

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

DESCRIPTION

SSM0420S-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provides excellent $R_{DS(ON)}$ and gate charge for most synchronous buck converter applications.

FEATURES

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

MARKING



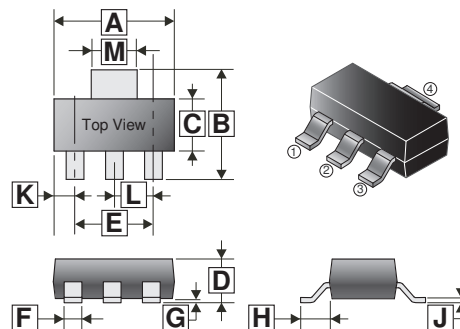
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch

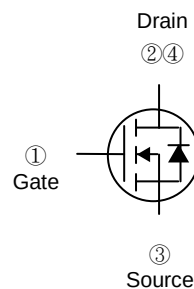
ORDER INFORMATION

Part Number	Type
SSM0420S-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	1.42	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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V _{DS}	200	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current @V _{GS} =10V ¹	T _A =25℃	I _D	2.05	A
	T _A =70℃		1.34	A
Pulsed Drain Current ²		I _{DM}	5.5	A
Total Power Dissipation @T _A =25℃ ¹		P _D	1.5	W
Maximum Thermal Resistance from Junction-Ambient ¹		R _{θJA}	85	℃/W
Maximum Thermal Resistance from Junction-Ambient			120	
Maximum Thermal Resistance from Junction-Case ¹		R _{θJC}	36	℃/W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	℃

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

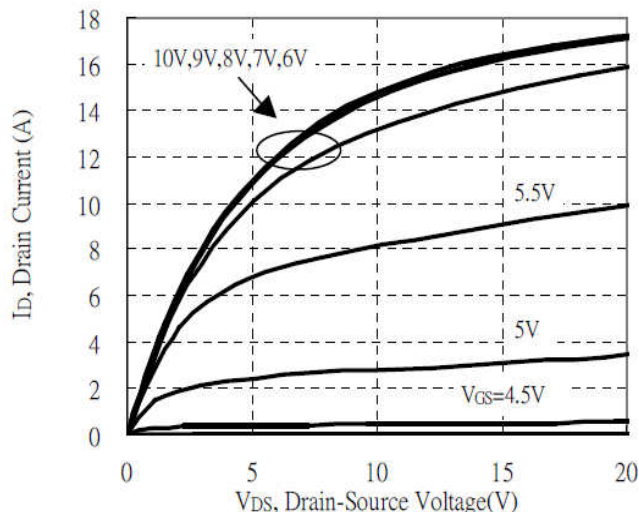
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage	BV _{DSS}	200	-	-	V	V _{GS} =0, I _D =250μA
Gate Threshold Voltage	V _{GS(th)}	2	-	4	V	V _{DS} =V _{GS} , I _D =250μA
Forward Transfer conductance	g _{fs}	-	3.2	-	S	V _{DS} =15V, I _D =2A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current	I _{DSS}	-	-	1	μA	V _{DS} =160V, V _{GS} =0, T _J =25℃
		-	-	25		V _{DS} =160V, V _{GS} =0, T _J =125℃
Static Drain-Source On-Resistance ³	R _{DS(ON)}	-	-	360	mΩ	V _{GS} =10V, I _D =2A
Total Gate Charge	Q _g	-	10.2	-	nC	V _{DS} =160V V _{GS} =10V I _D =2A
Gate-Source Charge	Q _{gs}	-	2.2	-		
Gate-Drain (“Miller”) Charge	Q _{gd}	-	3.8	-		
Turn-on Delay Time	T _{d(on)}	-	8.8	-	nS	V _{DD} =100V V _{GS} =10V I _D =2A R _G =25Ω
Rise Time	T _r	-	17	-		
Turn-off Delay Time	T _{d(off)}	-	21.2	-		
Fall Time	T _f	-	20.4	-		
Input Capacitance	C _{iss}	-	373	-	pF	V _{DS} =25V V _{GS} =0 f=1MHz
Output Capacitance	C _{oss}	-	46	-		
Reverse Transfer Capacitance	C _{rss}	-	20	-		
Source-Drain Diode						
Forward On Voltage ³	V _{SD}	-	-	1.2	V	I _S =2A, V _{GS} =0, T _J =25℃
Continuous Source Current ¹	I _S	-	-	2.05	A	V _G =V _D =0, Force Current
Pulsed Source Current ²	I _{SM}	-	-	5.5		
Reverse Recovery Time	T _{rr}	-	54	-	nS	I _F =2A, dI/dt=100A/us, T _J =25℃
Reverse Recovery Charge	Q _{rr}	-	105	-	nC	I _F =2A, dI/dt=100A/us, T _J =25℃

Notes:

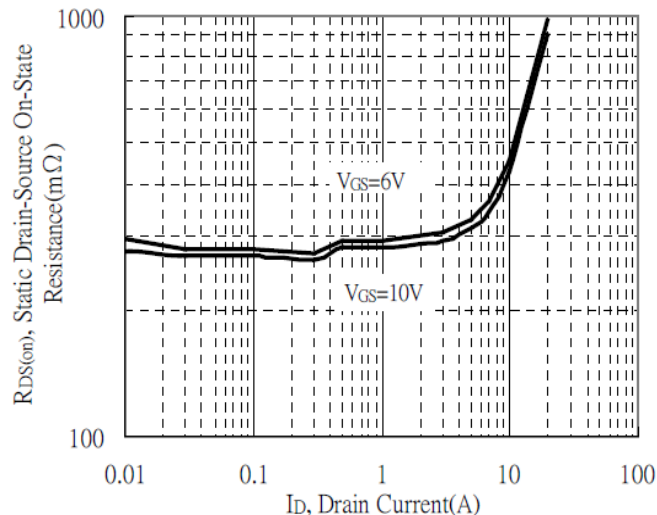
1. Surface mounted on a 1 inch² FR-4 board with 20Z copper pad.
2. The power dissipation is limited by 150°C junction temperature.
3. The data is tested by pulse: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

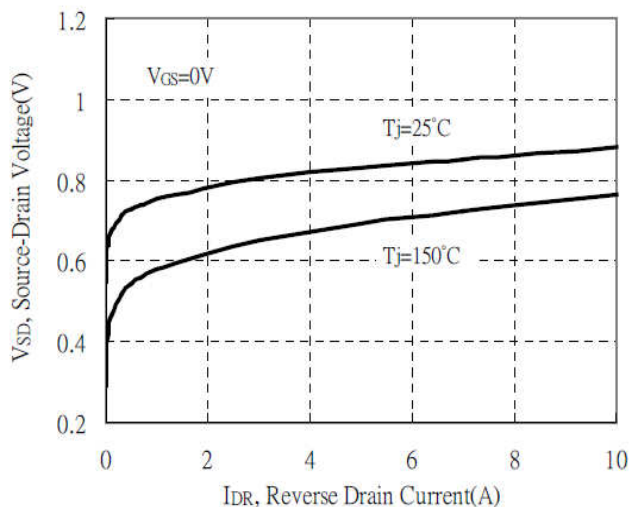
Typical Output Characteristics



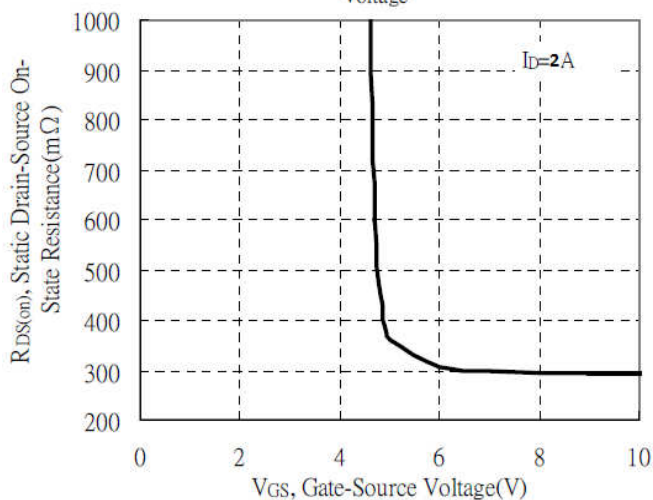
Static Drain-Source On-State resistance vs Drain Current



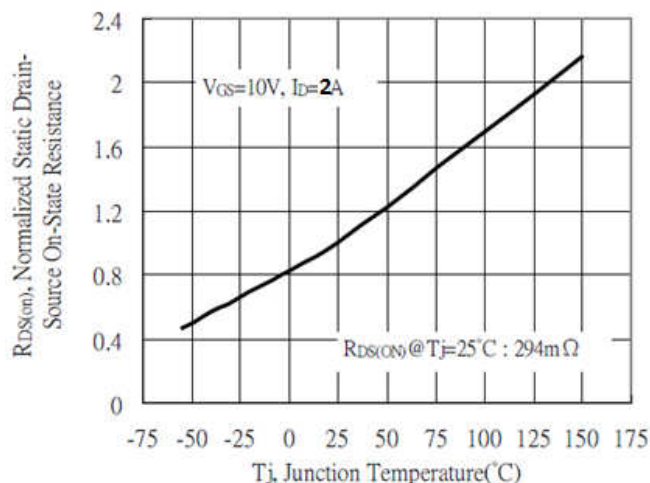
Reverse Drain Current vs Source-Drain Voltage



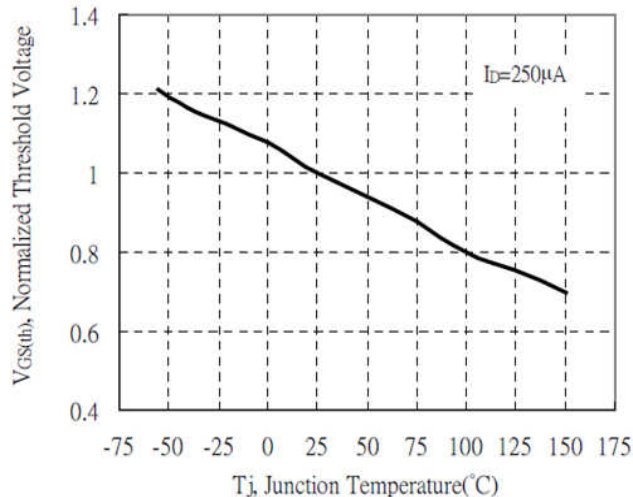
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

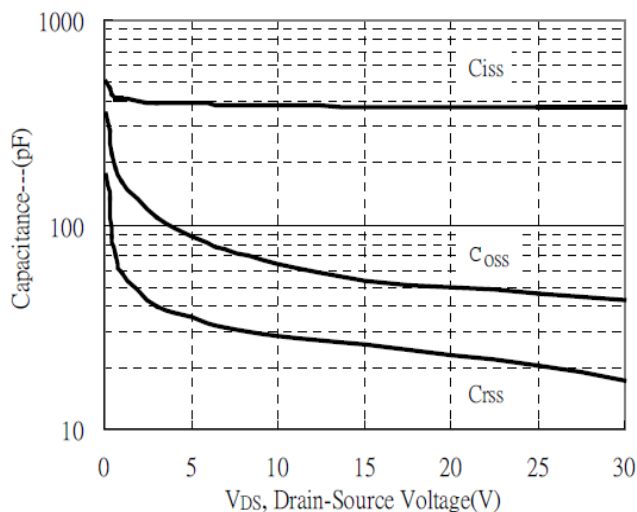


Threshold Voltage vs Junction Temperature

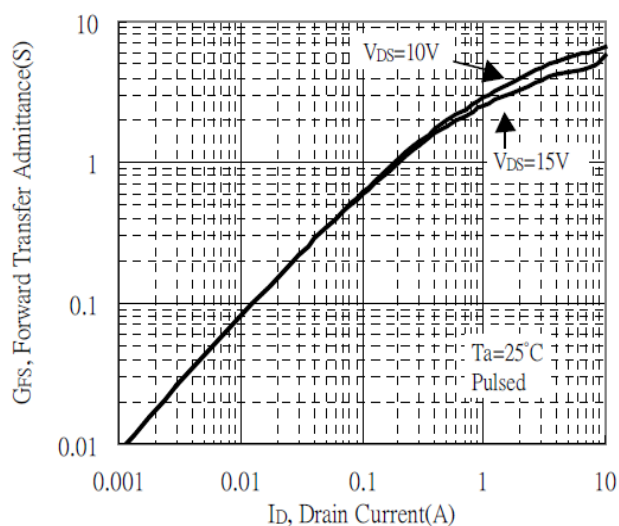


CHARACTERISTIC CURVES

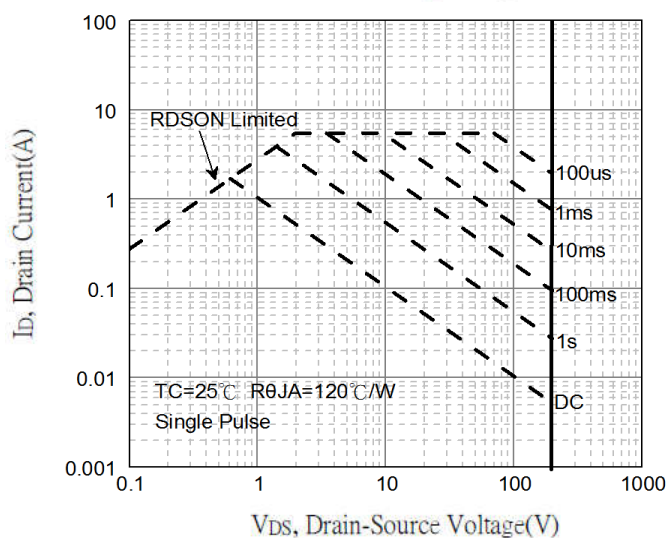
Capacitance vs Drain-to-Source Voltage



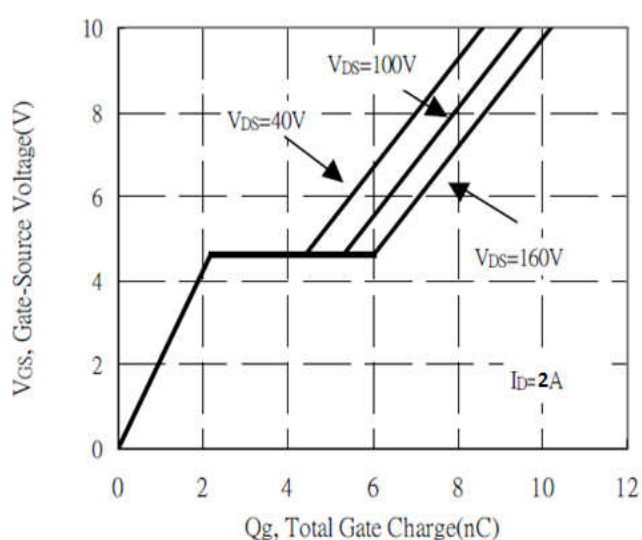
Forward Transfer Admittance vs Drain Current



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves

