

RoHS Compliant Product
 A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

The SMG2313B-C is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(ON)} and gate charge for most of the small power switching and load switch applications.

The SMG2313B-C meet the RoHS and Green Product requirement with full function reliability approved.

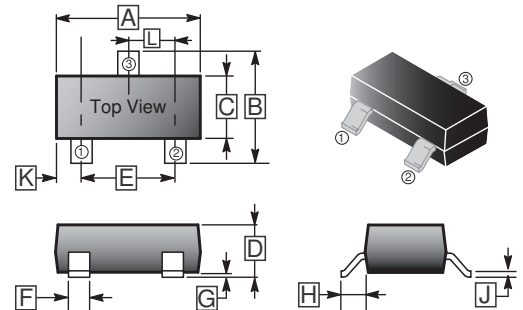
FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

2313B

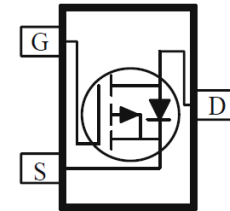
SC-59



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			

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMG2313B-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings		Unit	
		t≤5sec	Steady State		
Drain-Source Voltage	V _{DS}	-60		V	
Gate-Source Voltage	V _{GS}	±20		V	
Continuous Drain Current ¹ @ V _{GS} = -10V	T _A =25°C	-3.8	-3.3	A	
	T _A =70°C	-3	-2.6		
Pulsed Drain Current ³	I _{DM}	-15		A	
Power Dissipation	T _A =25°C	P _D	1.31	1	W
Operating Junction & Storage Temperature Range	T _J , T _{STG}	-55~150		°C	
Thermal Resistance Rating					
Thermal Resistance Junction-Ambient ¹	R _{θJA}	95	125	°C/W	
Thermal Resistance Junction-Ambient ²		313			

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-60	-	-	V	$V_{GS}=0V, I_D = -250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu A$	
Forward Transconductance	g_{fs}	-	8.7	-	S	$V_{DS} = -5V, I_D = -2.5A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	-1	μA	$V_{DS} = -48V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	-5		$V_{DS} = -48V, V_{GS}=0V$
Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	70	90	m Ω	$V_{GS} = -10V, I_D = -2.5A$	
		-	90	120		$V_{GS} = -4.5V, I_D = -2A$	
Total Gate Charge	Q_g	-	11.8	-	nC	$V_{DS} = -20V$ $V_{GS} = -4.5V$ $I_D = -2.5A$	
Gate-Source Charge	Q_{gs}	-	1.9	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	6.5	-			
Turn-on Delay Time	$T_{d(on)}$	-	8.8	-	nS	$V_{DD} = -15V$ $V_{GS} = -10V$ $I_D = -1A$ $R_G = 3.3\Omega$	
Rise Time	T_r	-	19.6	-			
Turn-off Delay Time	$T_{d(off)}$	-	47.2	-			
Fall Time	T_f	-	9.6	-			
Input Capacitance	C_{iss}	-	1080	-	pF	$V_{GS}=0V$ $V_{DS} = -15V$ $f=1MHz$	
Output Capacitance	C_{oss}	-	73	-			
Reverse Transfer Capacitance	C_{rss}	-	50	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	-3.8	A		
Pulsed Source Current ³	I_{SM}	-	-	-15	A		
Diode Forward Voltage ⁴	V_{SD}	-	-	-1.2	V	$I_S = -1A, V_{GS}=0V, T_J=25^\circ\text{C}$	

Notes:

- Surface Mounted on 1" x 1" FR4 Board with 2OZ copper.
- When mounted on Min. copper pad.
- Pulse width limited by maximum junction temperature, Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

CHARACTERISTIC CURVES

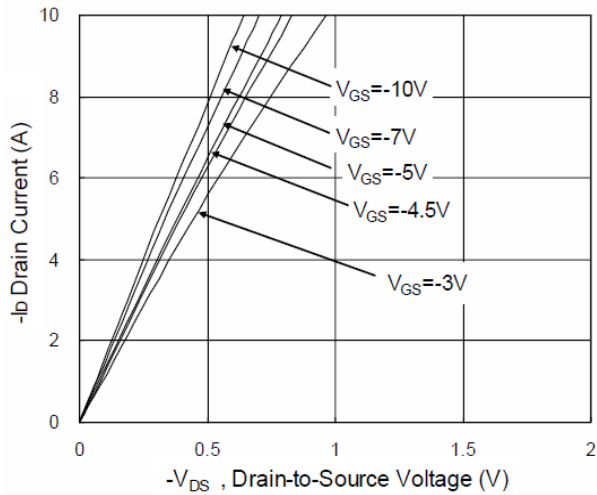


Fig.1 Typical Output Characteristics

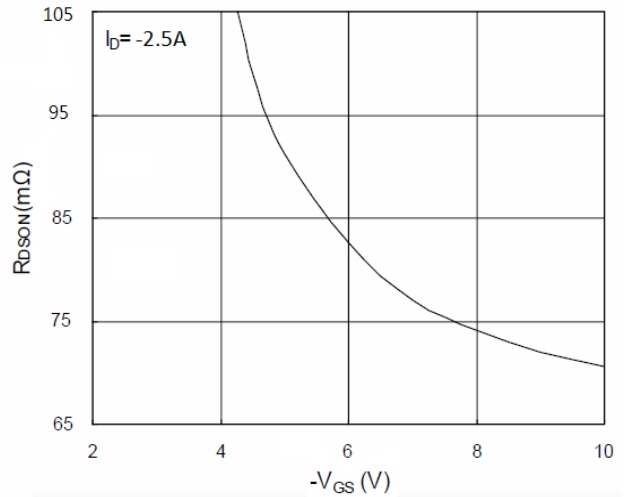


Fig.2 On-Resistance v.s Gate-Source

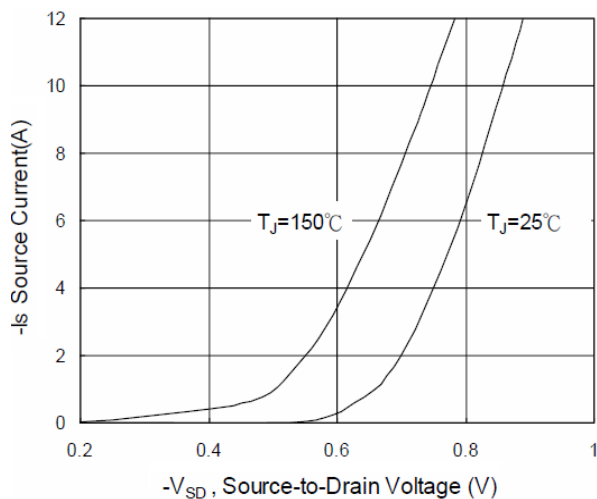


Fig.3 Forward Characteristics of Reverse

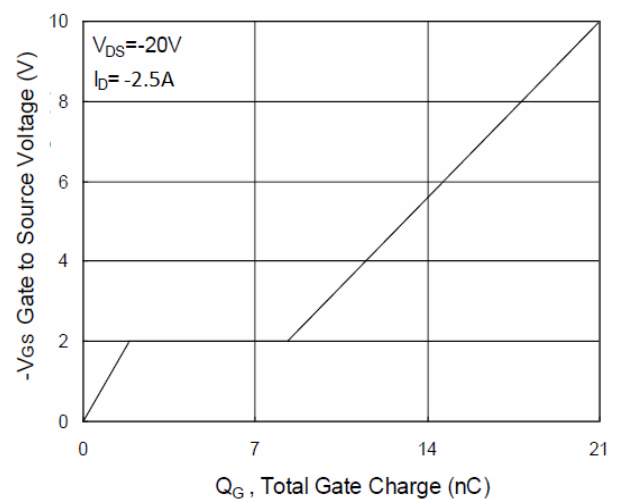


Fig.4 Gate-Charge Characteristics

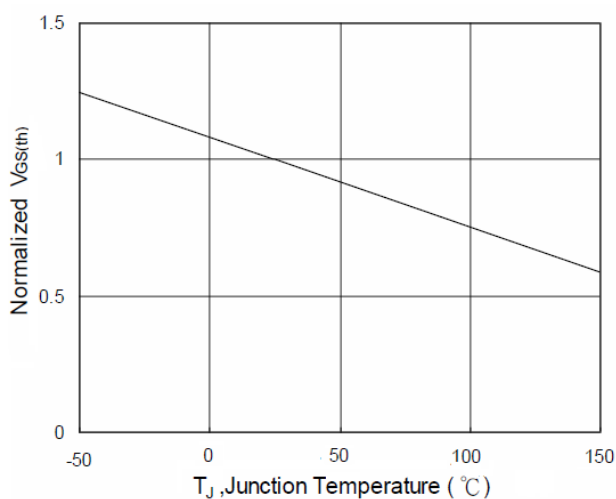


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

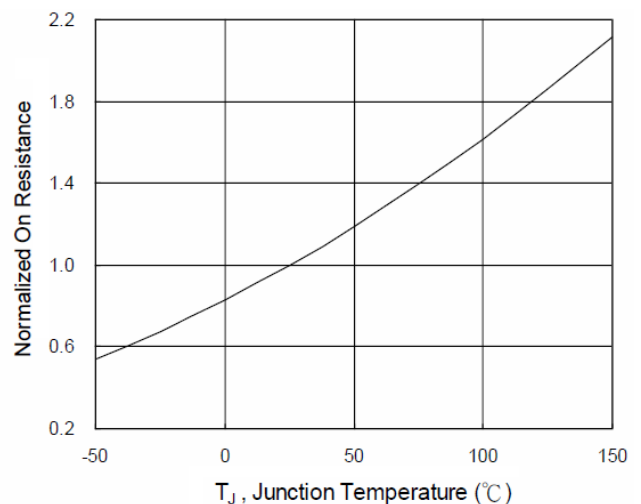


Fig.6 Normalized $R_{DS(ON)}$ v.s T_J

CHARACTERISTIC CURVES

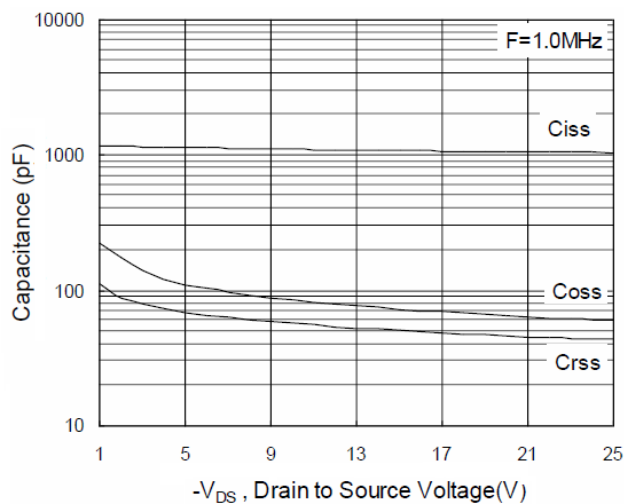


Fig.7 Capacitance

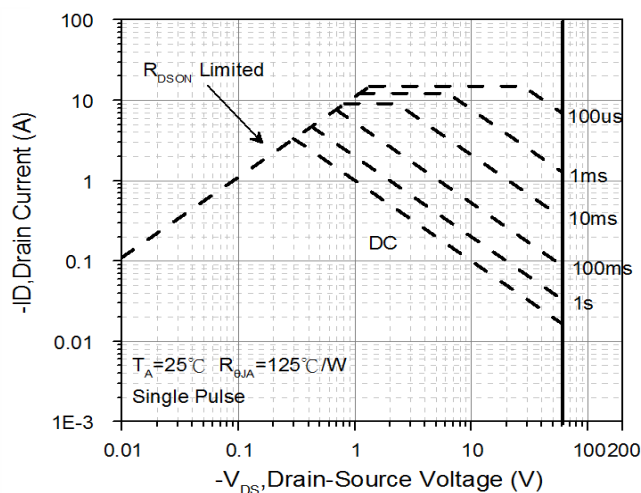


Fig.8 Safe Operating Area

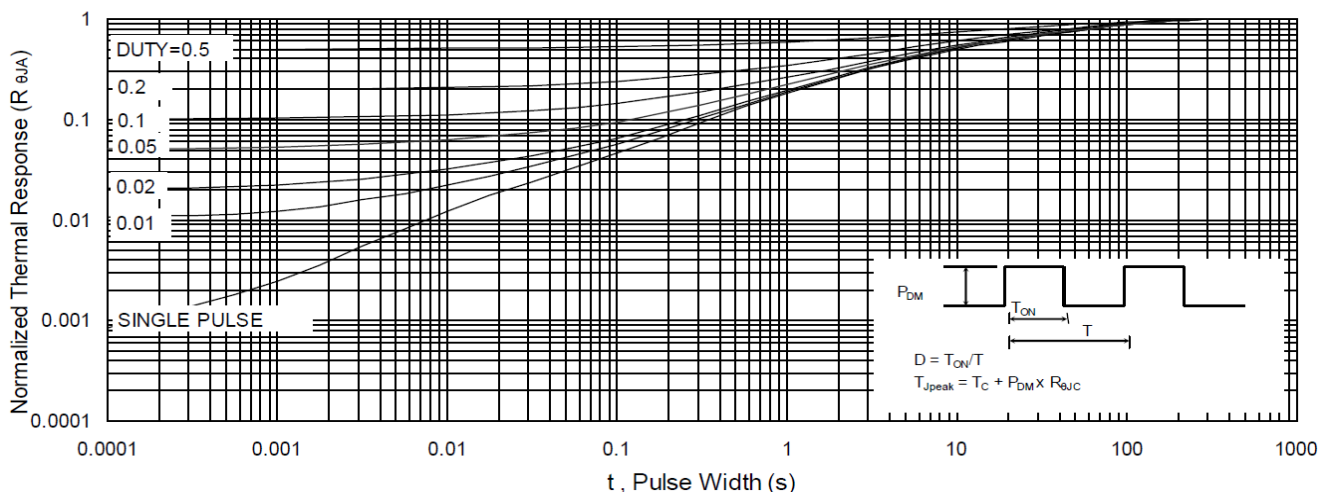


Fig.9 Normalized Maximum Transient Thermal Impedance

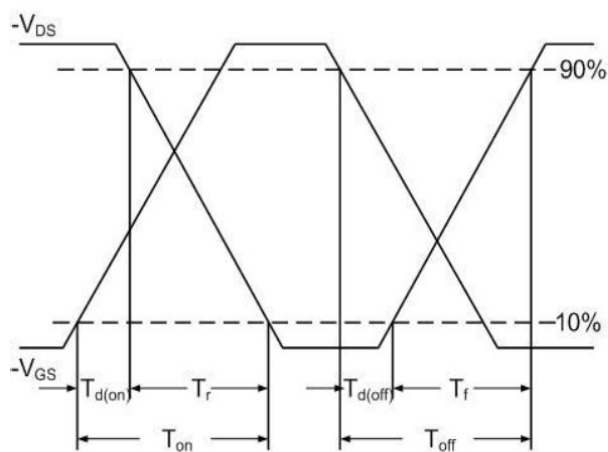


Fig.10 Switching Time Waveform

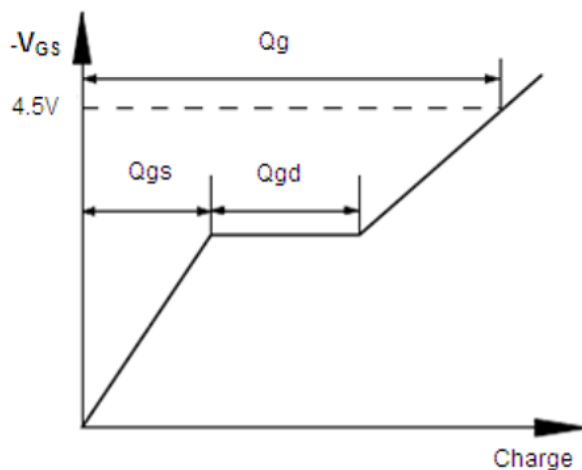


Fig.11 Gate Charge Waveform