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

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

S3M090065BH	1.98 * 2.50

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

(T_C=25 , $R_{th\ (j-c),max}$ ≤ 1.25°C/W)

(V_{GS} = 15V, I_D = 12A, T_J = 25)

S3M090065BH 650V 3

(Tc = 25°C unless otherwise specified)

$V_{DS,max}$	Drain source voltage	650	V	V_{GS} = 0V, I_D = 100 μA	
$V_{GS,max}$	Gate source voltage	-8 /+19	V	Absolute maximum values	Note1
V_{GSop}	Gate source voltage	-4~0 /+15	V	Recommended operational values	
I_D	Continuous drain current	35 25	A	V_{GS} = 15V, T_C = 25˚C V_{GS} = 15V, T_C = 100˚C	
$I_{D(pu}$					

(Tc = 25°C unless otherwise specified)

$V_{(BR)DSS}$	Drain-source breakdown voltage	650	-	-	V	V_{GS} = 0V, I_D = 100μA
$V_{GS(th)}$	Gate threshold voltage	2.7	3.5	4.2	V	V_{DS} = V_{GS}, I_D =

Q_{gs}	Gate source charge	-	10	-	nC	V_{DS} = 400V, V_{GS} = -4/+15V I_D = 12A	Fig.12
Q_{gd}	Gate drain charge	-	7	-			
Q_g	Gate charge	-	21	-			

(Tc = 25°C unless otherwise specified,the data com

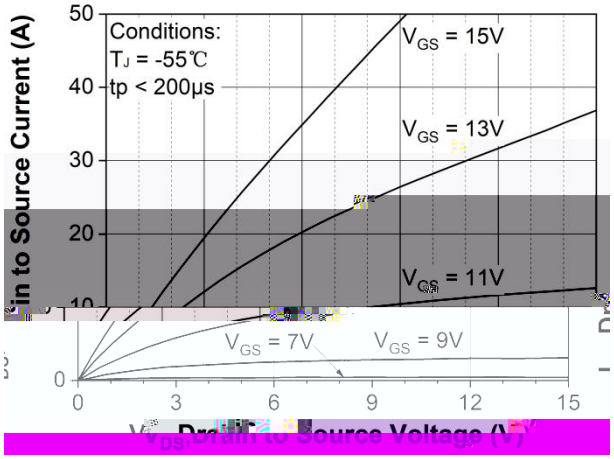


Figure 1. Output characteristics T_J = -55 ºC

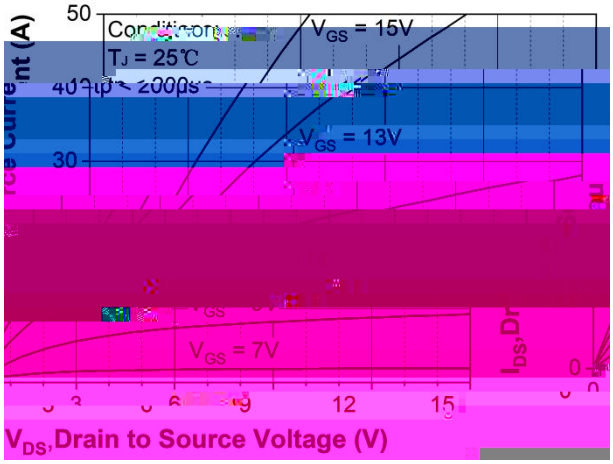


Figure 2. Output characteristics T_J = 25 ºC

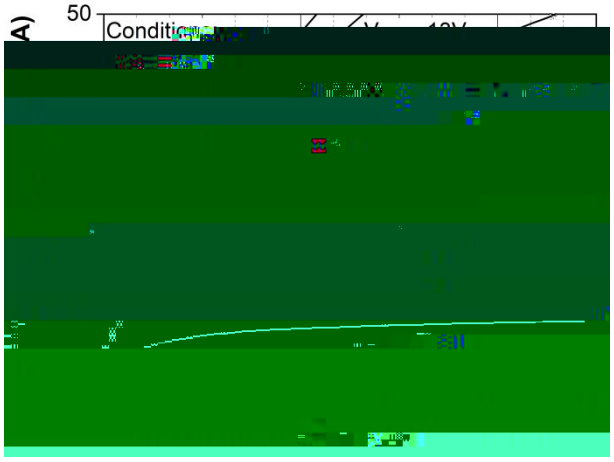


Figure 3. Output characteristics T_J = 175 ºC

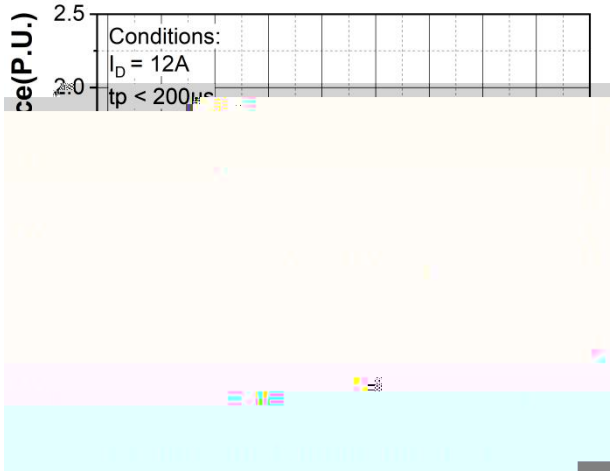


Figure 4. Normalized on-resistance vs. temperature

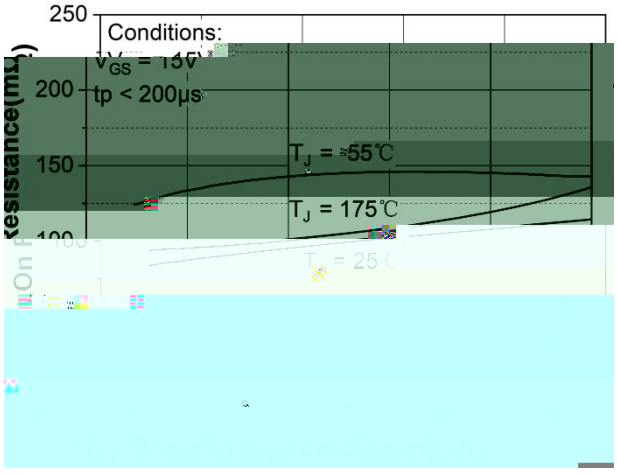


Figure 5. On-resistance vs. drain current for various temperatures

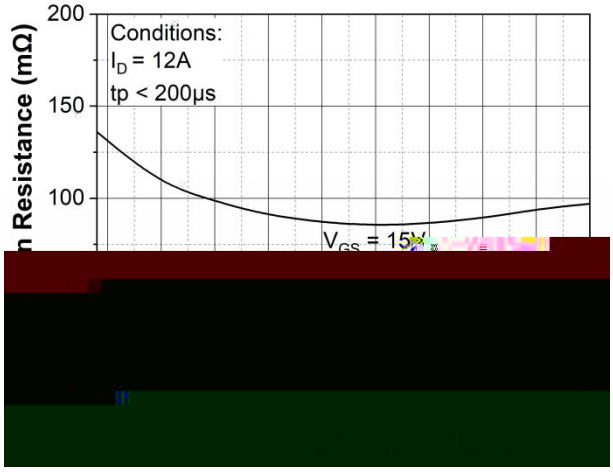


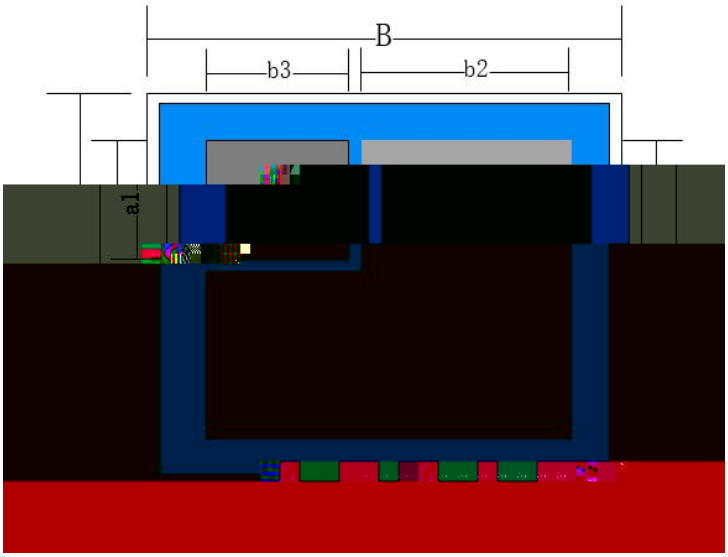
Figure 6. On-resistance vs. temperature for various gate voltages

Figure 7. Transfer characteristics

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

Figure 14. 3rd quadrant characteristic at T_J 5 ṁΩ ٭

Die size W x L	1.98 * 2.50	mm	
Gate pad size W x L	0.30 * 0.40	mm	
Die thickness	130	μm	
Top side source gate metallization	4	μm	AlCu
Back side drain metallization	1	μm	Ag



Symbol	Dimension / mm
B	2.50
b1	1.92
b2	1.42
b3	0.40
A	1.98
a1	0.30
a2	1.00
a3	1.40

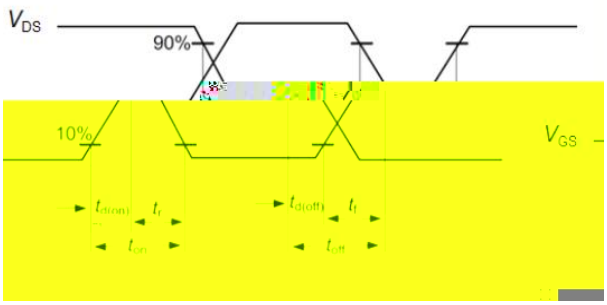


Figure A. Definition of switching times

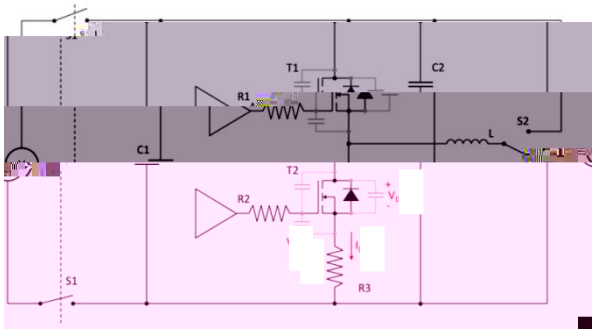


Figure B. Dynamic test circuit

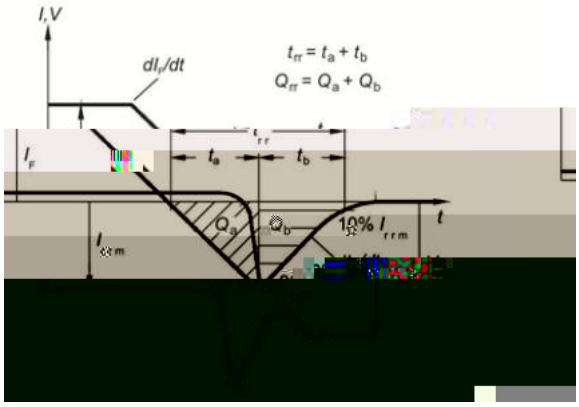


Figure C. Definition of body diode switching characteristics

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1.
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 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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