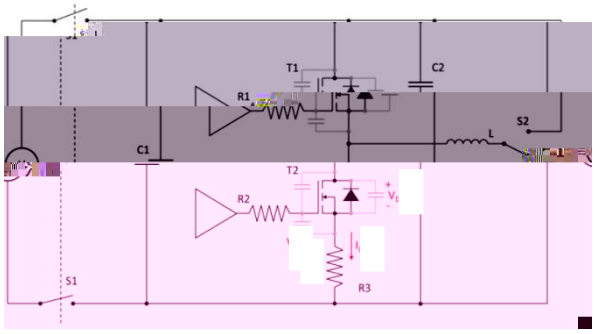



Figure B. Dynamic test circuit

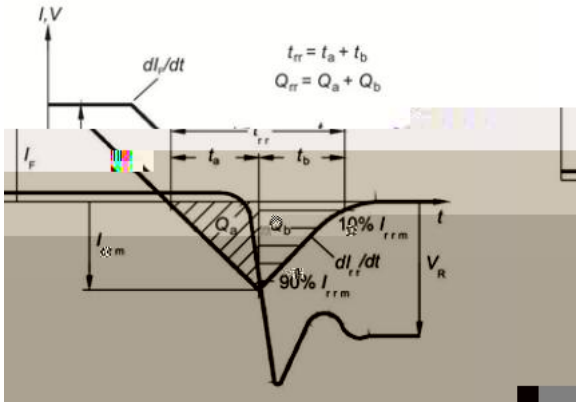



Figure C. Definition of body diode switching characteristics

| | | | |
|---|---|---|---|
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| | | | —— |
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| | | | |

of

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

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

8. For use of our products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a Sichain representatives, for example but not limited to: transportation equipment,primary communication equipment,traffic lights,fire/crime prevention, safety equipment, medical systems, and power transmission systems.