

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

DESCRIPTION

The SMG2310B utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device. The SMG2310B is universally used for all commercial-industrial applications.

FEATURES

- Simple Drive Requirement
- Small Package Outline

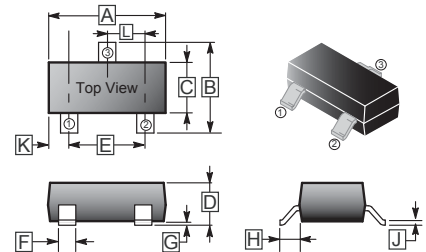
MARKING

2310B

PACKAGE INFORMATION

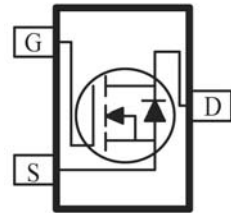
Package	MPQ	Leader Size
SC-59	3K	7 inch

SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.25	3.00	H	0.40	REF.
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

TOP VIEW



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ , $V_{GS}@10\text{V}$	I_D	$T_A=25^\circ\text{C}$	2.3
		$T_A=70^\circ\text{C}$	1.8
Pulsed Drain Current ²	I_{DM}	9.2	A
Power Dissipation ³	P_D	1	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Maximum Junction to Ambient ¹	$R_{\theta JA}$	125	$^\circ\text{C} / \text{W}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Static							
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Breakdown Voltage Temperature	$\Delta BV_{DSS}/\Delta T_j$	-	0.054	-	V/ $^\circ\text{C}$	Reference to 25°C , $I_D=1\text{mA}$	
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transconductance	g_{fs}	-	13	-	S	$V_{DS}=5\text{V}, I_D=2\text{A}$	
Gate-Body Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=48\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		$V_{DS}=48\text{V}, V_{GS}=0$
Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	100	m Ω	$V_{GS}=10\text{V}, I_D=2.3\text{A}$	
		-	-	110		$V_{GS}=4.5\text{V}, I_D=2.2\text{A}$	
Total Gate Charge ²	Q_g	-	5	-	nC	$V_{DS}=48\text{V},$ $V_{GS}=4.5\text{V},$ $I_D=2\text{A}$	
Gate-Source Charge	Q_{gs}	-	1.68	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	1.9	-			
Turn-on Delay Time ²	$T_{d(on)}$	-	1.6	-	nS	$V_{DS}=30\text{V},$ $V_{GS}=10\text{V},$ $R_G=3.3\Omega,$ $R_D=30\Omega,$ $I_D=2\text{A}$	
Rise Time	T_r	-	7.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	25	-			
Fall Time	T_f	-	14.4	-			
Input Capacitance	C_{iss}	-	511	-	pF	$V_{GS}=0,$ $V_{DS}=15\text{V},$ $f=1.0\text{MHz}$	
Output Capacitance	C_{oss}	-	38	-			
Reverse Transfer Capacitance	C_{rss}	-	25	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$I_S=1\text{A}, V_{GS}=0$	
Continuous Source Current ^{1,4}	I_S	-	-	2.3	A	$V_G=V_D=0, \text{Force Current}$	
Pulsed Source Current ^{2,4}	I_{SM}	-	-	9.2			
Reverse Recovery Time	T_{RR}	-	9.7	-	nS	$I_F=2\text{A}, di/dt=100\text{A}/\mu\text{s}$	
Reverse Recovery Charge	Q_{RR}	-	5.8	-	nC	$V_{GS}=0$	

Notes:

- Surface mounted on a 1 inch2 FR-4 board with 2OZ copper. ;270°C / W when mounted on min. copper pad.
- The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- The power dissipation is limited by 150 °C junction temperature
- The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation

CHARACTERISTIC CURVES

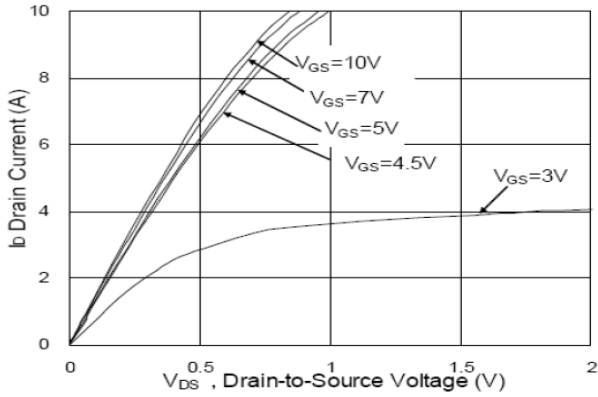


Fig.1 Typical Output Characteristics

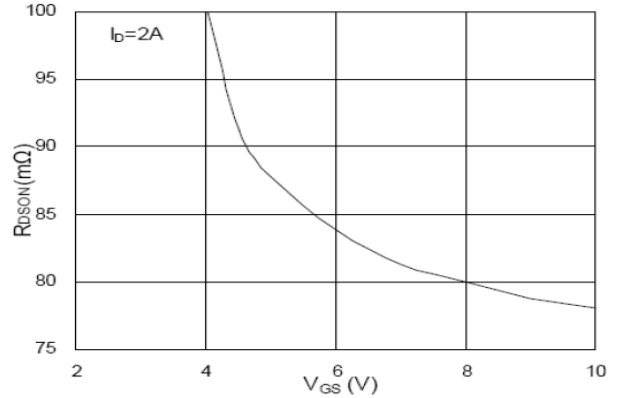


Fig.2 On-Resistance v.s Gate-Source

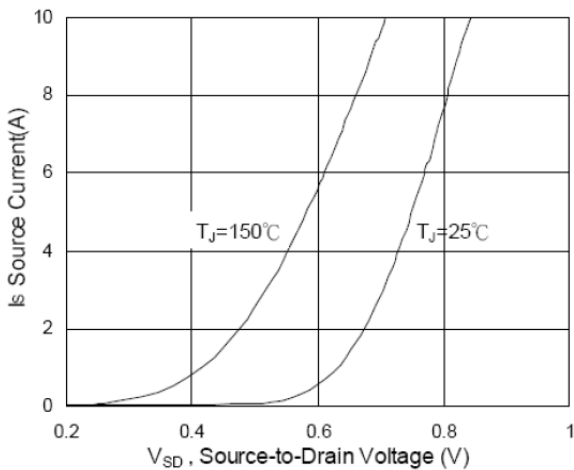


Fig.3 Forward Characteristics of Reverse

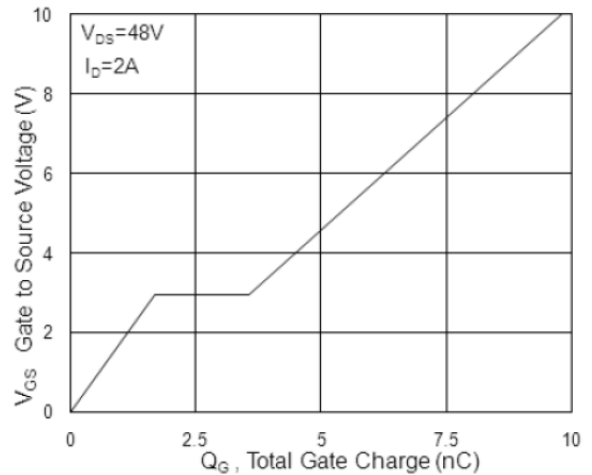


Fig.4 Gate-Charge Characteristics

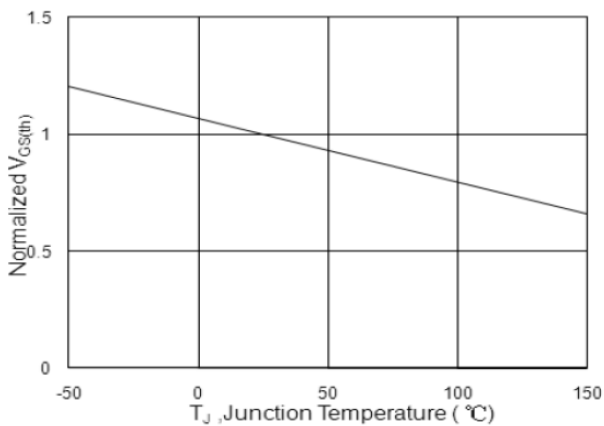


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

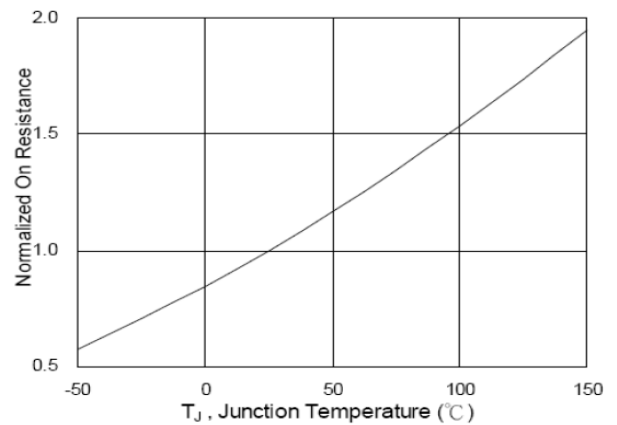


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

CHARACTERISTIC CURVES

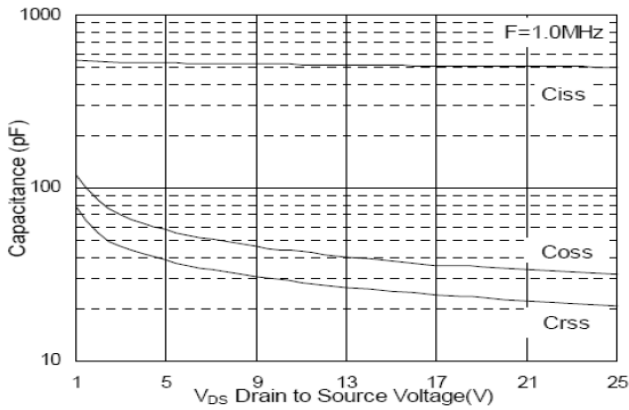


Fig.7 Capacitance

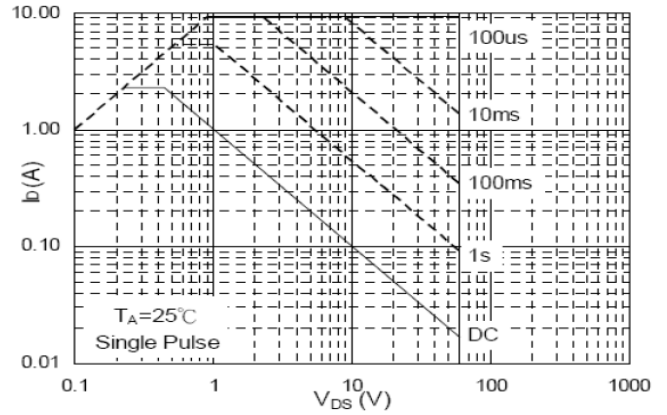


Fig.8 Safe Operating Area

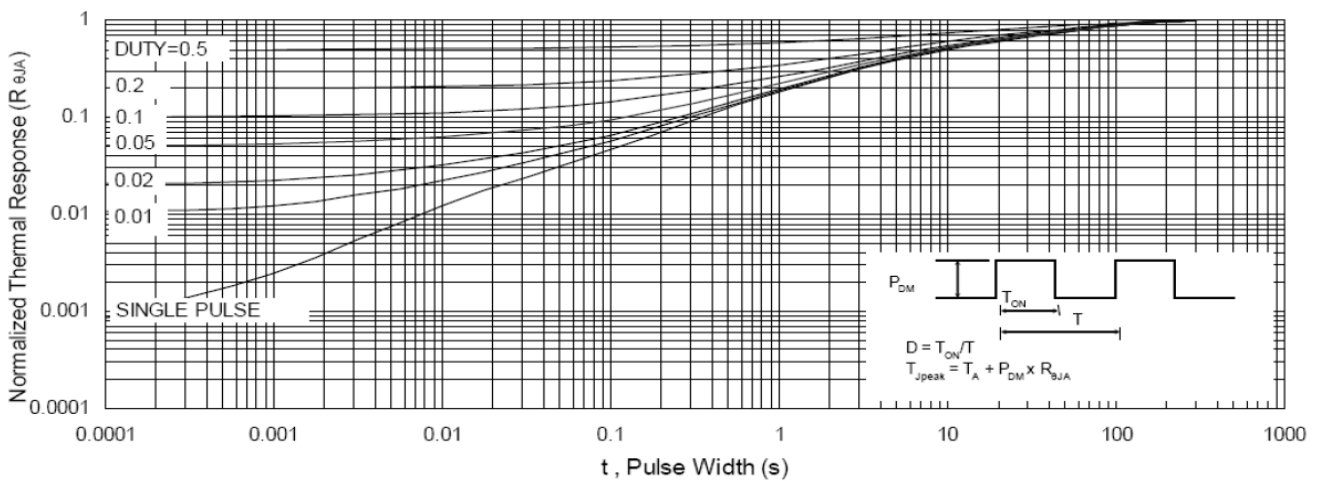


Fig.9 Normalized Maximum Transient Thermal Impedance

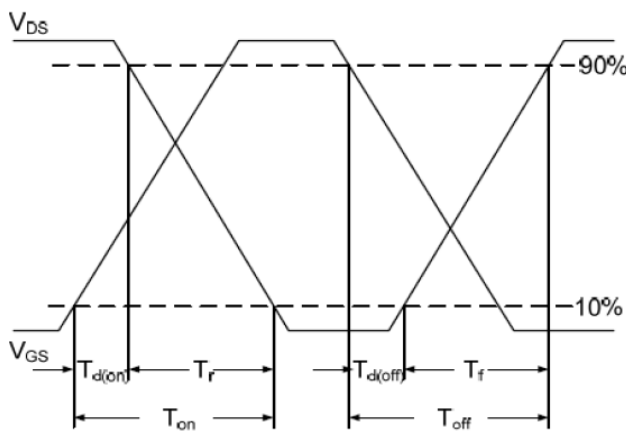


Fig.10 Switching Time Waveform

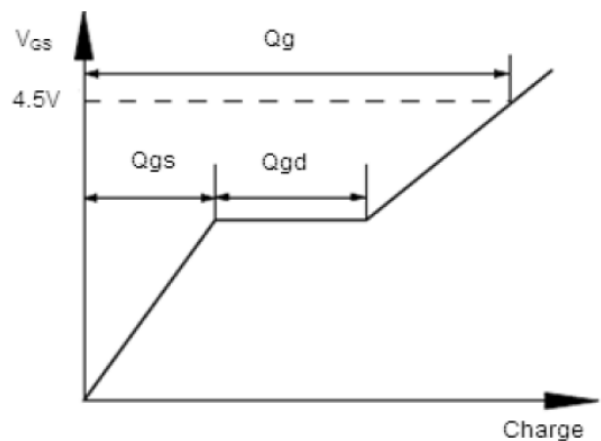


Fig.11 Gate Charge Waveform