Elektronische Bauelemente

SGM0410

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

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

DESCRIPTION

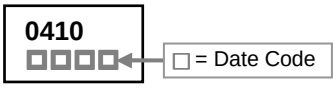
The SGM0410 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The SGM0410 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

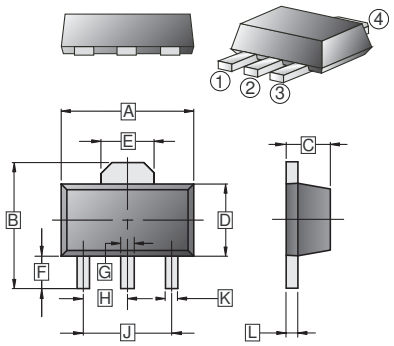
MARKING



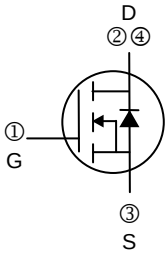
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7 inch

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			



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ 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℃	I_D	3.5	A
	T_A=70℃		2.8	A
Pulsed Drain Current [3]		I_{DM}	10	A
Power Dissipation	T_A=25℃	P_D	1.5	W
Operating Junction and Storage Temperature		T_J, T_{STG}	-65~150	℃
Thermal Resistance Rating				
Maximum Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	t≦10s , 50	℃ / W
			Steady State , 85	
Maximum Thermal Resistance from Junction to Ambient [2]		$R_{\theta JA}$	135	℃ / W
Maximum Thermal Resistance from Junction to Case [1]		$R_{\theta JC}$	36	℃ / W

ELECTRICAL CHARACTERISTICS (T_J=25℃ 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	gfs	-	4	-	S	V_{DS}=5V, I_D=2A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0,T_J=25℃
		-	-	10		V_{DS}=80V, V_{GS}=0,T_J=55℃
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℃
Reverse Recovery Charge	Q_{rr}	-	15	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR4 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

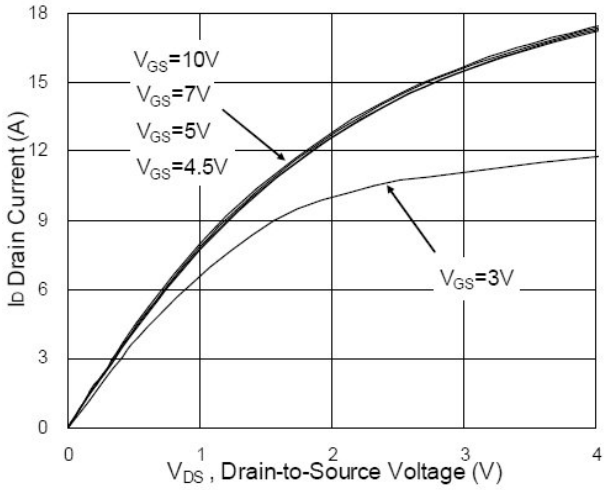

Fig.1 Typical Output Characteristics

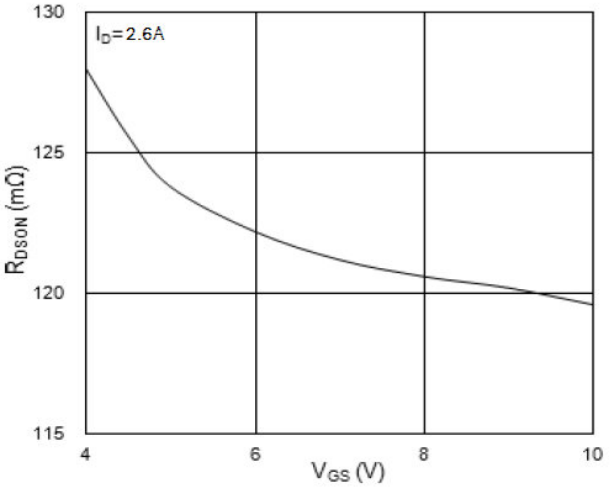

Fig.2 On-Resistance vs. Gate-Source

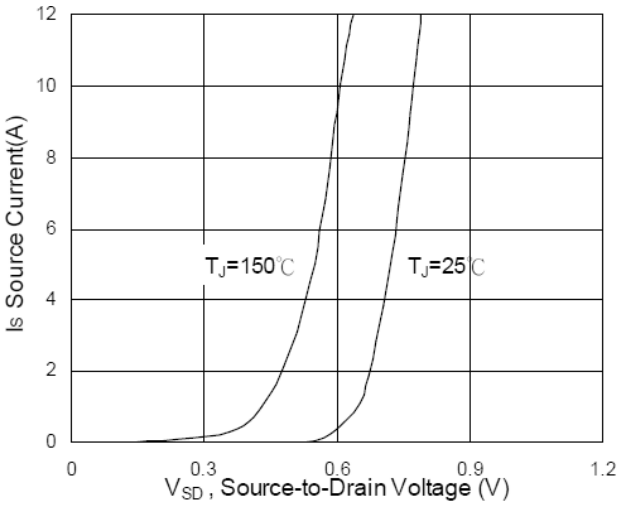

Fig.3 Forward Characteristics Of Reverse

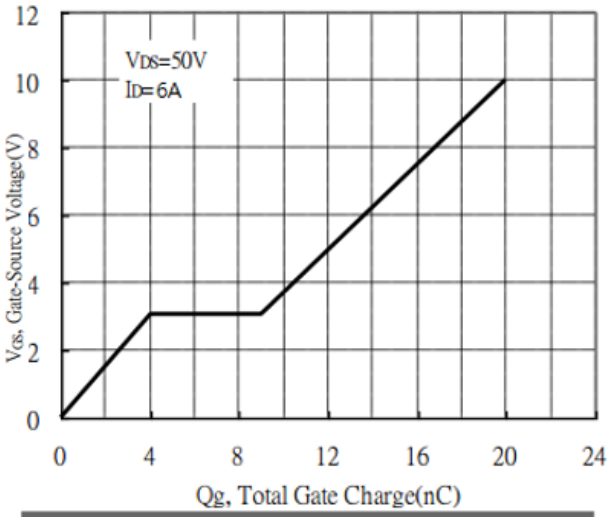

Fig.4 Gate-Charge Characteristics

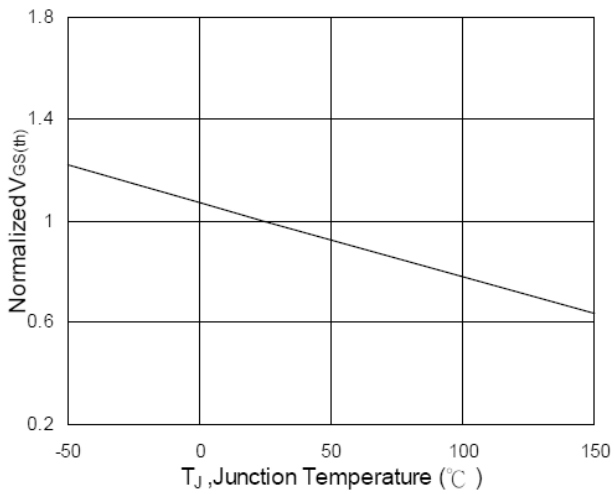

Fig.5 Normalized $V_{GS(th)}$ vs. T_J

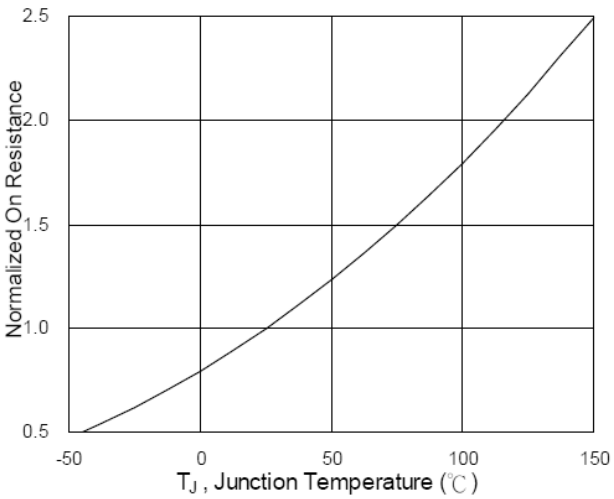

Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

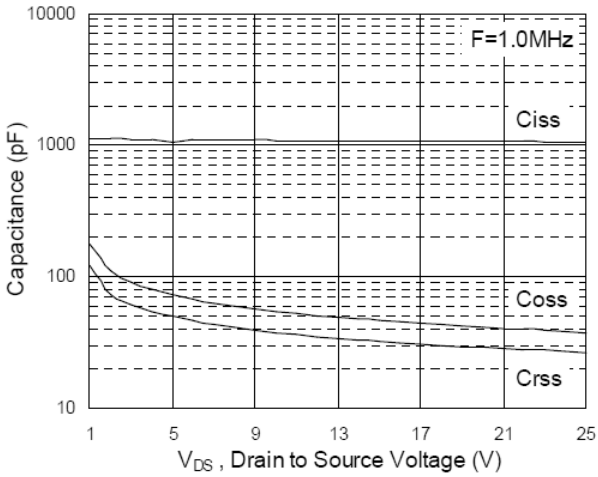

Fig.7 Capacitance

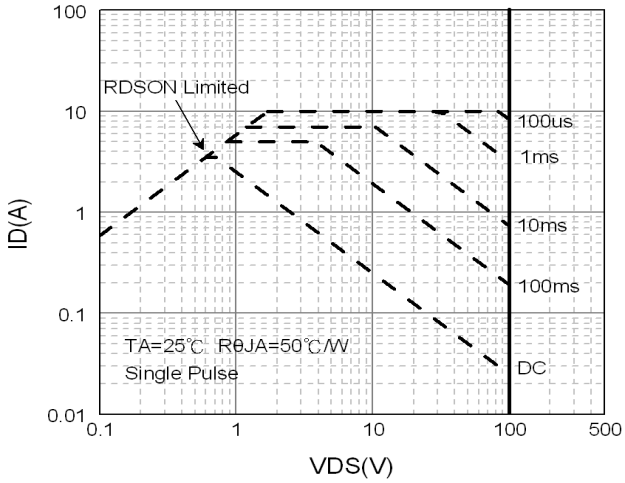

Fig.8 Safe Operating Area

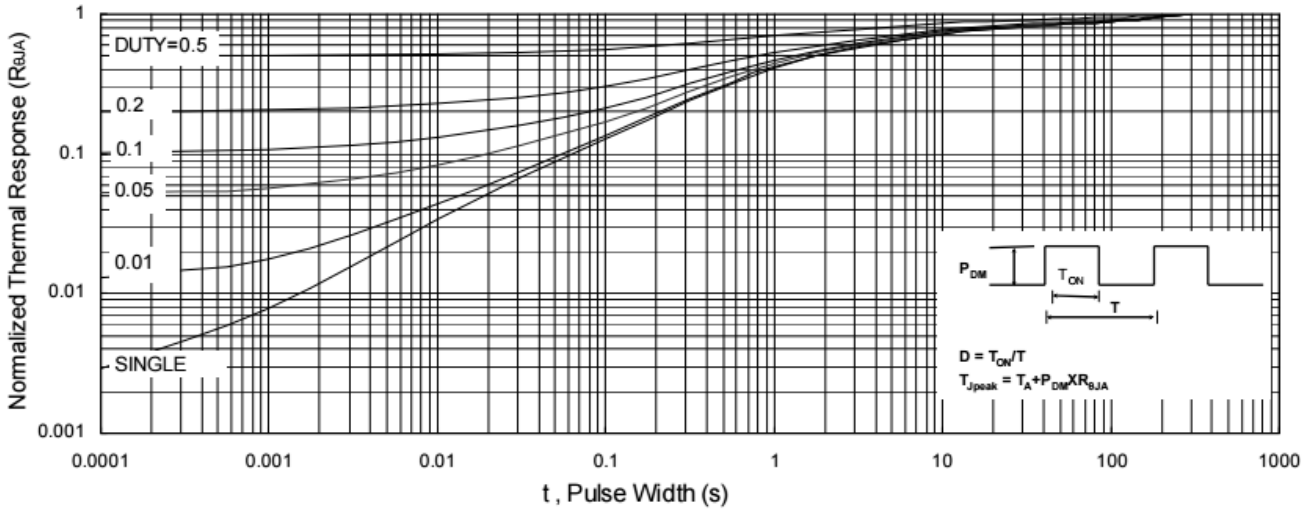

Fig.9 Normalized Maximum Transient Thermal Impedance

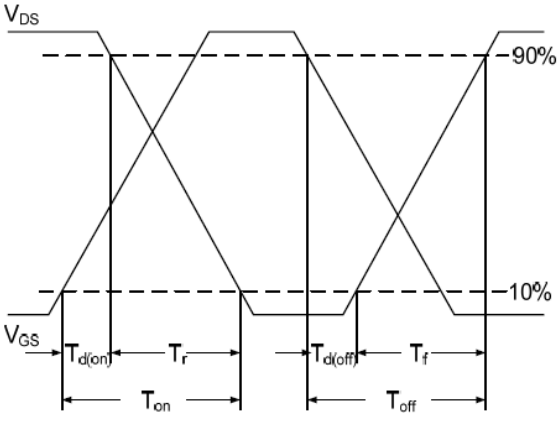

Fig.10 Switching Time Waveform

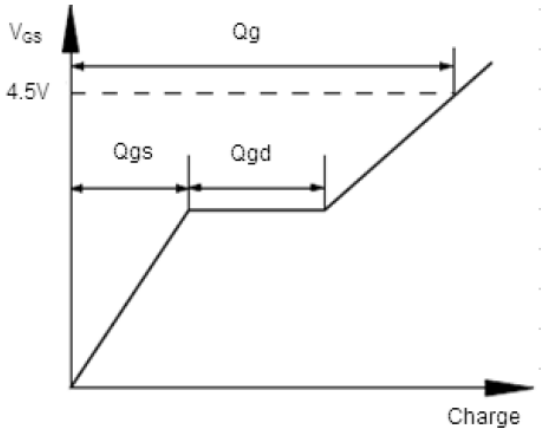

Fig.11 Gate Charge Waveform