SSM0410S

Elektronische Bauelemente

3A , 100V , $R_{DS(ON)}$ 310 mΩ

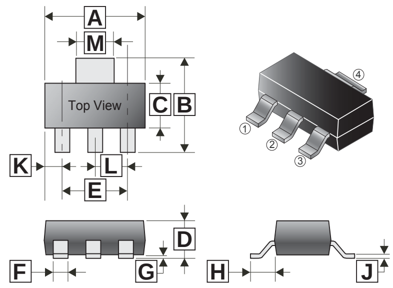
N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

The SSM0410S provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The SOT-223 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SOT-223

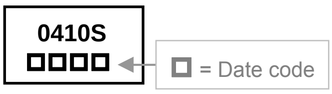


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.20	6.70	G	-	0.10
B	6.70	7.30	H	-	-
C	3.30	3.70	J	0.25	0.35
D	1.42	1.90	K	-	-
E	4.50	4.70	L	2.30 REF.	
F	0.60	0.82	M	2.90	3.10

FEATURES

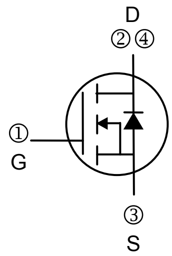
- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch



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	A
	T_A=70°C		1.7	A
Pulsed Drain Current [2]		I_{DM}	5.5	A
Power Dissipation [3]	T_A=25°C	P_D	1.5	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-65~150	°C
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient[1](Max).		$R_{\theta JA}$	85	°C / W
Thermal Resistance Junction-Case[1](Max).		$R_{\theta JC}$	36	°C / W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	V_{GS}=0, I_D= 250µA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250µA
Forward Transconductance	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	I_{DSS}	-	-	1	µA	V_{DS}=80V, V_{GS}=0, T_J=25°C
		-	-	5		V_{DS}=80V, V_{GS}=0, T_J=55°C
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	-	310	mΩ	V_{GS}=10V, I_D=3A
		-	-	320		V_{GS}=4.5V, I_D=1.7A
Total Gate Charge(10V)	Q_g	-	9.1	-	nC	I_D=2A V_{DS}=50V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	2	-		
Gate-Drain Change	Q_{gd}	-	1.4	-		
Turn-on Delay Time [2]	$T_{d(on)}$	-	2	-	nS	V_{DD}=50V I_D=2A V_{GS}=10V R_G=3.3Ω R_L=30Ω
Rise Time	T_r	-	21.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	11.2	-		
Fall Time	T_f	-	18.8	-		
Input Capacitance	C_{iss}	-	508	-	pF	V_{GS} =0 V_{DS}=15V f =1.0MHz
Output Capacitance	C_{oss}	-	29	-		
Reverse Transfer Capacitance	C_{rss}	-	16.4	-		
Source-Drain Diode						
Diode Forward Voltage [2]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0, T_J=25°C
Continuous Source Current [1,4]	I_S	-	-	3	A	V_D=V_G=0, Force Current
Pulsed Source Current [2,4]	I_{SM}	-	-	5.5	A	
Reverse Recovery Time	T_{rr}	-	17.5	-	nS	I_F=2A, dI/dt=100A/µS, T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	14	-	nC	

Note:

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2_{OZ} copper.
2. The data tested by pulsed , pulse width ≦ 300µs , duty cycle ≦ 2%
3. The power dissipation is limited by 150°C, junction temperature.
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

CHARACTERISTIC CURVES

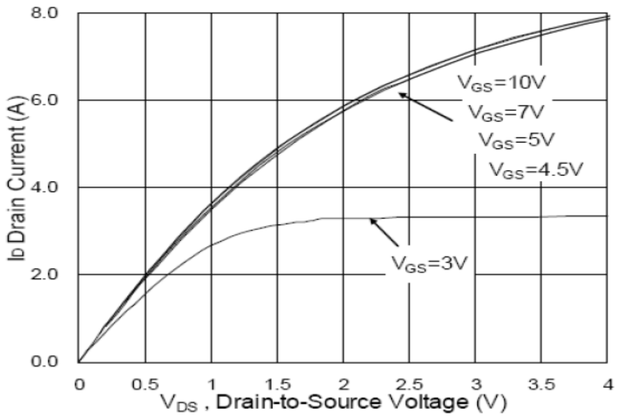


Fig.1 Typical Output Characteristics

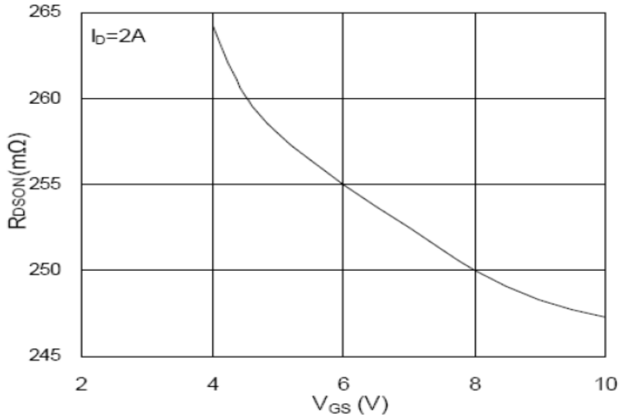


Fig.2 On-Resistance vs. Gate-Source

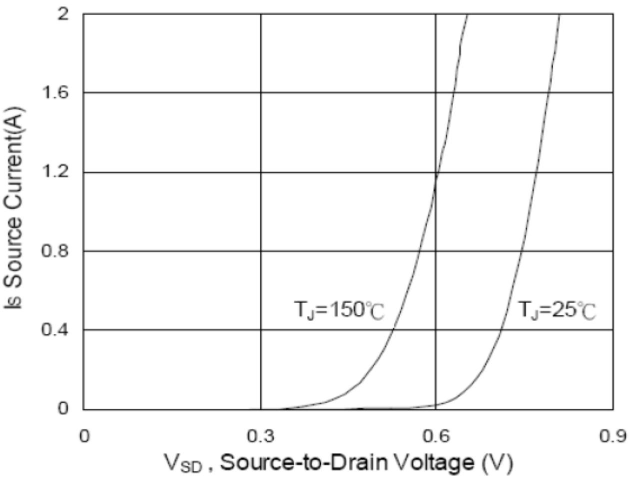


Fig.3 Forward Characteristics of Reverse

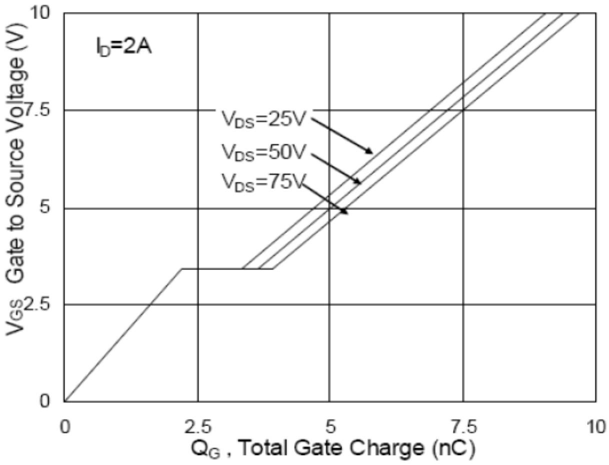


Fig.4 Gate-Charge Characteristics

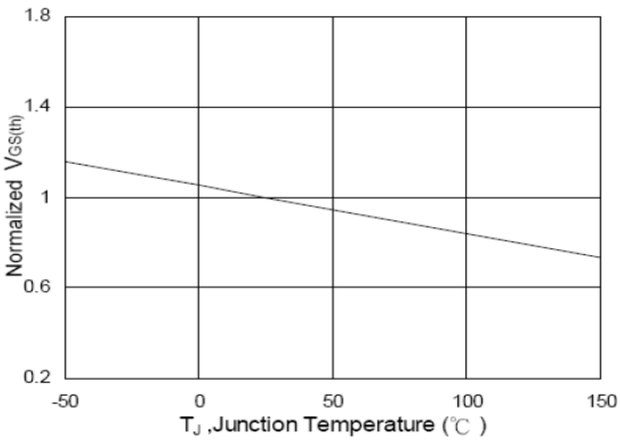


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

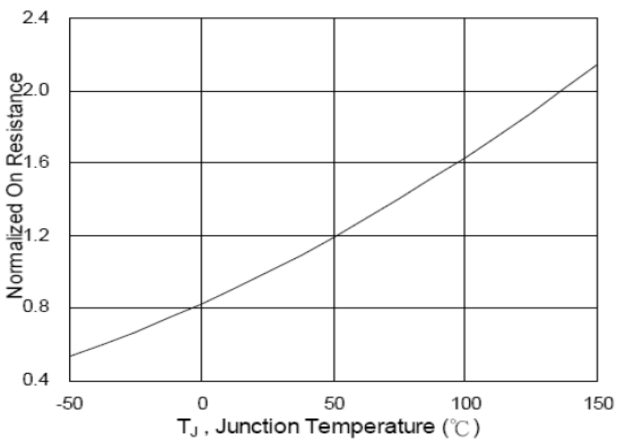


Fig.6 Normalized R_{DSON} vs. T_J

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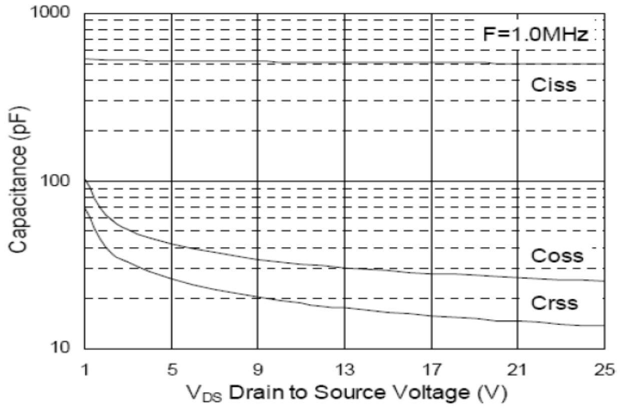

Fig.7 Capacitance

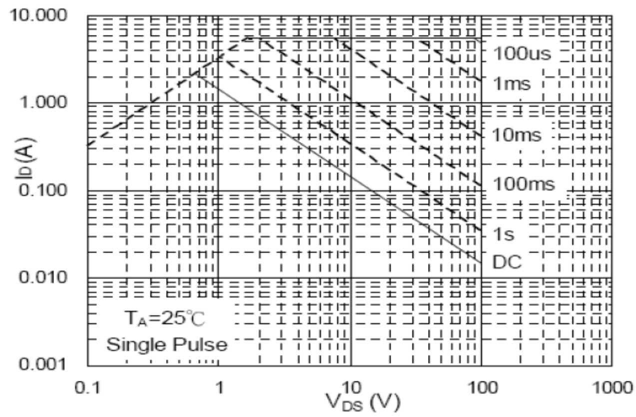

Fig.8 Safe Operating Area

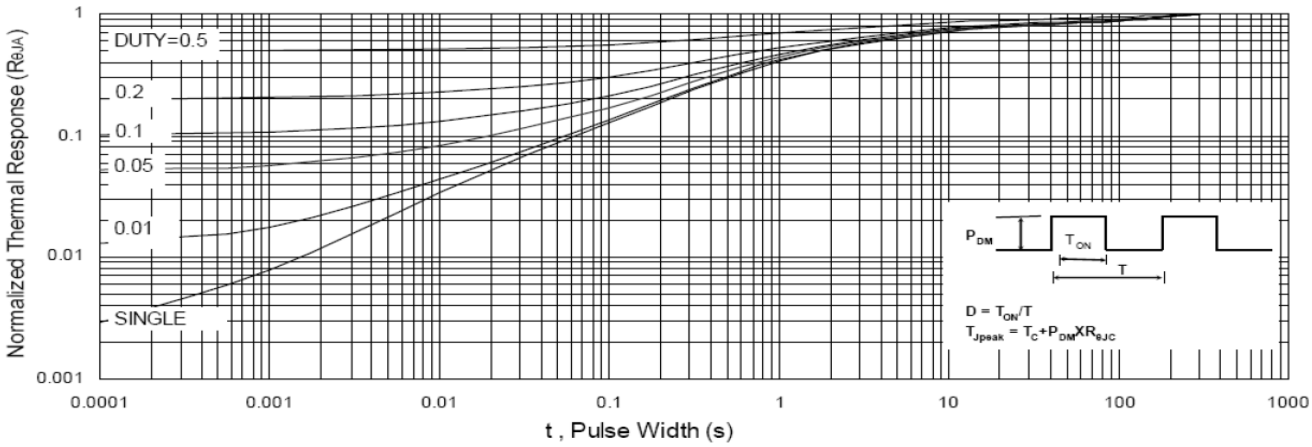

Fig.9 Normalized Maximum Transient Thermal Impedance

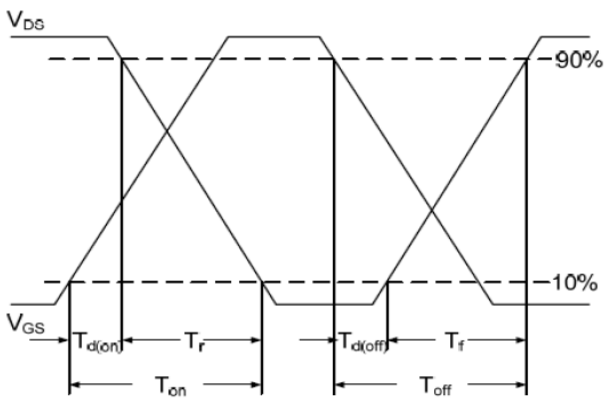

Fig.10 Switching Time Waveform

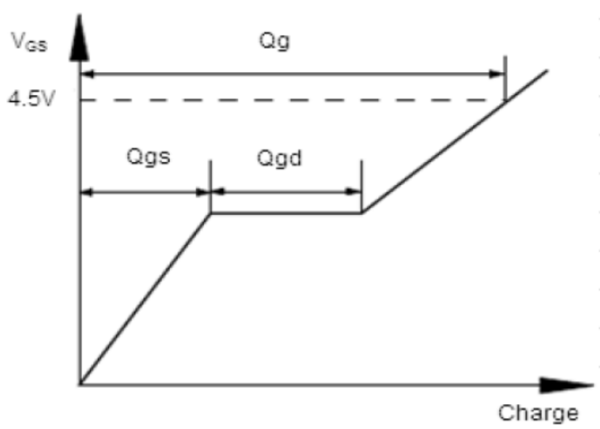

Fig.11 Gate Charge Waveform