Elektronische Bauelemente

SSM1KN20-C

1.5A, 200V, $R_{DS(ON)}$ 1.0Ω
N-Channel Enhancement Mode Power MOSFET

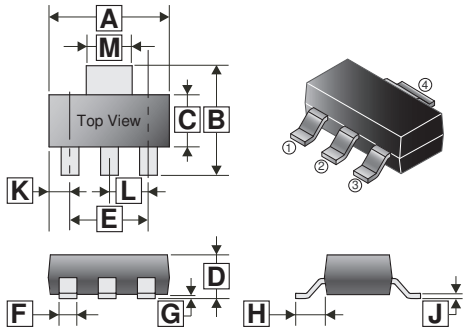
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSM1KN20-C is the highest performance trench N-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 SSM1KN20-C meet the RoHS and Green Product requirement with full function reliability approved.

SOT-223

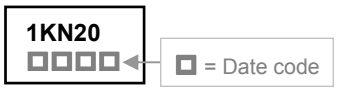


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.90	6.70	G	-	0.18
B	6.70	7.30	H	2.00 REF.	
C	3.30	3.80	J	0.20	0.40
D	1.40	1.90	K	1.10 REF.	
E	4.45	4.75	L	2.30 REF.	
F	0.60	0.85	M	2.80	3.20

FEATURES

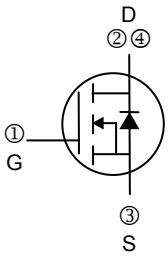
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-223	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSM1KN20-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}=10V [1]	T_C=25°C	I_D	1.5	A
	T_C=100°C		1.3	A
Pulsed Drain Current [3]		I_{DM}	8	A
Total Power Dissipation [2]	T_C=25°C	P_D	4.16	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]		$R_{\theta JA}$	Steady State, 85	°C / W
Maximum Thermal Resistance from Junction to Case [1]		$R_{\theta JC}$	30	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	200	-	-	V	V_{GS}=0, I_D=250uA
Gate Threshold Voltage	$V_{GS(th)}$	1.2	-	3	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transfer conductance	gfs	-	10	-	S	V_{DS}=10V, I_D=1A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	uA	V_{DS}=160V, V_{GS}=0
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	-	1	Ω	V_{GS}=10V, I_D=1A
		-	-	1.1		V_{GS}=4.5V, I_D=1A
Total Gate Charge	Q_g	-	15	-	nC	I_D=1A V_{DS}=160V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	3	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	5.2	-		
Turn-On Delay Time	$T_{d(on)}$	-	22	-	nS	V_{DD}=100V I_D=1A V_{GS}=10V R_G=3Ω
Rise Time	T_r	-	34	-		
Turn-Off Delay Time	$T_{d(off)}$	-	45	-		
Fall Time	T_f	-	11	-		
Input Capacitance	C_{iss}	-	900	-	pF	V_{GS}=0 V_{DS}=25V f=1MHz
Output Capacitance	C_{oss}	-	130	-		
Reverse Transfer Capacitance	C_{rss}	-	4.6	-		
Source-Drain Diode						
Continuous Source Current [1]	I_S	-	-	1	A	
Forward On Voltage [3]	V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	85	-	nS	I_F=1A , dI/dt=100A/μs , T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	257	-	nC	

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. Pulse width limited by maximum junction temperature.
3. Pulse test: Pulse width ≦ 300us, Duty cycle ≦ 2%.

TYPICAL CHARACTERISTIC CURVES

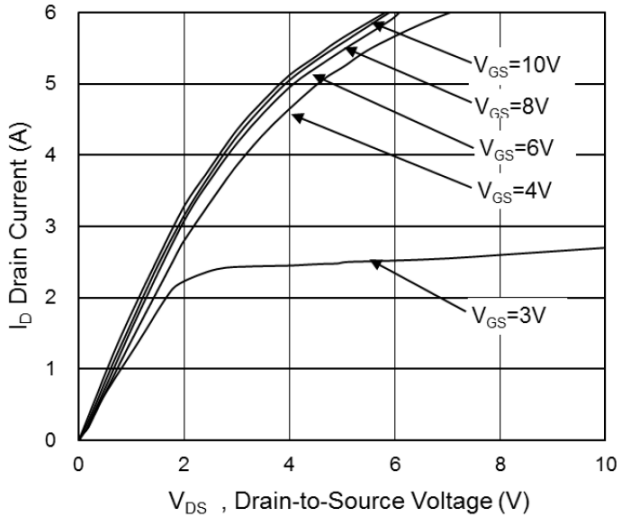


Fig.1 Typical Output Characteristics

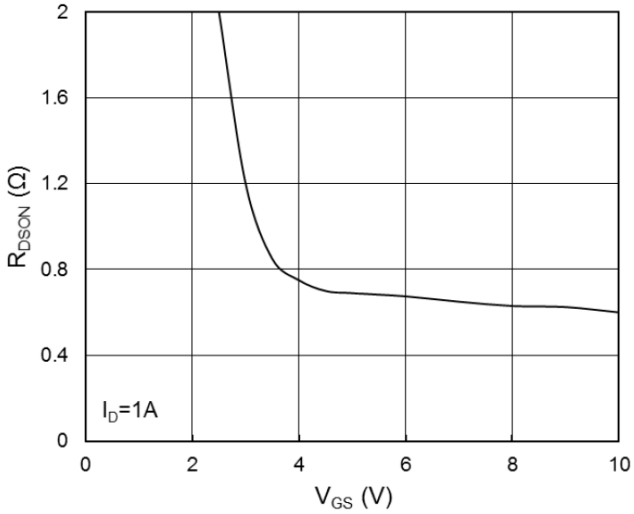


Fig.2 On-Resistance vs. G-S Voltage

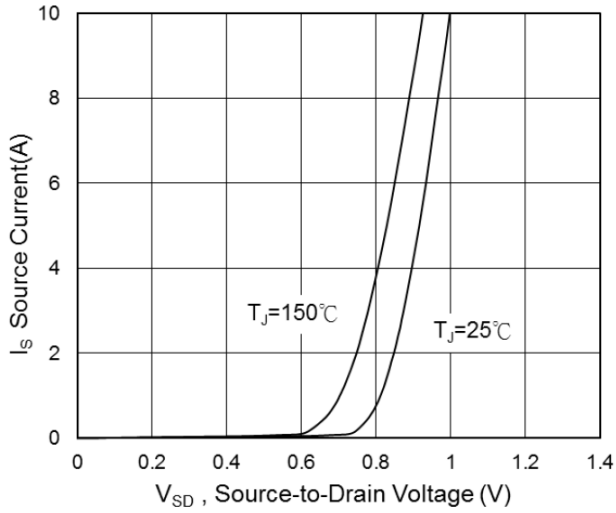


Fig.3 Forward Characteristics of Reverse

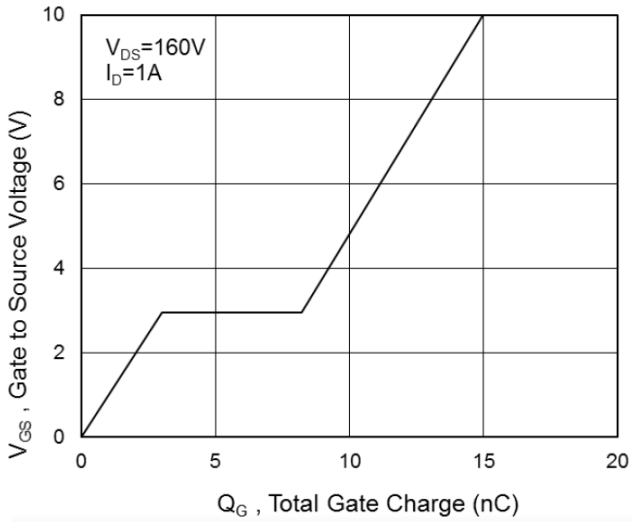


Fig.4 Gate-Charge Characteristics

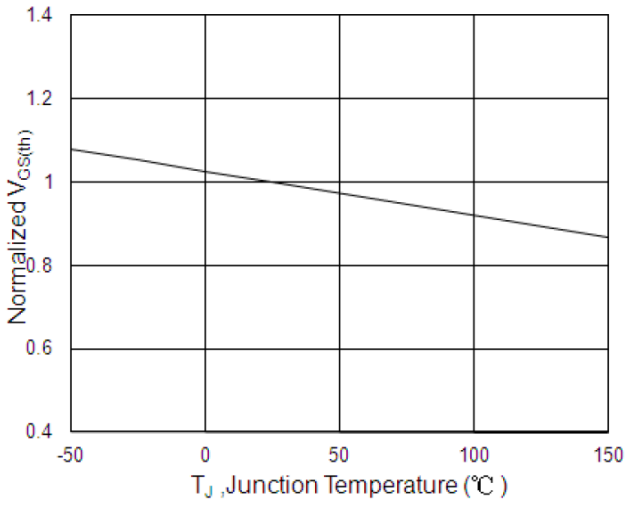


Fig.5 $V_{GS(th)}$ vs. T_J

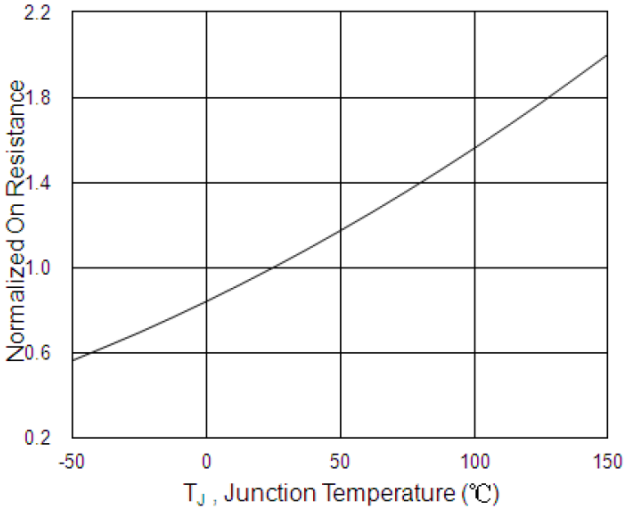


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTIC CURVES

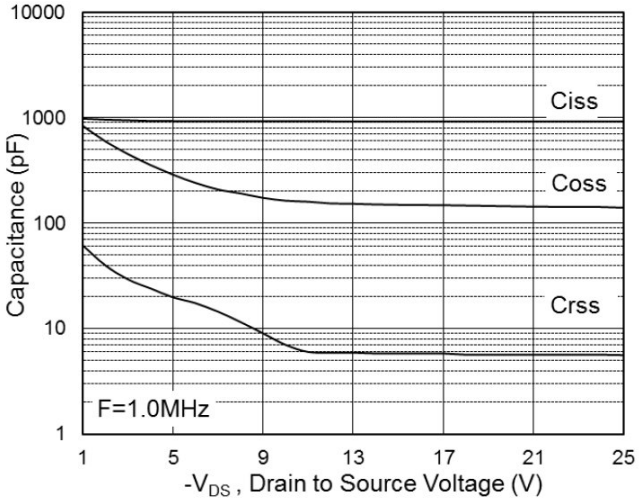


Fig.7 Capacitance

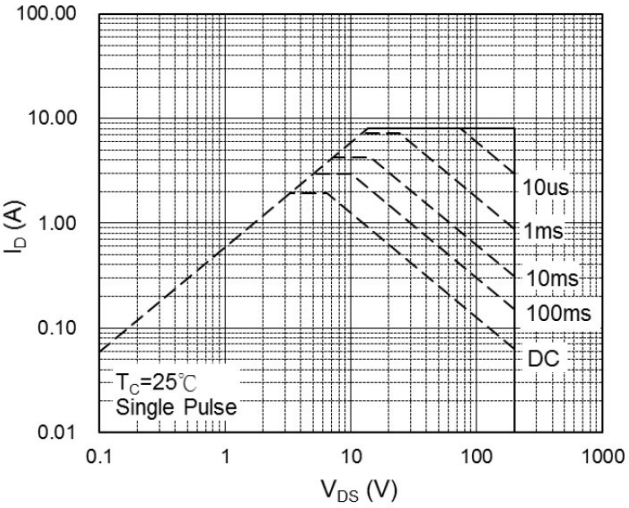


Fig.8 Safe Operating Area

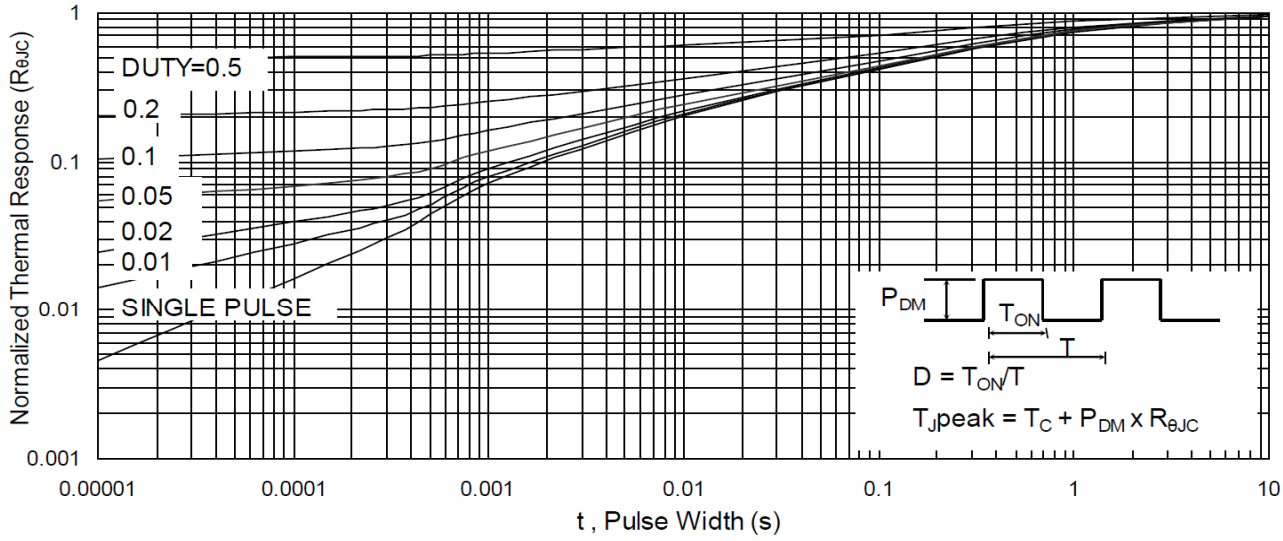


Fig.9 Normalized Maximum Transient Thermal Impedance

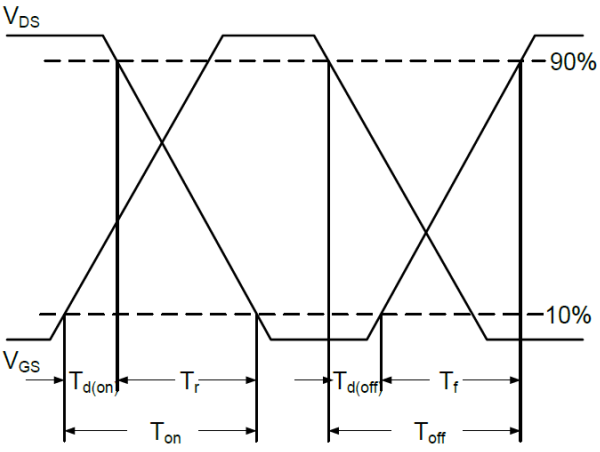


Fig.10 Switching Time Waveform

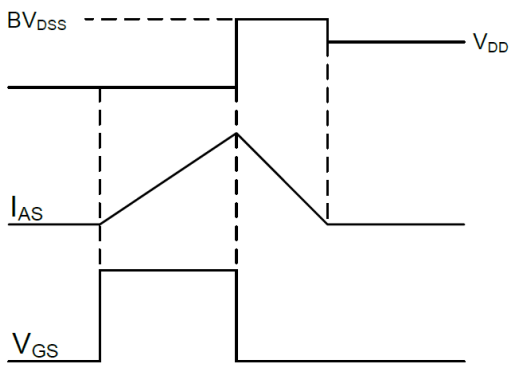


Fig.11 Unclamped Inductive Switching Waveform