Elektronische Bauelemente

SSM9577-C

-3.8A, -60V, $R_{DS(ON)}$ 85mΩ

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

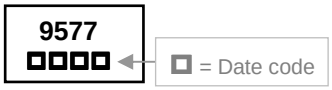
The SSM9577-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSM9577-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



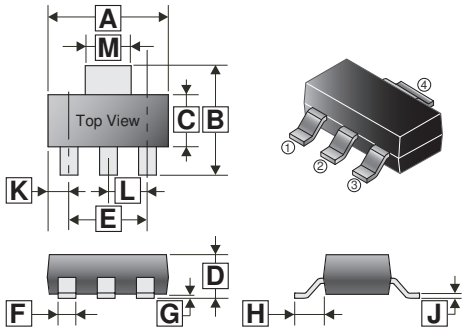
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch

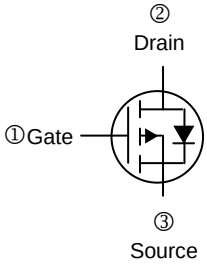
ORDER INFORMATION

Part Number	Type
SSM9577-C	Lead (Pb)-free and Halogen-free

SOT-223



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.90	6.70	G	-	0.18
B	6.70	7.30	H	2.00 REF.	
C	3.30	3.80	J	0.20	0.40
D	1.40	1.90	K	1.10 REF.	
E	4.45	4.75	L	2.30 REF.	
F	0.60	0.85	M	2.80	3.20



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}=10V [1]	T_A=25℃	I_D	-3.8	A
	T_A=70℃		-3	A
Pulsed Drain Current [3]		I_{DM}	-8	A
Total Power Dissipation	T_A=25℃	P_D	1.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Maximum Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	85	℃/W
Maximum Thermal Resistance from Junction to Ambient [2]			125	
Maximum Thermal Resistance from Junction to Case [1]		$R_{\theta JC}$	60	

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-60	-	-	V	V_{GS}=0, I_D= -250uA
Gate-Threshold Voltage		$V_{GS(th)}$	-1	-	-2.5	V	V_{DS}=V_{GS}, I_D= -250uA
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	uA	V_{DS}= -48V, V_{GS}=0
	T_J=55℃		-	-	-5		V_{DS}= -48V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	85	mΩ	V_{GS}= -10V, I_D= -3A
			-	-	105		V_{GS}= -4.5V, I_D= -2A
Total Gate Charge		Q_g	-	11.8	-	nC	I_D= -3A V_{DS}= -20V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	1.9	-		
Gate-Drain Charge		Q_{gd}	-	6.5	-		
Turn-on Delay Time		$T_{d(on)}$	-	8.8	-	nS	V_{DS}= -15V I_D= -1A V_{GS}= -10V R_G=3.3Ω
Rise Time		T_r	-	19.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	47.2	-		
Fall Time		T_f	-	9.6	-		
Input Capacitance		C_{iss}	-	1080	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	73	-		
Reverse Transfer Capacitance		C_{rss}	-	50	-		
Source-Drain Diode							
Forward On Voltage [4]		V_{SD}	-	-	-1.2	V	I_S= -1A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	-3.8	A	
Pulsed Source Current [3]		I_{SM}	-	-	-8		

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150℃ junct ion temperature.
4. The data tested by pulsed, Pulse width≦300us, Duty cycle≦2%.

TYPICAL CHARACTERISTIC CURVES

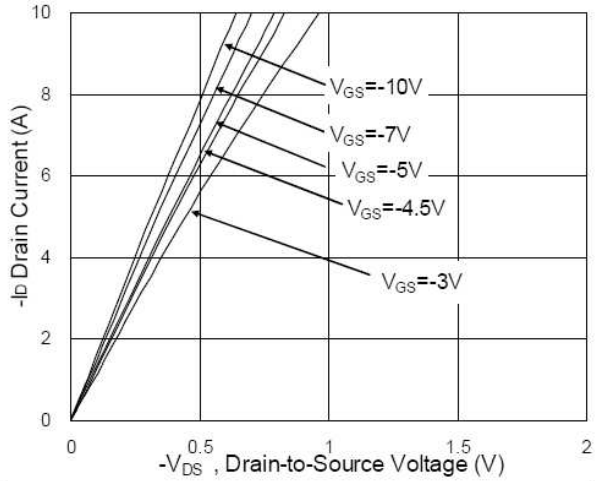


Fig.1 Typical Output Characteristics

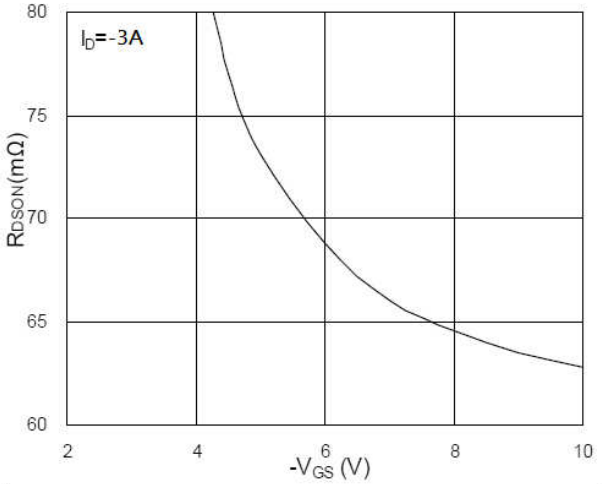


Fig.2 On-Resistance v.s Gate-Source

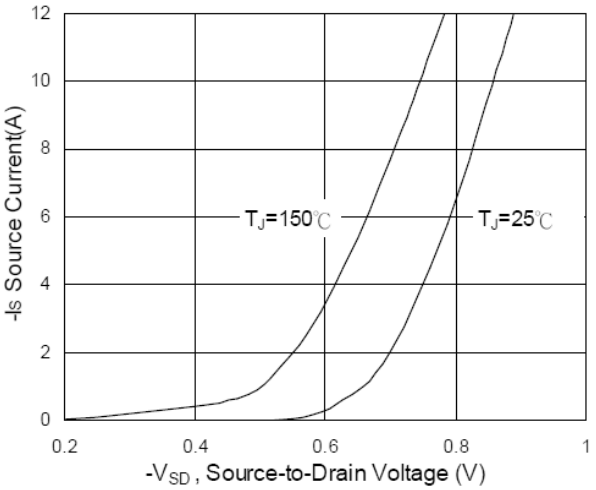


Fig.3 Forward Characteristics of Reverse

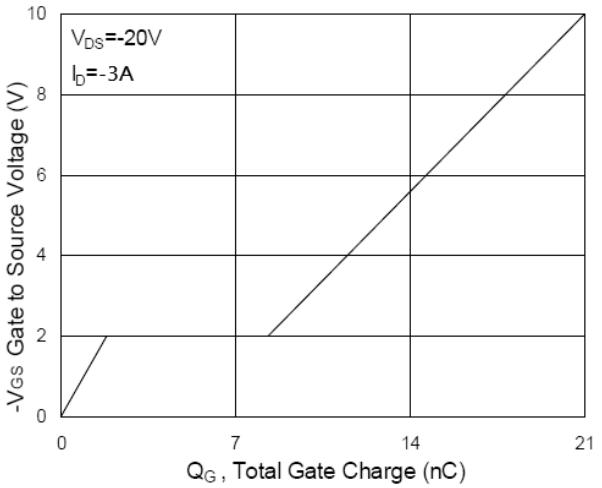


Fig.4 Gate-Charge Characteristics

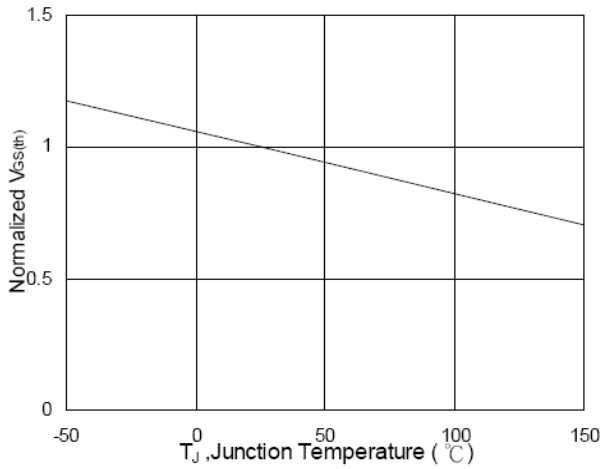


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

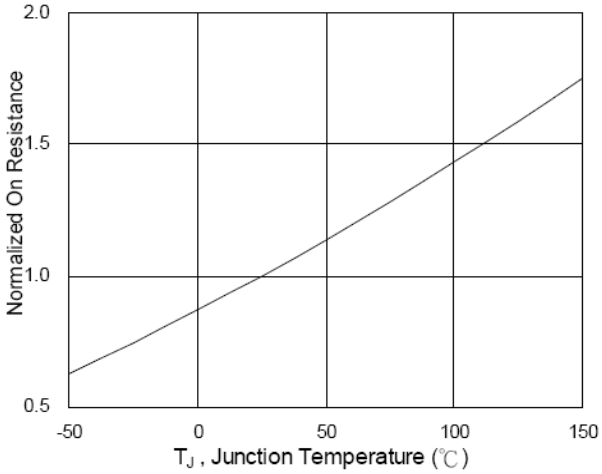


Fig.6 Normalized R_{DSON} v.s T_J

TYPICAL CHARACTERISTIC CURVES

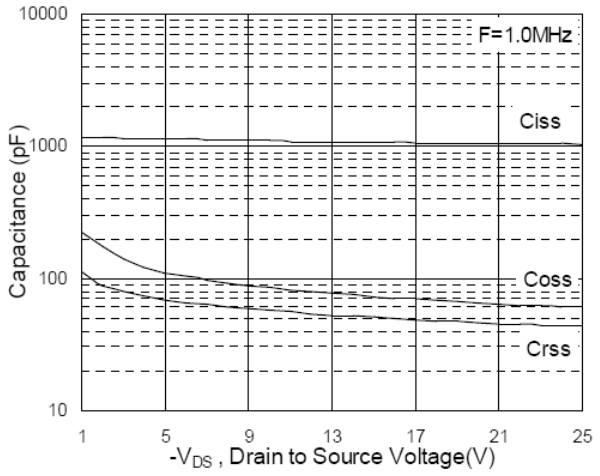


Fig.7 Capacitance

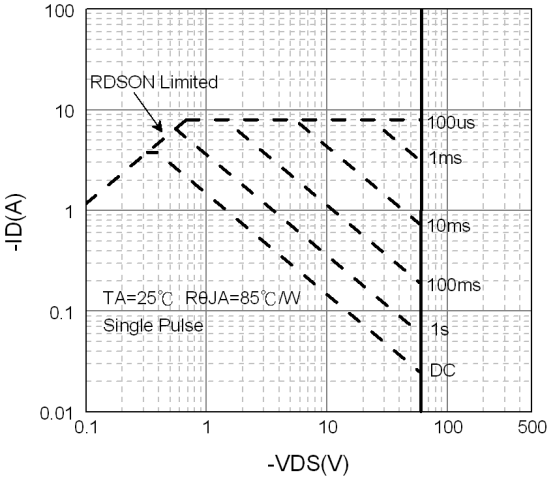


Fig.8 Safe Operating Area

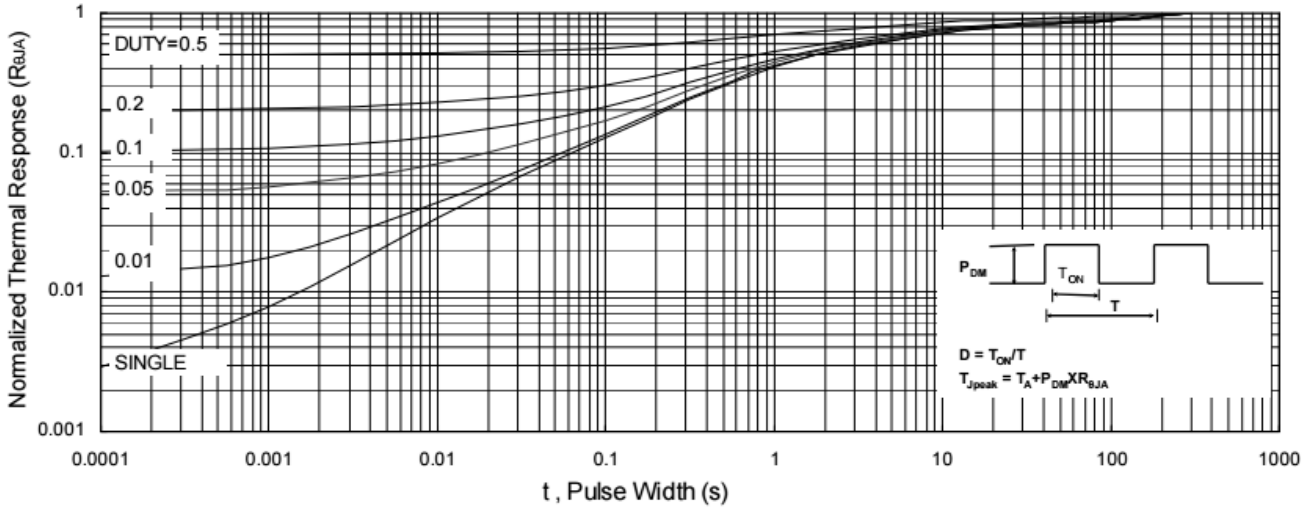


Fig.9 Normalized Maximum Transient Thermal Impedance

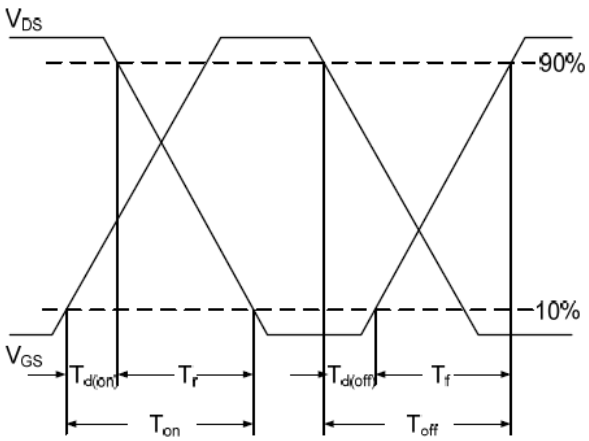


Fig.10 Switching Time Waveform

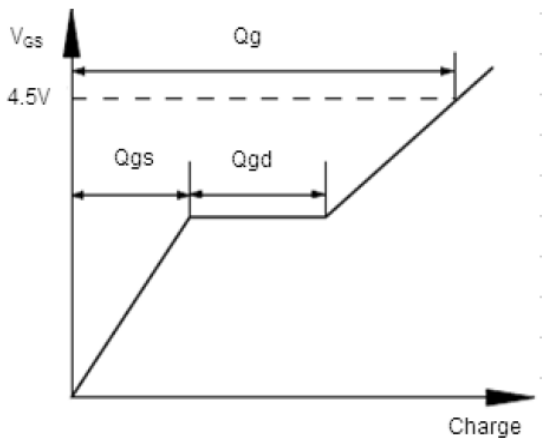


Fig.11 Gate Charge Waveform