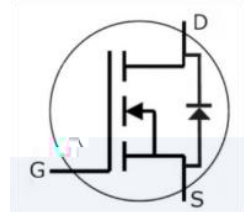


N Channel Enhancement

- High speed switching
- Very low switching losses
- Fully controllable dv/dt
- High blocking voltage with low on-resistance
- Fast intrinsic diode with low reverse recovery (Qrr)
- 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

SG2M018120BJ	4.46*5.02

- On-board charger/PFC
- EV battery chargers
- Booster/DC-DC converter
- Switch mode power supplies

		($T_C=25^\circ\text{C}$, $R_{th(j-c),max} = 0.31^\circ\text{C/W}$)	($V_{GS} = 18\text{V}$, $I_D = 64\text{A}$, $T_J = 25^\circ\text{C}$)	
SG2M018120BJ	1200V	121A	18m	175

S!

(Tc = 25°C unless otherwise specified)

$V_{DS,max}$	Drain source voltage	1200	V	$V_{GS} = 0V, I_D = 100\mu A$	
$V_{GS,max}$	Gate source voltage	-8 /+22	V	Absolute maximum values	Note1
$V_{GS,pulse}$	Gate-source voltage,max. transient voltage	-10 /+25	V	$t_p \ 0.5\mu s, D \ 0.01$	
V_{GSop}	Gate source voltage	-4 /+18	V	Recommended operational values	
I_D	Continuous drain current	121	A	$V_{GS} = 18V, T_C = 25^\circ C$	
		85		$V_{GS} = 18V, T_C = 100^\circ C$	
$I_D(pulse)$	Pulsed drain current	362	A	Pulse width $t_p=100\mu s$ limited by $T_{J,max}$	
T_J, T_{stg}	Operating Junction and storage temperature	-55 to +175	°C		

Note 1 when using MOSFET Body Diode $V_{GS,max} = -4 / +22V$

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

($T_c = 25^\circ C$ unless otherwise specified, the data comes from TO-247-4L)

E_{on}	Turn on switching energy	-	740	-	μJ	$V_{BS} = 800V, V_{GS} = -4/+18V$ $I_D = 64A, R_g = 2.5$ $L = 16.7\mu H$	Fig.26
E_{off}	Turn off switching energy	-	278	-			ns
$t_{d\ on}$	Turn on delay time	-	14	-			
t_r	Rise time	-	23	-			
$t_{d\ off}$	Turn off delay time	-	50	-			
t_f	Fall time	-	12	-			

(The data comes from TO-247-4L)

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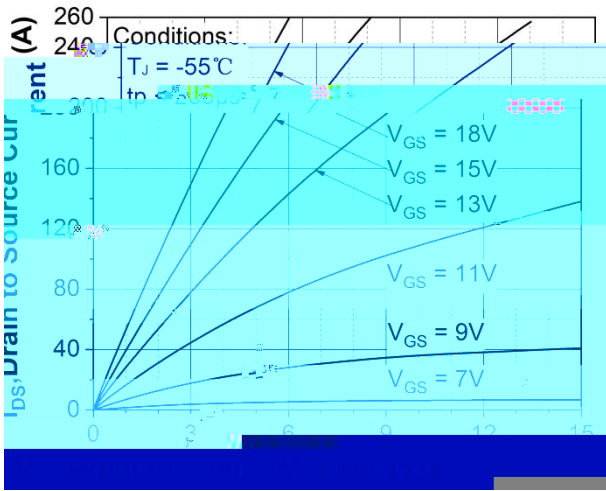


Figure 1. Output characteristics $T_J = -55^\circ\text{C}$

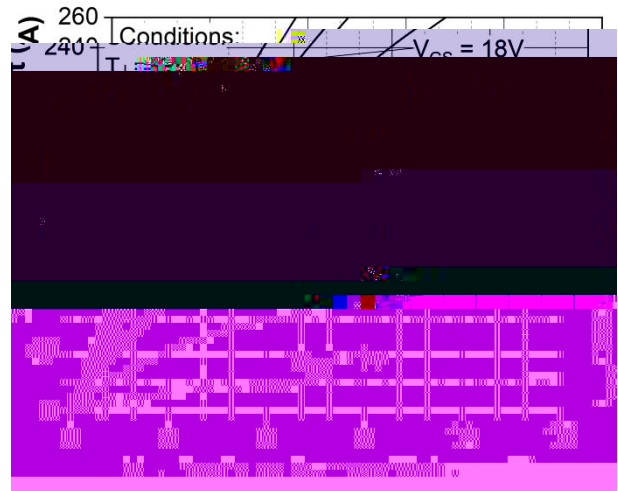


Figure 2. Output characteristics $T_J = 25^\circ\text{C}$

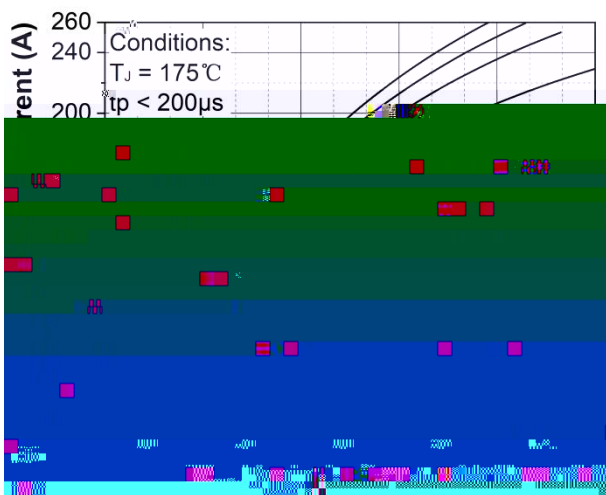


Figure 3. Output characteristics $T_J = 175^\circ\text{C}$

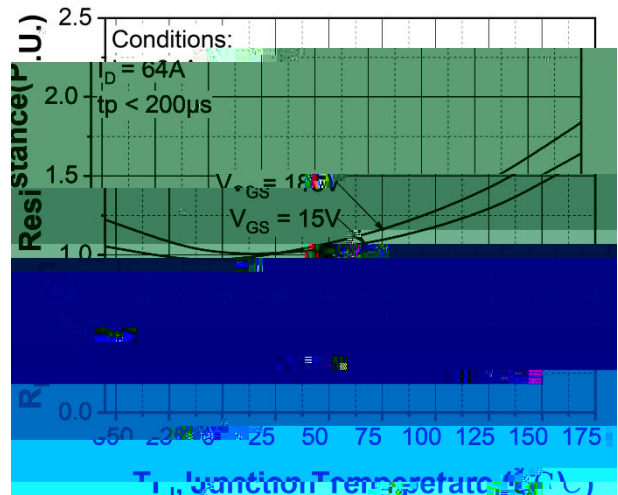


Figure 4. Normalized on-resistance vs. temperature

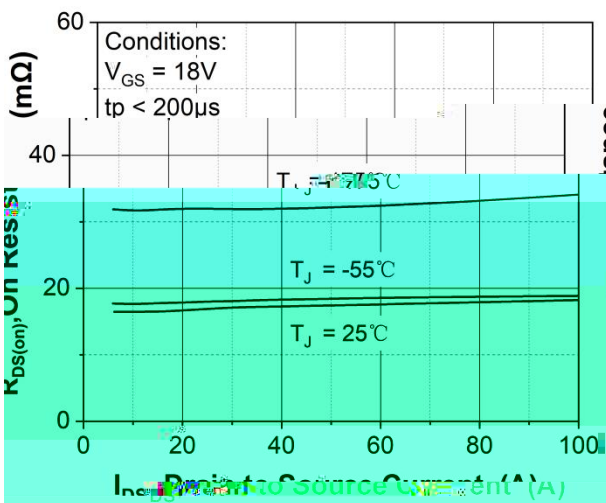


Figure 5. On-resistance vs. drain current for various temperatures

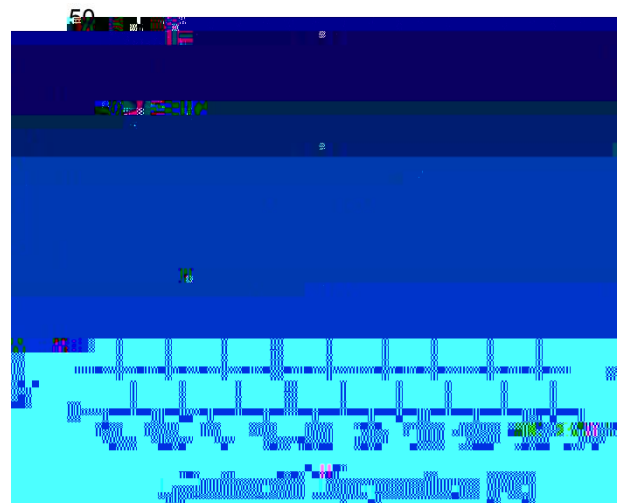


Figure 6. On-resistance vs. temperature for various gate voltages

W C P S

I

P

S

aJ

SS

a

Da a

W

S

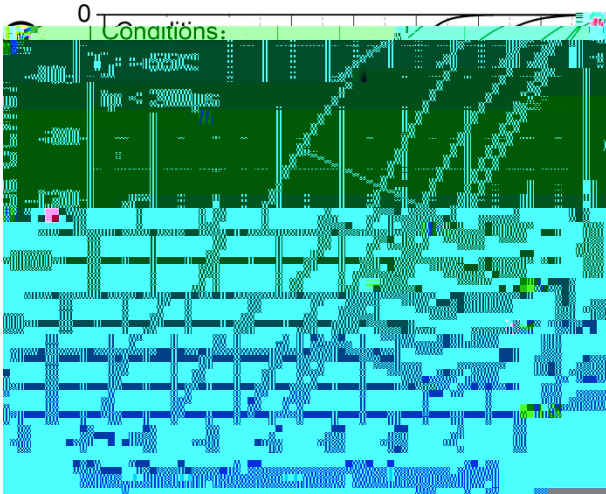


Figure 13. 3rd quadrant characteristic at $T_J = -55\text{ }^\circ\text{C}$

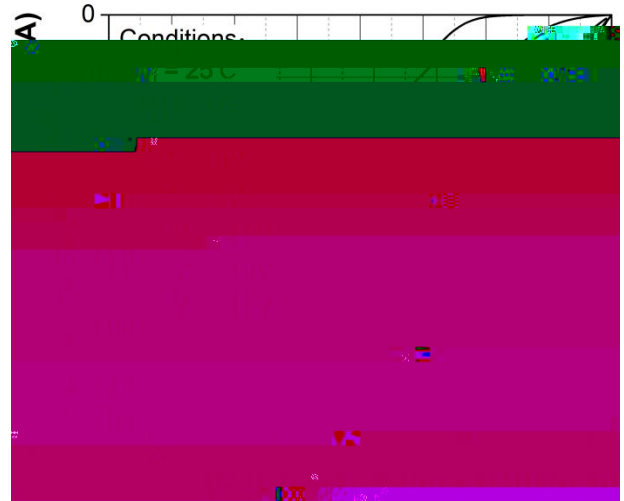


Figure 14. 3rd quadrant characteristic at $T_J = 25\text{ }^\circ\text{C}$

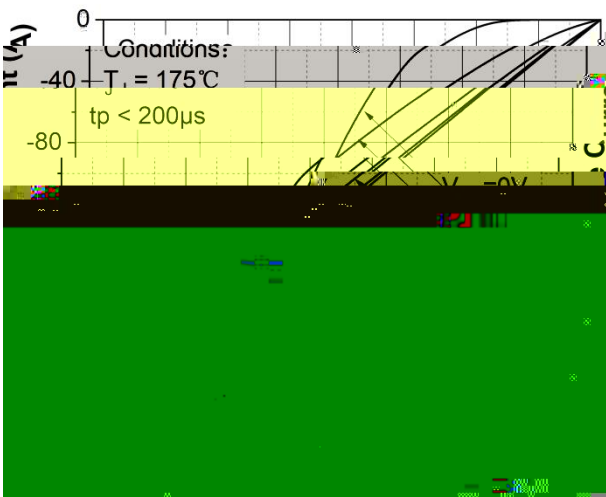


Figure 15. 3rd quadrant characteristic at $T_J = 175\text{ }^\circ\text{C}$

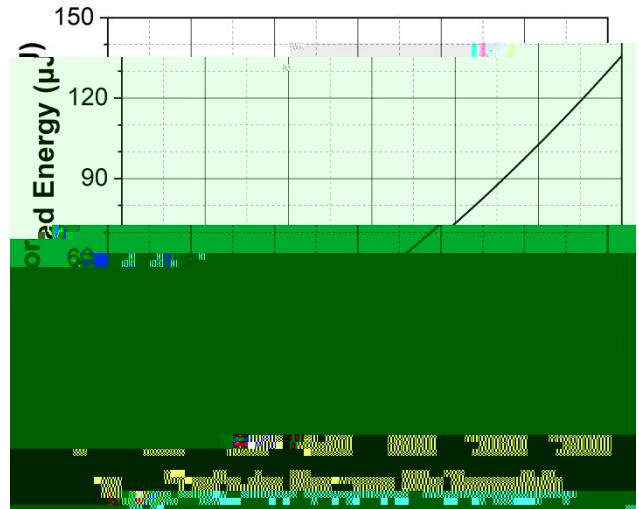


Figure 16. Output capacitor stored energy

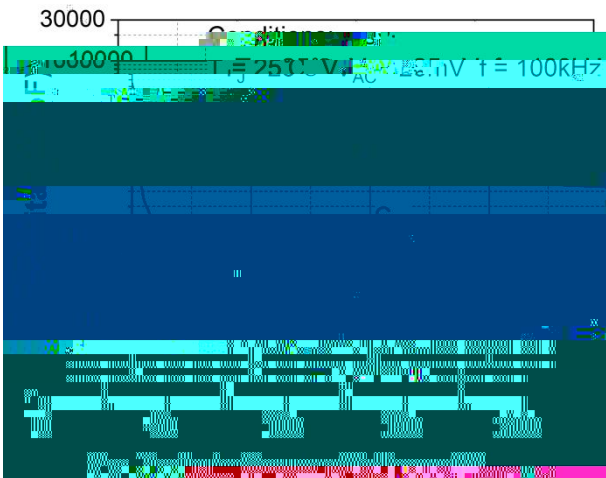


Figure 17. Capacitances vs. drain-source voltage (0 - 200V)

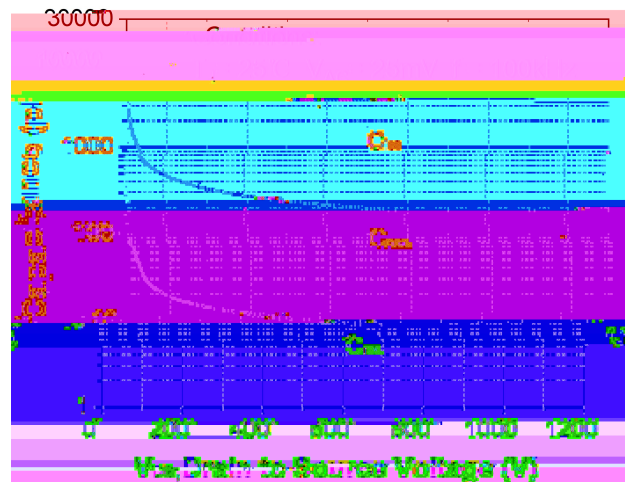
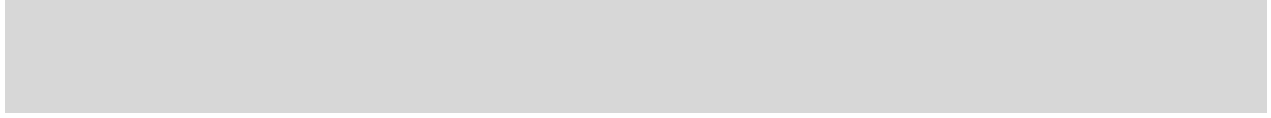


Figure 18. Capacitances vs. drain-source voltage (0 - 1200V)



Die size

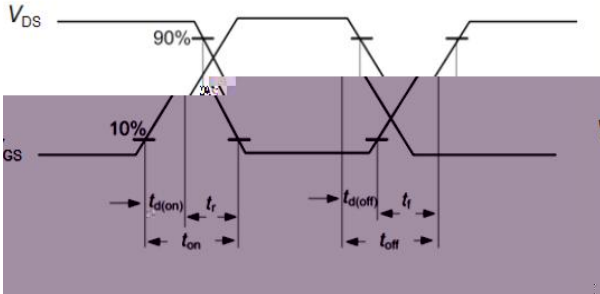


Figure A. Definition of switching times

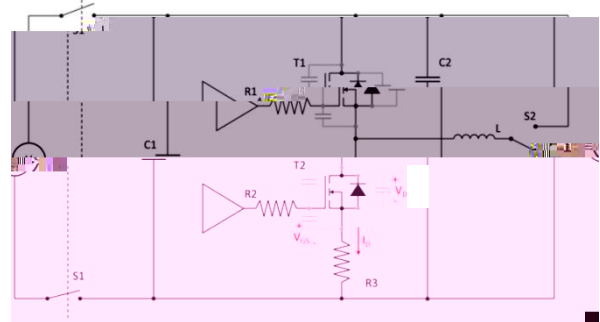


Figure B. Dynamic test circuit

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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, 2015.

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



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.