Elektronische Bauelemente

SGM0410-C

3.5A, 100V, $R_{DS(ON)}$ 170mΩ
N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

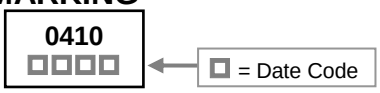
The SGM0410-C is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SGM0410-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



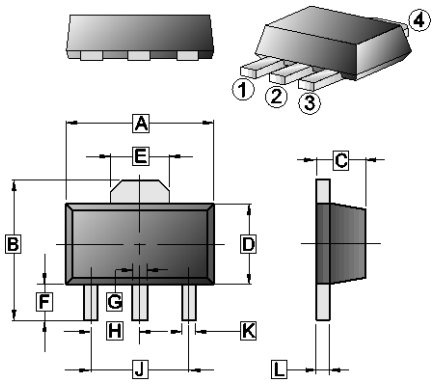
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7 inch

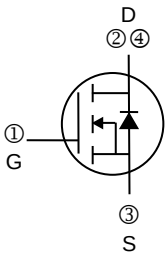
ORDER INFORMATION

Part Number	Type
SGM0410-C	Lead (Pb)-free and Halogen-free

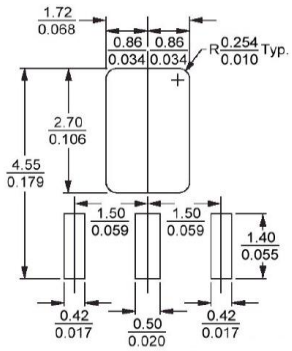
SOT-89



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	0.40	0.58
B	3.94	4.25	H	1.50 TYP.	
C	1.40	1.60	J	3.00 TYP.	
D	2.25	2.60	K	0.32	0.52
E	1.55 TYP.		L	0.35	0.44
F	0.89	1.20			



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_A=25°C	I_D	3.5	A
	T_A=70°C		2.8	A
Pulsed Drain Current [3]		I_{DM}	10	A
Power Dissipation	T_A=25°C	P_D	1.5	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-65~150	°C
Thermal Resistance Rating				
Maximum Thermal Resistance from Junction-Ambient [1]		$R_{\theta JA}$	t≦10s, 50	°C/W
			Steady State, 85	
Maximum Thermal Resistance from Junction-Ambient [2]		$R_{\theta JA}$	135	
Maximum Thermal Resistance from Junction-Case [1]		$R_{\theta JC}$	36	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250uA
Gate Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer conductance		g_{fs}	-	4	-	S	V_{DS}=5V, I_D=2A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0
	T_J=55°C		-	-	10		V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	170	mΩ	V_{GS}=10V, I_D=2.6A
			-	-	200		V_{GS}=5V, I_D=1.7A
Total Gate Charge		Q_g	-	20	-	nC	I_D=6A V_{DS}=50V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	4	-		
Gate-Drain (“Miller”) Charge		Q_{gd}	-	5	-		
Turn-On Delay Time		$T_{d(on)}$	-	17.3	-	nS	V_{DD}=50V I_D=1A V_{GS}=10V R_G=3.3Ω R_D=50Ω
Rise Time		T_r	-	2.8	-		
Turn-Off Delay Time		$T_{d(off)}$	-	50	-		
Fall Time		T_f	-	2.8	-		
Input Capacitance		C_{iss}	-	1077	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	46	-		
Reverse Transfer Capacitance		C_{rss}	-	32	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	3.5	A	
Pulsed Source Current [3]		I_{SM}	-	-	10	A	
Diode Forward Voltage [4]		V_{SD}	-	-	1.2	V	I_S=3.5A, V_{GS}=0V
Reverse Recovery Time		t_{rr}	-	26	-	nS	I_F=6A, dI/dt=100A/μs, T_J=25°C
Reverse Recovery Charge		Q_{rr}	-	15	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by Max. junction temperature.
4. Pulse width≤300us, duty cycle≤2%.

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CHARACTERISTIC CURVES

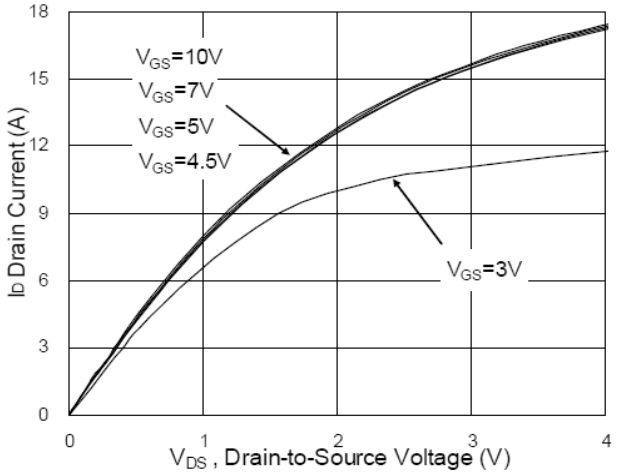

Fig.1 Typical Output Characteristics

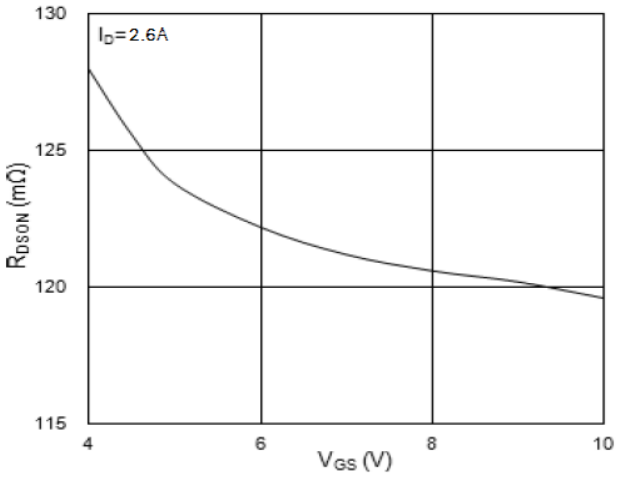

Fig.2 On-Resistance vs. Gate-Source

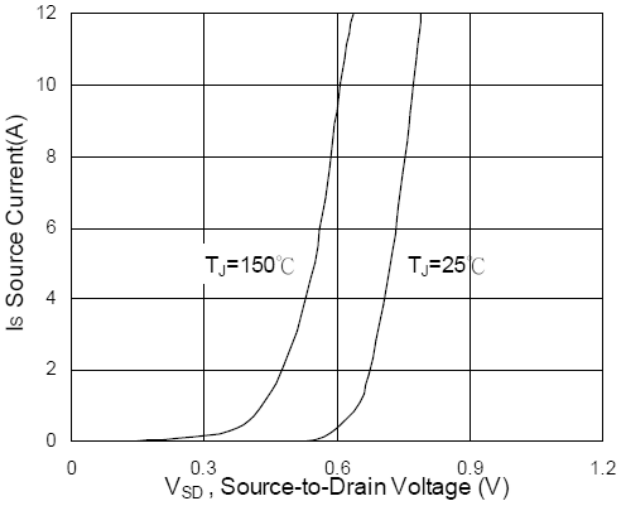

Fig.3 Forward Characteristics Of Reverse

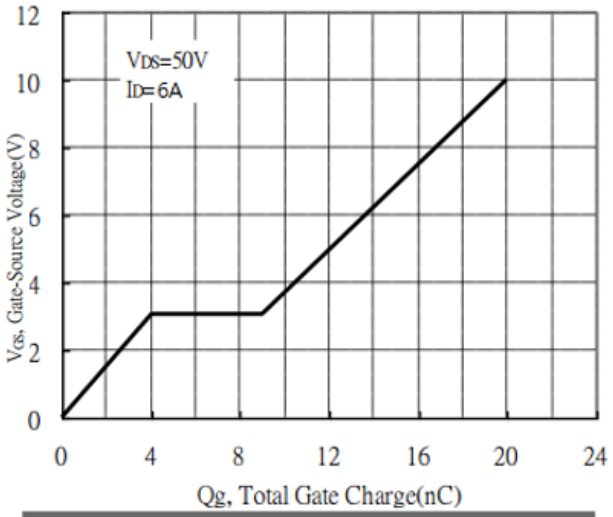

Fig.4 Gate-Charge Characteristics

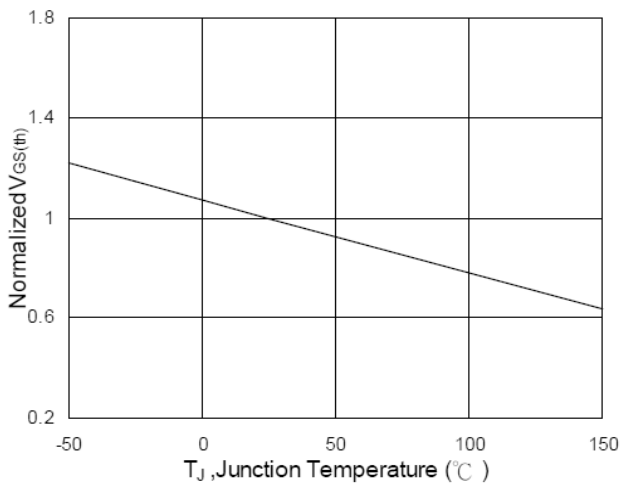

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

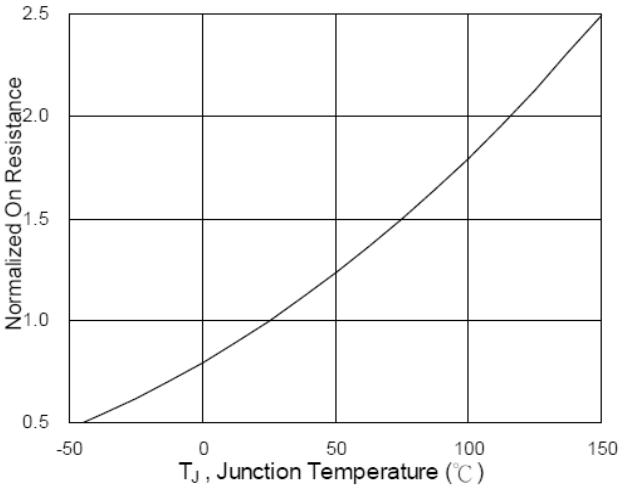

Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

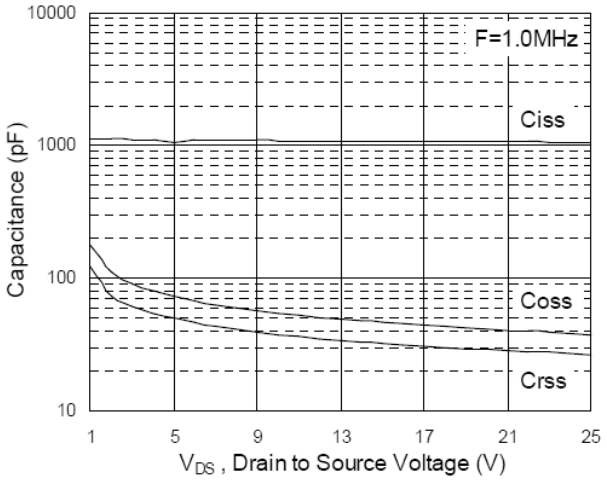

Fig.7 Capacitance

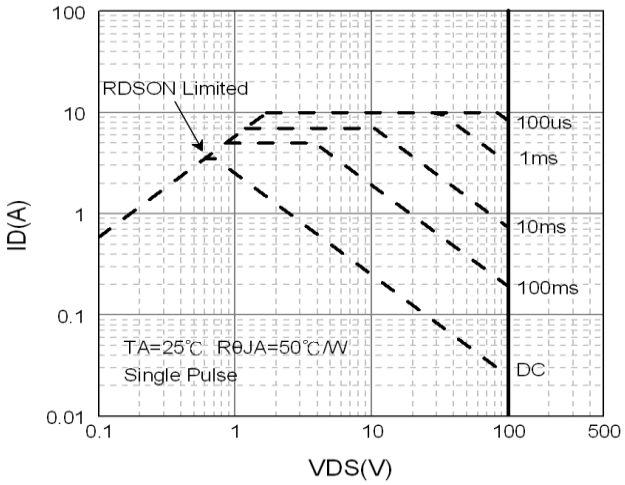

Fig.8 Safe Operating Area

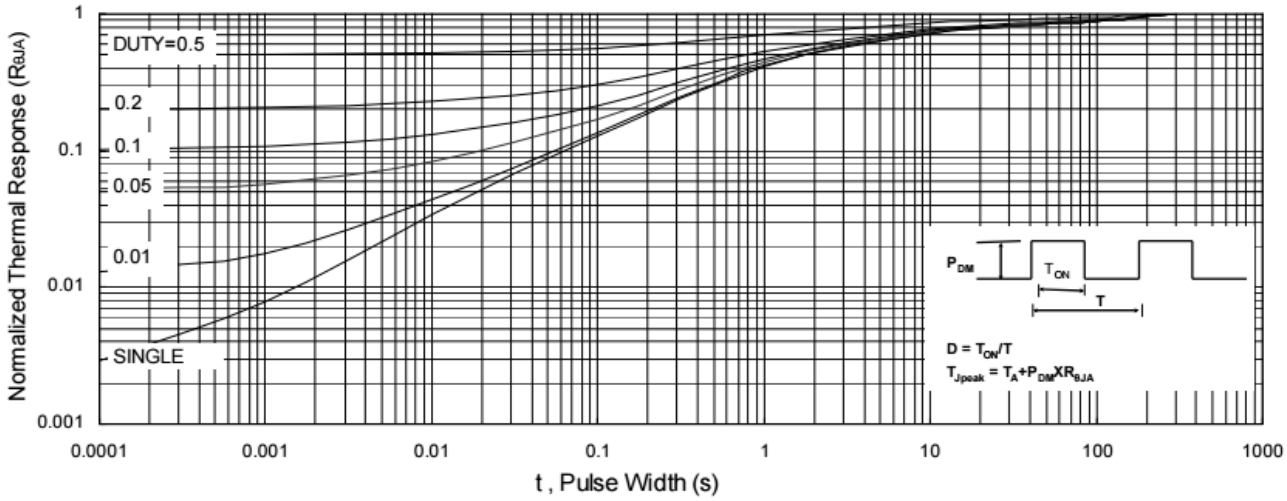

Fig.9 Normalized Maximum Transient Thermal Impedance

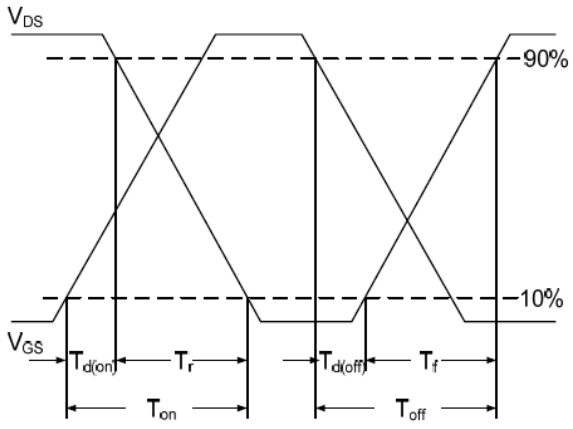

Fig.10 Switching Time Waveform

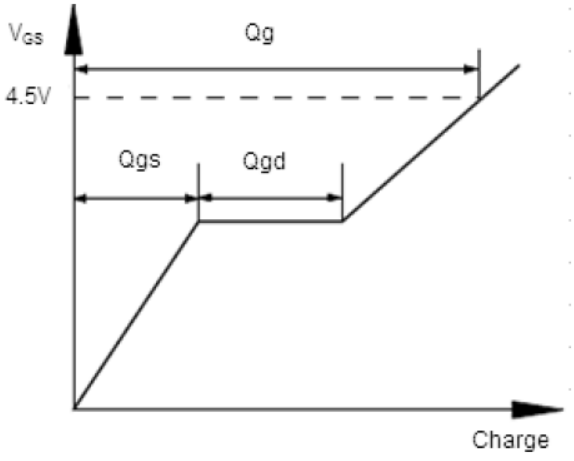

Fig.11 Gate Charge Waveform