SG2M040120HJ

TO-247-4L



Table of contents

Features 1

Benefits 1

Applications 1

Table of contents 2

1 Maximum ratings 3

2 Thermal characteristics 3

3 Electrical characteristics 4

3.1 Static characteristics 4

3.2 Dynamic characteristics 4

3.3 Switching characteristics 5

4 Electrical characteristic diagrams 6

5 Package drawing (TO-247-4L-A) 11

6 Test conditions 12

Revision history 13

Attention 13

1 Maximum ratings

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

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{DS,max}$	Drain source voltage	1200	V	V_{GS} = 0V, I_D = 100μA	
$V_{GS,max}$	Gate source voltage			bsolute maximum values	Note1
$V_{GSpulse}$	Gate-source voltage,max. transient voltage	10 /+25	V	≤ 0.5μs, D 0.01	
V_{GSop}	Gate source voltage	-4 /+18	V	ecommended operational values	
I_D	Continuous drain current	65	A	$_{GS}$ = 18V, T_C = 25˚C	Fig.19
		46		V_{GS} = 18V, T_C = 100˚C	
$I_{D(pulse)}$	Pulsed drain current	185	A	Pulse width t_P =100μS limited by $T_{J,max}$	Fig.22
P_D	Power dissipation	268	W	T_C = 25˚C,T_J = 175˚C	Fig.20
T_J , T_{stg}	Operating Junction and storage temperature	-55 to +175	˚C		
T_L	Soldering temperature	260	˚C	1.6mm (0.063”) from case for 10s	
T_M	Mounting torque	8	n	M3 or 6-32 screw	

SG2M040120HJ

Datasheet

Q_{gs}	Gate source charge	-	22	-	nC	V_{DS} = 800V, V_{GS} = -4/+18V I_D = 32A	Fig.12
Q_{gd}	Gate drain charge	-	18	-			
Q_g	Gate charge	-	60	-			

3.3 Switching characteristics

Table 6 Dynamic characteristics(Tc = 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
E_{on}	Turn on						

•] S

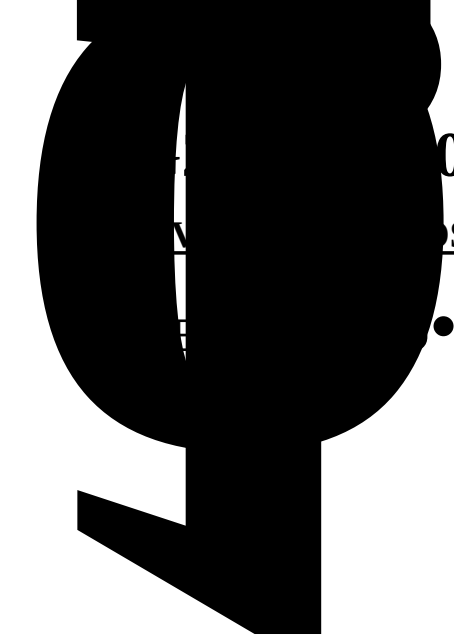


Figure 1. Output characteristics T_J = -55 °C

Figure 2. Output characteristics T_J = 25 °C

SG2M040120HJ

SG2M040120HJ

Datas

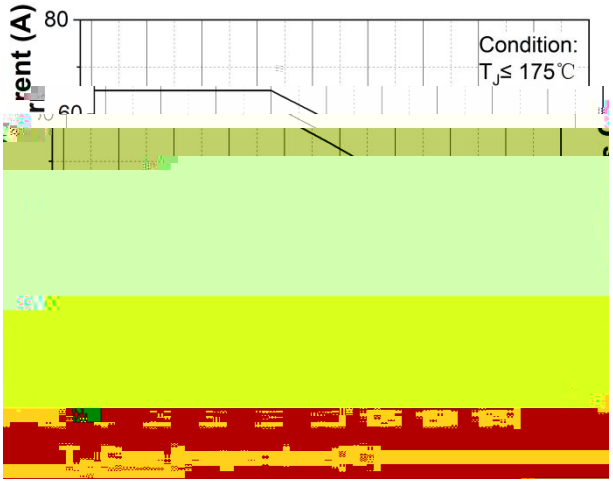


Figure 19. Continuous drain current derating vs. case temperature

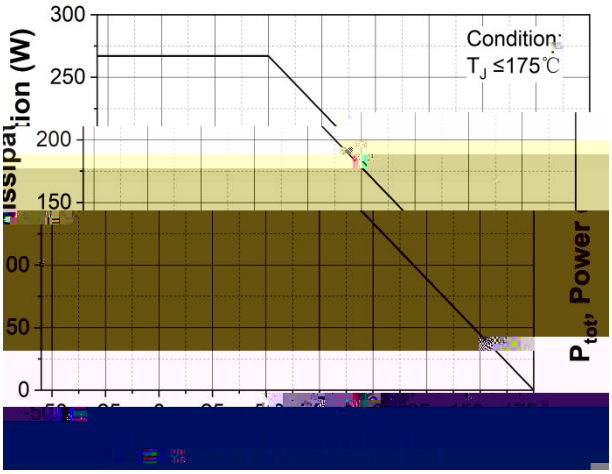


Figure 20. Maximum power dissipation derating vs. case temperature

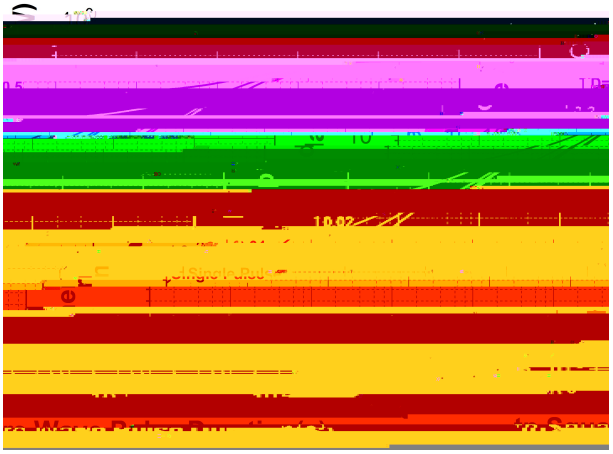


Figure 21. Transient thermal impedance (junction - case)

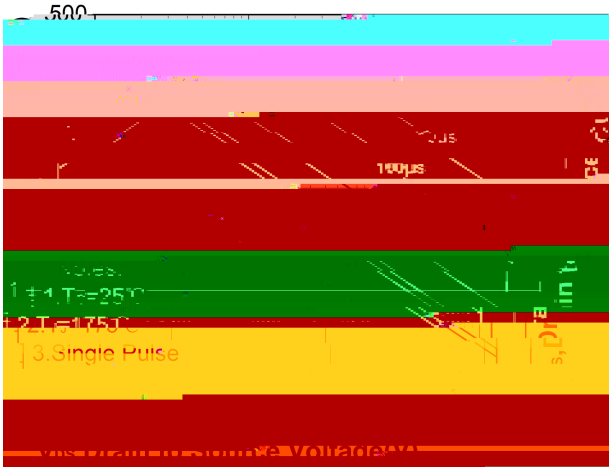


Figure 22. Safe operating area

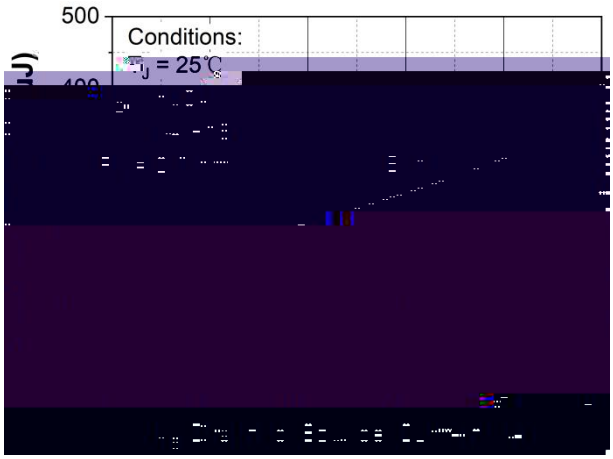


Figure 23. Clamped Inductive switching energy vs. drain current (V_{DD} = 600V)

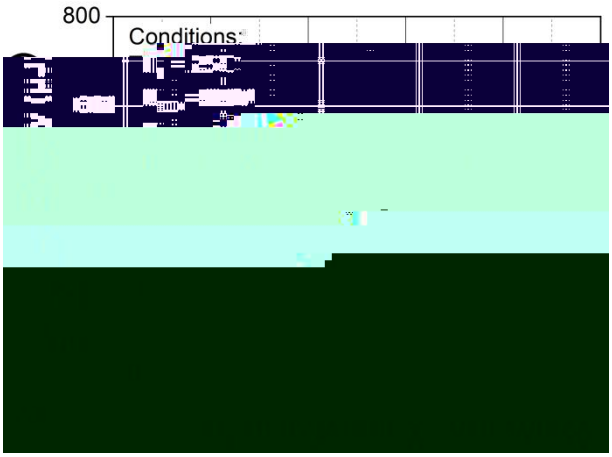


Figure 24. Clamped inductive switching energy vs. drain current (V_{DD} = 800V)

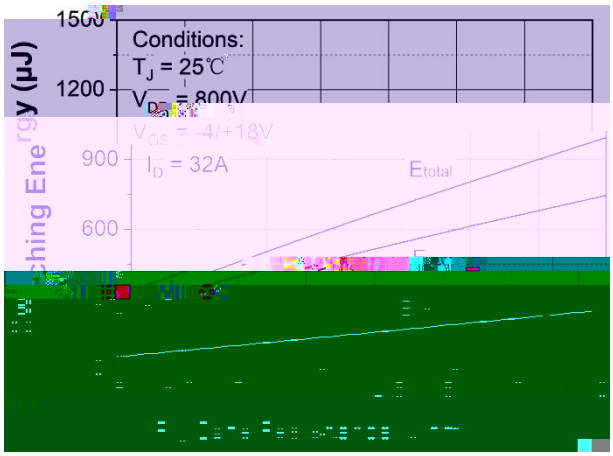


Figure 25. Clamped inductive switching energy vs. R_G(ext)

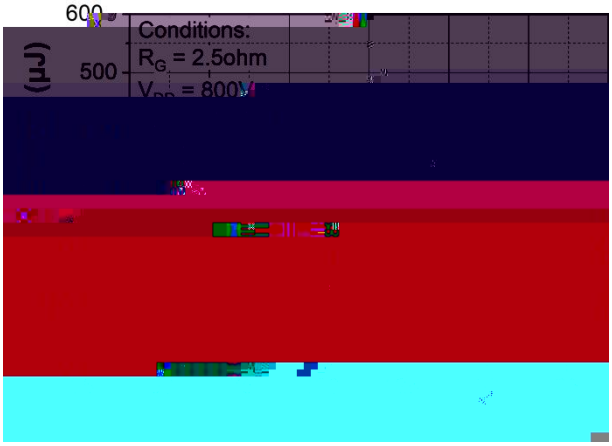


Figure 26. Clamped inductive switching energy vs. temperature

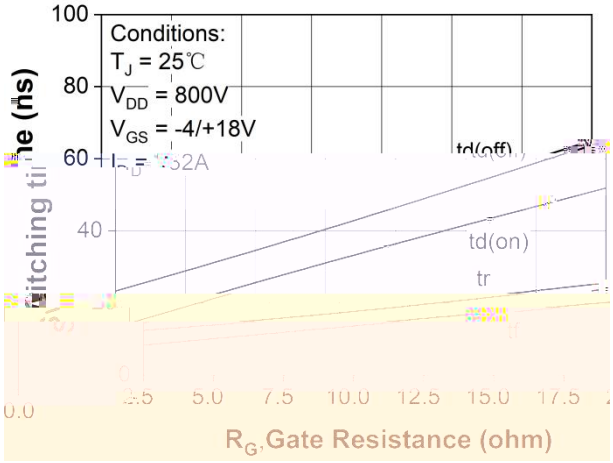


Figure 27. Switching times vs. R_G(ext)

SG2M040120HJ

Revision history

Document version	Date of release	Document stage	Description of changes
V01_00	2025-03-19	——	——
V01_01	2025-09-01	——	——
V01_01	2025-12-25	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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