

RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

FEATURES

- 40V/5A
R_{DS(ON)} ≤ 35mΩ @ V_{GS}=10V
R_{DS(ON)} ≤ 45mΩ @ V_{GS}=4.5V
- Reliable and Rugged
- Green Device Available

APPLICATION

- Power Management in Notebook Computer
- Portable Equipment and Battery Powered Systems

MARKING

4008

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch

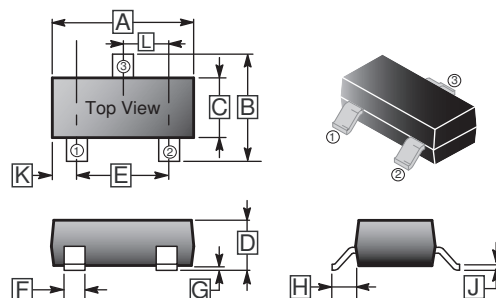
ORDER INFORMATION

Part Number	Type
SMG4008-C	Lead (Pb)-free and Halogen-free

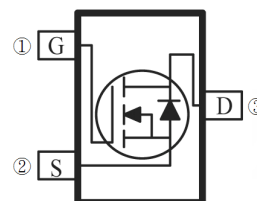
MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit	
Drain-Source Voltage	V _{DS}	40	V	
Gate-Source Voltage	V _{GS}	±20	V	
Continuous Drain Current @ V _{GS} =10V ¹	T _A =25°C	5	A	
	T _A =70°C	4		
Pulsed Drain Current ³	I _{DM}	15	A	
Power Dissipation	T _A =25°C	P _D	1.38	W
Operating Junction & Storage Temperature Range	T _J , T _{STG}	-55~150	°C	
Thermal Resistance Ratings				
Thermal Resistance from Junction-Ambient ¹	R _{θJA}	90	°C/W	
Thermal Resistance from Junction-Ambient ²		270		

SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.10	3.00	H	0.40 REF.	
C	1.20	1.70	J	0.047	0.207
D	0.89	1.40	K	0.50 REF.	
E	2.00 TYP.		L	0.95 REF.	
F	0.30	0.50			



ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	40	-	-	V	V _{GS} =0, I _D =250μA	
Gate-Threshold Voltage	V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA	
Forward Transconductance	g _{fs}	-	14	-	S	V _{DS} =5V, I _D =4A	
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V	
Drain-Source Leakage Current	I _{DSS}	T _J =25°C	-	-	1	μA	V _{DS} =32V, V _{GS} =0
		T _J =55°C	-	-	5		
Static Drain-Source On-Resistance ⁴	R _{DS(ON)}	-	-	35	mΩ	V _{GS} =10V, I _D =4A	
		-	-	45		V _{GS} =4.5V, I _D =3A	
Total Gate Charge	Q _g	-	5.5	-	nC	I _D =5A V _{DS} =20V V _{GS} =4.5V	
Gate-Source Charge	Q _{gs}	-	1.25	-			
Gate-Drain Charge	Q _{gd}	-	2.5	-			
Turn-on Delay Time	T _{d(on)}	-	8.9	-	nS	V _{DS} =20V I _D =1A V _{GS} =10V R _G =3.3Ω R _L =20Ω	
Rise Time	T _r	-	2.2	-			
Turn-off Delay Time	T _{d(off)}	-	41	-			
Fall Time	T _f	-	2.7	-			
Input Capacitance	C _{iss}	-	593	-	pF	V _{GS} =0 V _{DS} =15V f=1MHz	
Output Capacitance	C _{oss}	-	76	-			
Reverse Transfer Capacitance	C _{rss}	-	56	-			
Source-Drain Diode							
Forward on Voltage ⁴	V _{SD}	-	-	1.2	V	I _S =1A, V _{GS} =0	
Continuous Source Current ¹	I _S	-	-	5	A		
Pulsed Source Current ³	I _{SM}	-	-	15			

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 2OZ copper, t ≤ 10s.
2. When mounted on Min. Copper pad.
3. Pulse width limited by maximum junction temperature, pulse width ≤ 300μs, duty cycle ≤ 2%.
4. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.

CHARACTERISTIC CURVES

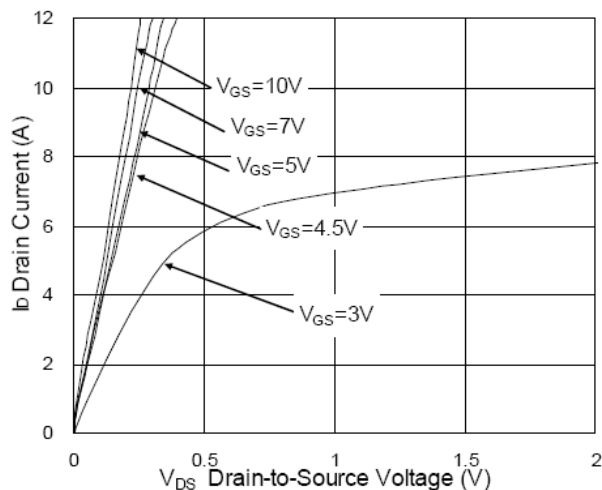


Fig.1 Typical Output Characteristics

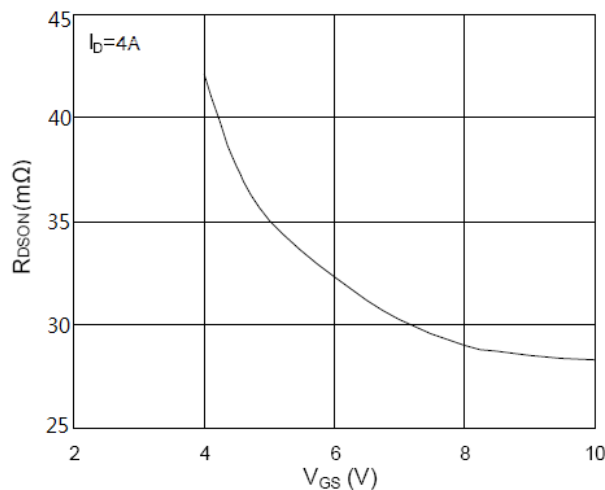


Fig.2 On-Resistance vs. G-S Voltage

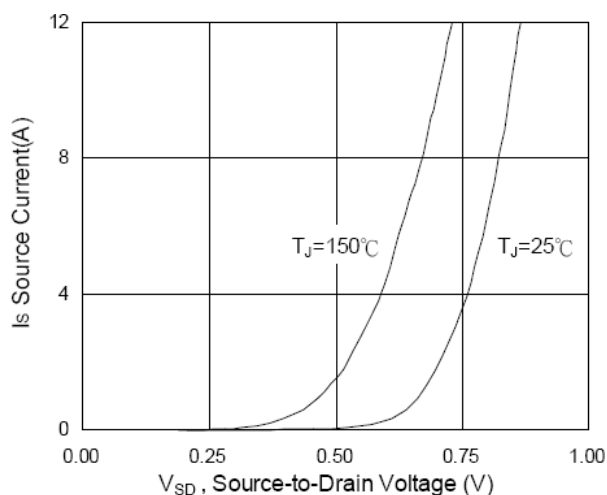


Fig.3 Forward Characteristics of Reverse

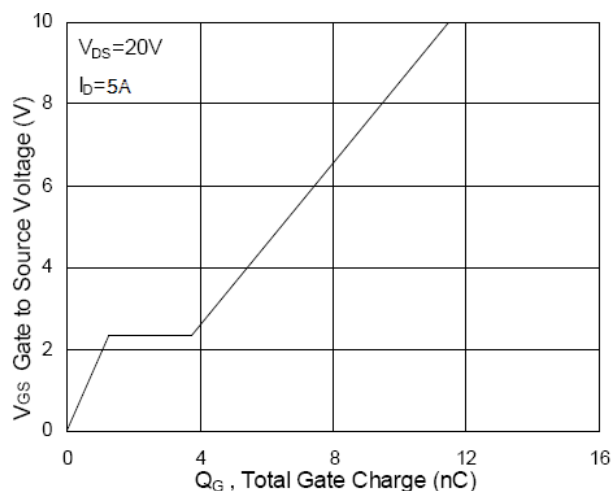


Fig.4 Gate-Charge Characteristics

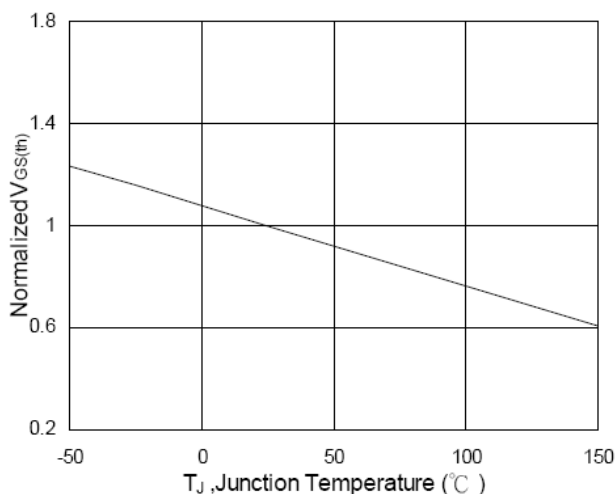


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

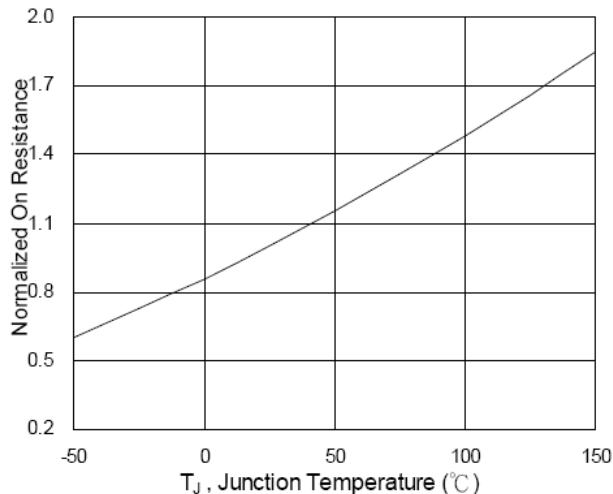


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTIC CURVES

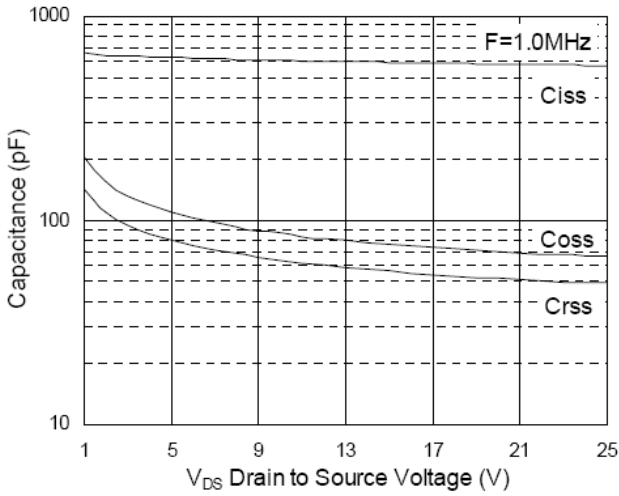


Fig.7 Capacitance

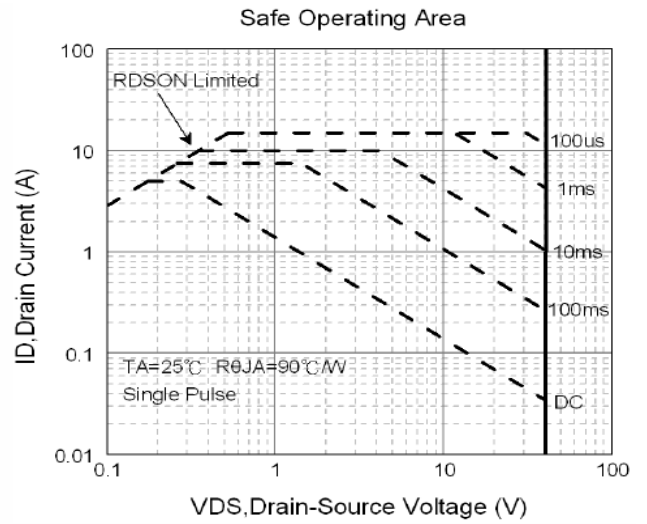


Fig.8 Safe Operating Area

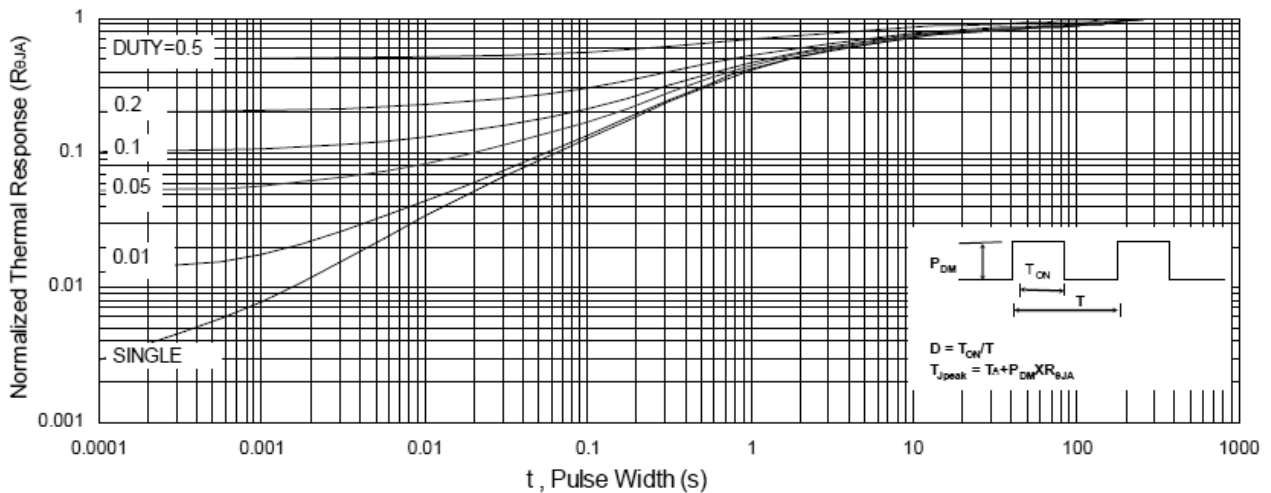


Fig.9 Normalized Maximum Transient Thermal Impedance

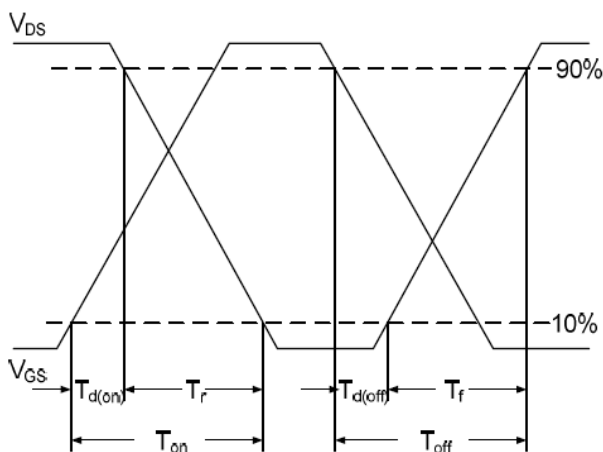


Fig.10 Switching Time Waveform

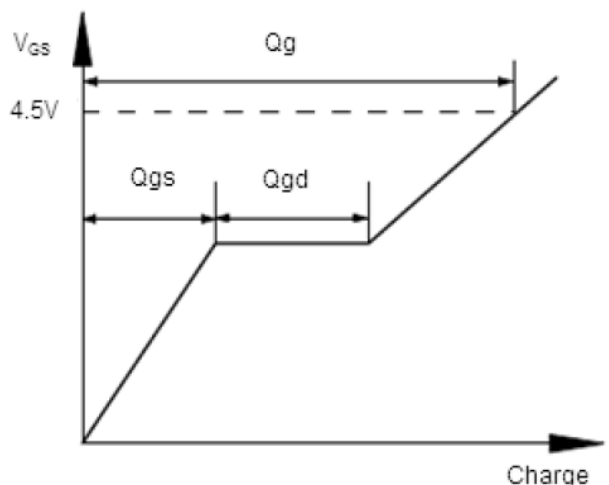


Fig.11 Gate Charge Waveform