Elektronische Bauelemente

SGM0410

3.5A , 100V , $R_{DS(ON)}$ 170 mΩ

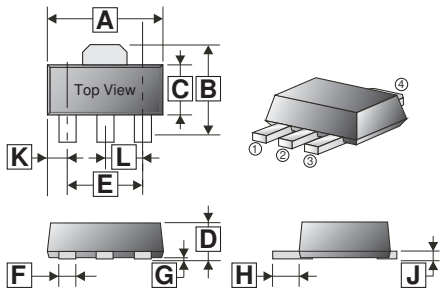
N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

The SGM0410 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-89 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SOT-89

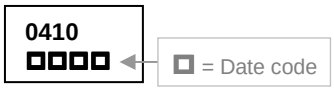


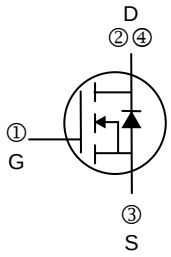
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.60	G	-	-
B	4.05	4.25	H	0.89	1.20
C	2.40	2.60	J	0.35	0.41
D	1.40	1.60	K	0.70	0.80
E	3.00 REF.		L	1.50 REF.	
F	0.40	0.52			

FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING





PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-89	1K	7 inch

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 DrainCurrent[3]@	V_{GS}=5V, T_A=25℃	I_D	3.5	A
	V_{GS}=5V, T_A=70℃		2.2	A
Pulsed Drain Current[1,2]		I_{DM}	10	A
Power Dissipation	T_A=25℃	P_D	2	W
Linear Derating Factor			0.016	W / ℃
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient[3](Max).		$R_{\theta JA}$	62.5	℃ / W

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=10V, I_D=1mA
Forward Transconductance	gfs	-	4	-	S	V_{DS}=10V, I_D=2.5A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	10	μA	V_{DS}=100V, V_{GS}=0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	170	mΩ	V_{GS}=10V, I_D=2.6A
		-	-	200		V_{GS}=5V, I_D=1.7A
Total Gate Charge [2]	Q_g	-	11.2	-	nC	I_D=3.5A V_{DS}=80V V_{GS}=5V
Gate-Source Charge	Q_{gs}	-	4.4	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	3	-		
Turn-on Delay Time [2]	$T_{d(on)}$	-	9	-	nS	V_{DD}=30V I_D=1A V_{GS}=10V R_G=6Ω R_D=30Ω
Rise Time	T_r	-	9.4	-		
Turn-off Delay Time	$T_{d(off)}$	-	26.8	-		
Fall Time	T_f	-	2.6	-		
Input Capacitance	C_{iss}	-	975	-	pF	V_{GS}=0 V_{DS}=25V f=1.0 MHz
Output Capacitance	C_{oss}	-	38	-		
Reverse Transfer Capacitance	C_{rss}	-	27	-		
Source-Drain Diode						
Forward On Voltage[2]	V_{SD}	-	-	1.5	V	I_S=3.5A, V_{GS}=0

Notes:
1. Pulse width limited by Max. junction temperature.
2. Pulse test.
3. Surface mounted on 1 in^2 copper pad of FR4 board;135℃ /w when mounted on Mi n. copper pad.

CHARACTERISTIC CURVES

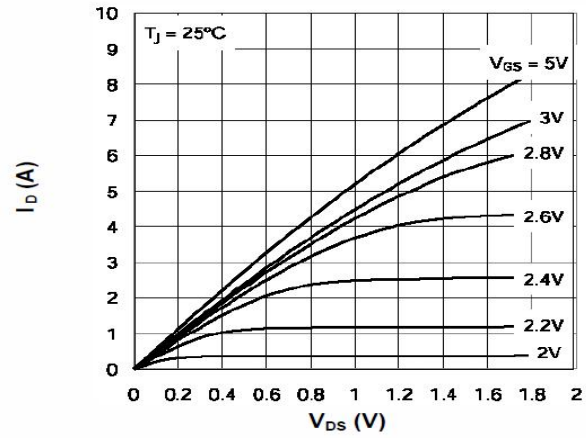


Fig 1. Typical Output Characteristics

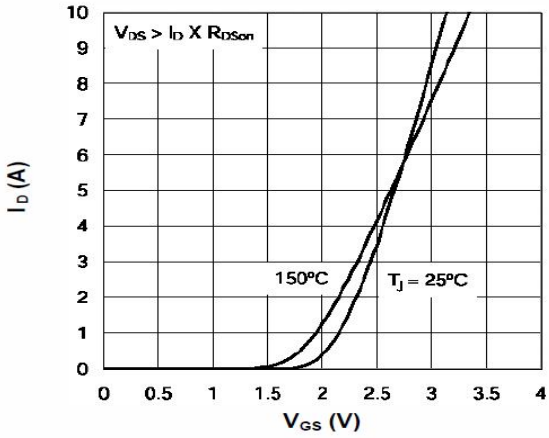


Fig 2. Transfer Characteristics

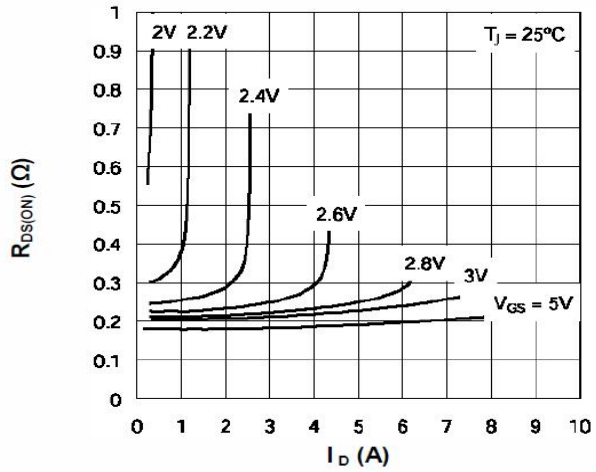


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

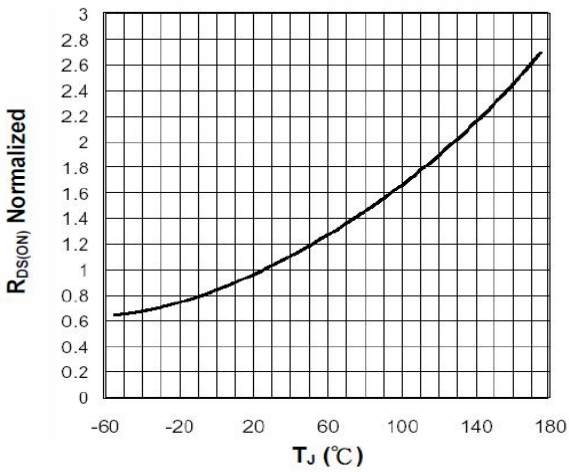


Fig 4. On-Resistance vs. Junction Temperature

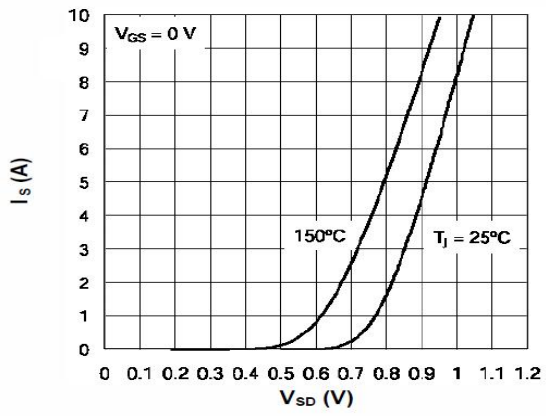


Fig 5. Body Diode Characteristics

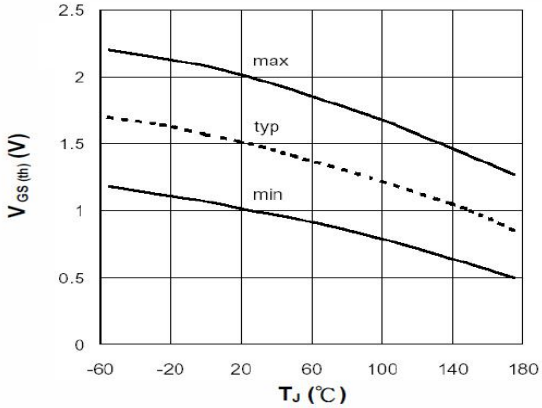


Fig 6. Gate-Source Threshold Voltage vs. Junction Temperature

CHARACTERISTIC CURVES

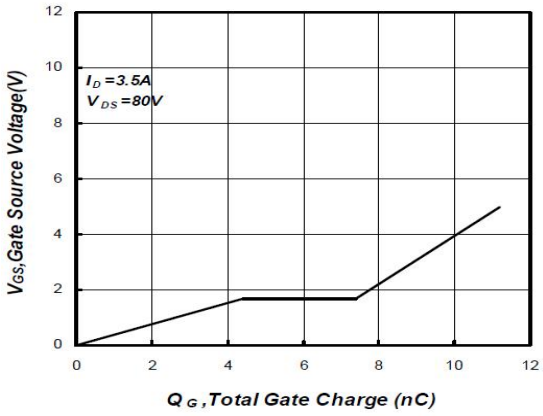


Fig 7. Gate Charge Characteristics

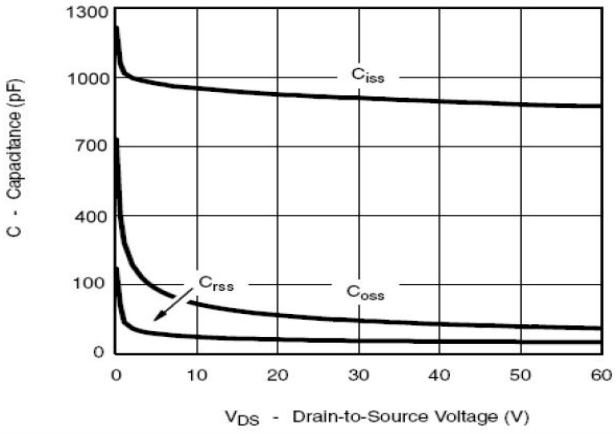


Fig 8. Typical Capacitance Characteristics

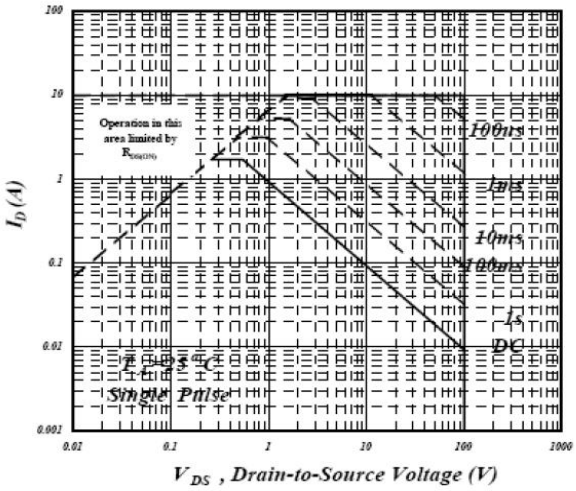


Fig 9. Maximum Safe Operating Area

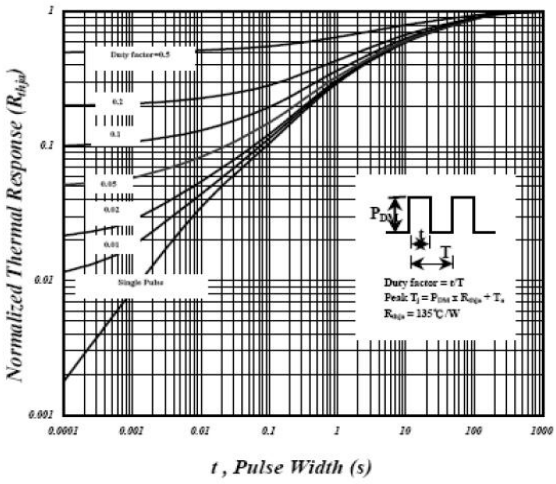


Fig 10. Effective Transient Thermal Impedance

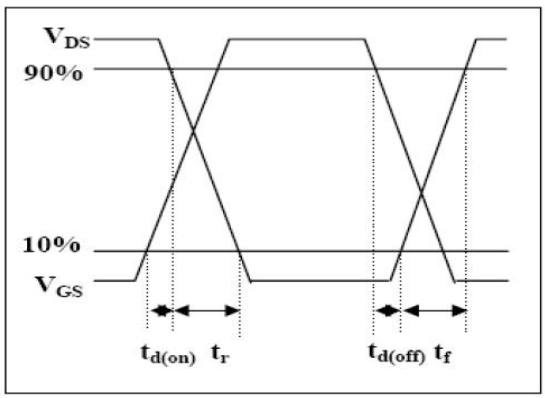


Fig 11. Switching Time Waveform

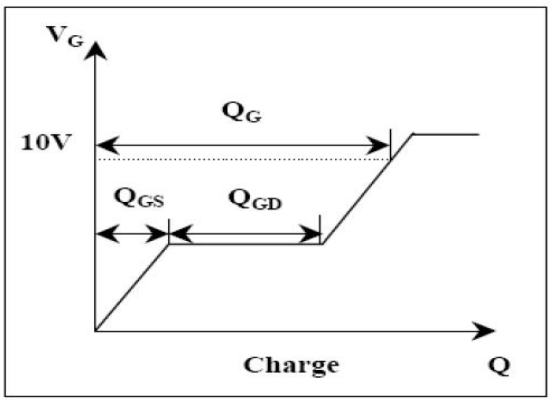


Fig 12. Gate Charge Waveform