Elektronische Bauelemente

SSM9577

-3.8A, -60V, $R_{DS(ON)}$ 85mΩ
P-Channel Enhancement Mode Power MOSFET

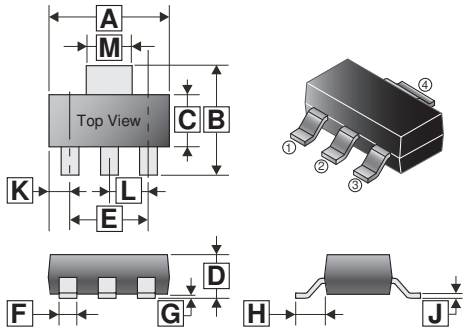
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSM9577 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 meet the RoHS and Green Product requirement with full function reliability approved.

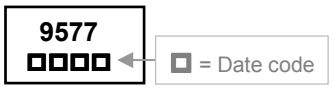
SOT-223

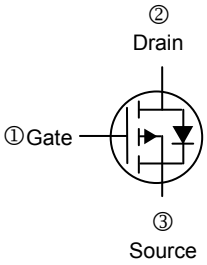


FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING





REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter 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

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}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}=10V [1]	T_A=25°C	I_D	-3.8	A
	T_A=70°C		-3	A
Pulsed Drain Current [3]		I_{DM}	-8	A
Total Power Dissipation	T_A=25°C	P_D	1.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Maximum Thermal Resistance from Junction to Ambient [1]		$R_{\theta JA}$	85	°C / 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_J=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
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	I_{DSS}	-	-	-1	uA	V_{DS}= -48V, V_{GS}=0, T_J=25°C
		-	-	-5		V_{DS}= -48V, V_{GS}=0, T_J=55°C
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}=0V
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°C junction temperature.
4. The data tested by pulsed, Pulse width ≦ 300us, Duty cycle ≦ 2%.

TYPICAL CHARACTERISTIC CURVES

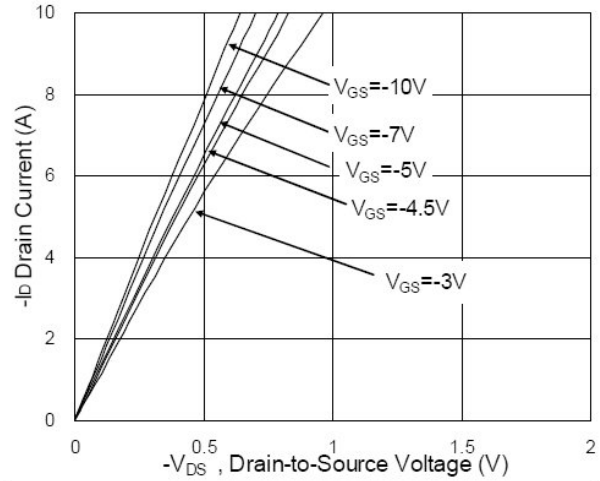


Fig.1 Typical Output Characteristics

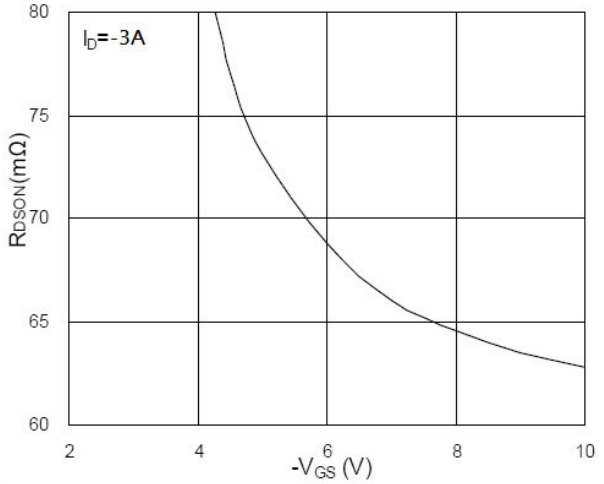


Fig.2 On-Resistance v.s Gate-Source

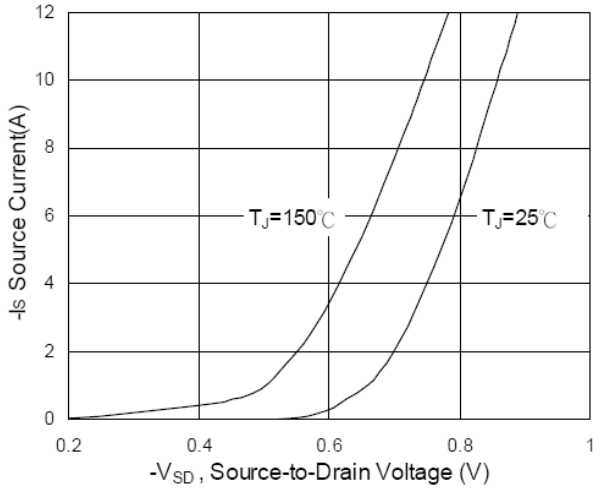


Fig.3 Forward Characteristics of Reverse

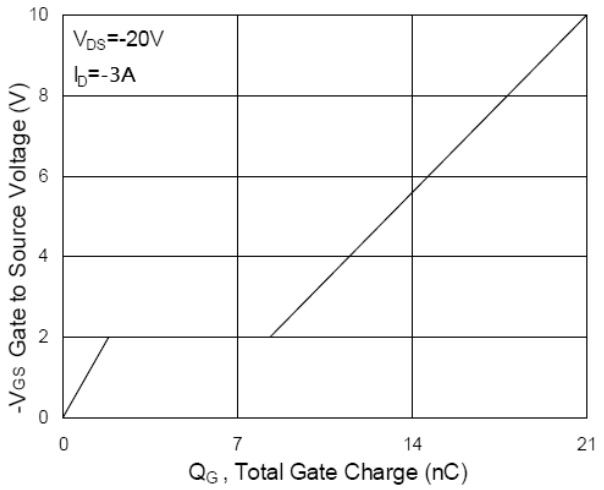


Fig.4 Gate-Charge Characteristics

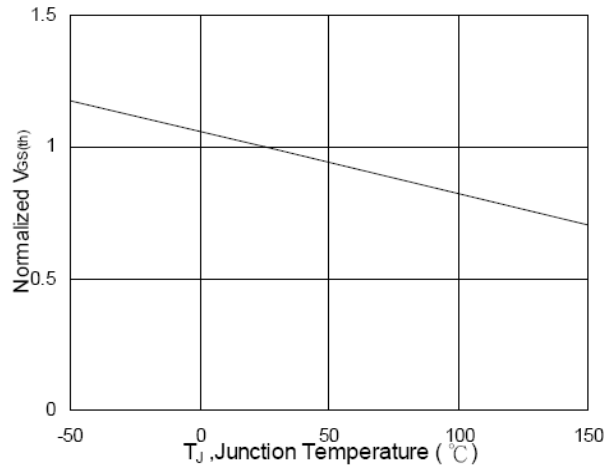


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

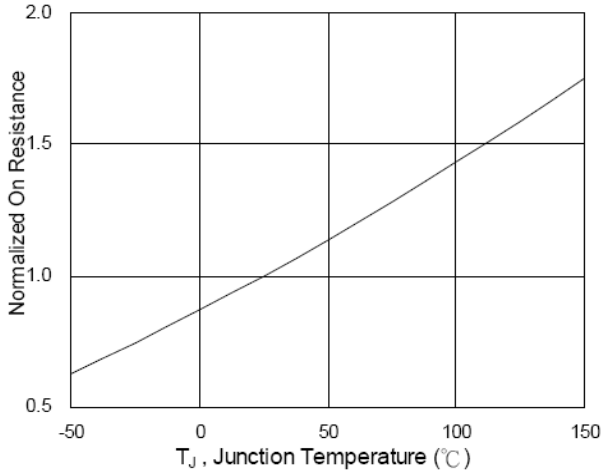


Fig.6 Normalized R_{DSON} v.s T_J

TYPICAL CHARACTERISTIC CURVES

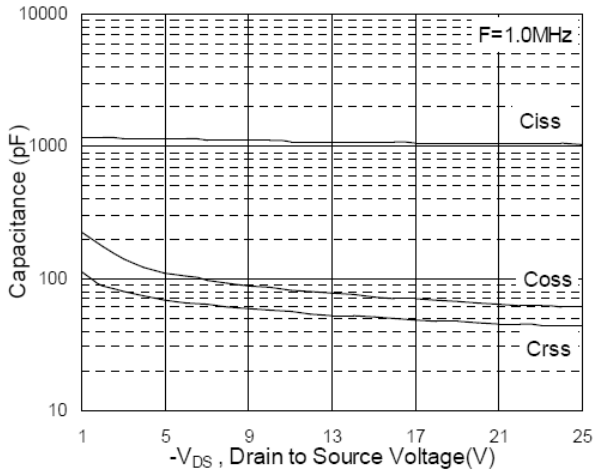


Fig.7 Capacitance

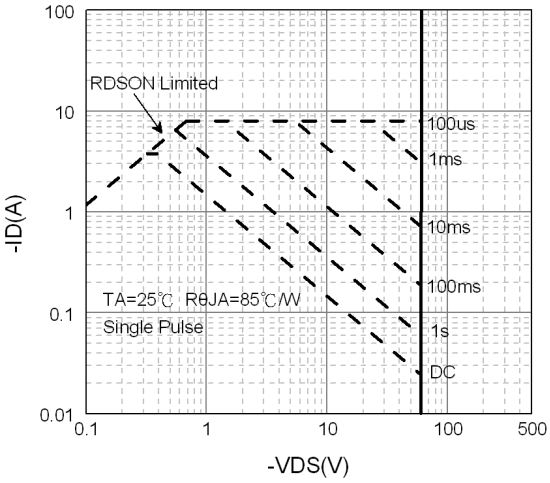


Fig.8 Safe Operating Area

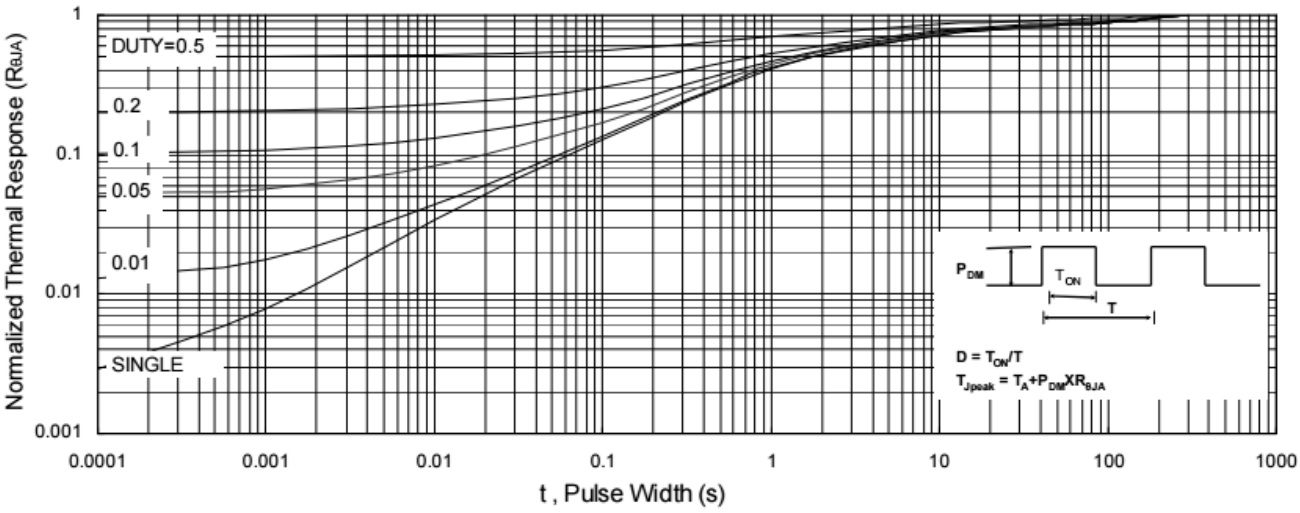


Fig.9 Normalized Maximum Transient Thermal Impedance

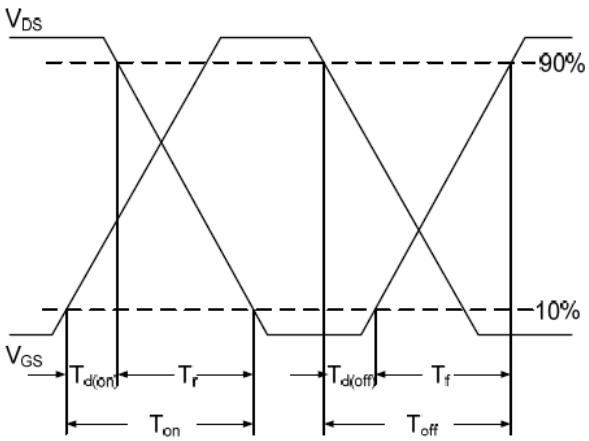


Fig.10 Switching Time Waveform

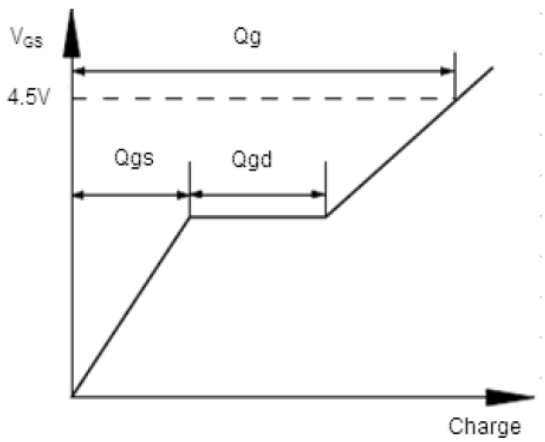


Fig.11 Gate Charge Waveform