Elektronische Bauelemente

SSF2102-C

2.1A, 20V, $R_{DS(ON)}$ 60 mΩ
N-Channel Enhancement Mode Power MOSFET

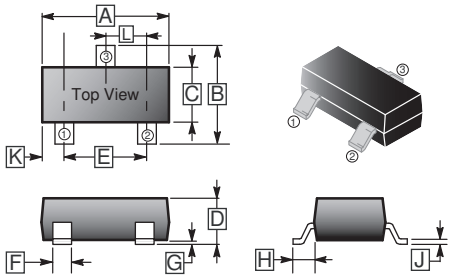
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSF2102-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 small power switching and load switch applications.

The SSF2102-C meet the RoHS and Green Product requirement with full function reliability approved.

SOT-323



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.1 REF.	
B	1.80	2.45	H	0.525 REF.	
C	1.1	1.4	J	0.08	0.25
D	0.80	1.10	K	0.8 TYP.	
E	1.20	1.40	L	0.65 TYP.	
F	0.15	0.40			

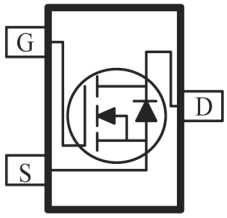
FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING

TS2

Top View



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch

ORDER INFORMATION

Part Number	Type
SSF2102-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current [1] @V_{GS}=4.5V	I_D	2.1	A
		1.7	
Pulsed Drain Current [3]	I_{DM}	8	A
Maximum Power Dissipation [1]	P_D	0.33	W
Operating Junction & Storage Temperature	T_J, T_{STG}	150, -55~150	℃
Thermal Resistance Rating			
Thermal Resistance Junction-Ambient [1]	$R_{\theta JA}$	t≦5s, 378	℃/W
		Steady state, 480	
Thermal Resistance Junction-Ambient [2]		625	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	0.5	-	1.2	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance	g_{fs}	-	9	-	S	V_{DS}=5V, I_D=3A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±8V, V_{DS}=0
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0, T_J=25℃
		-	-	10		V_{DS}=20V, V_{GS}=0, T_J=55℃
Static Drain-Source On-Resistance [4]	$R_{DS(ON)}$	-	-	60	mΩ	V_{GS}=4.5V, I_D=3.6A
		-	-	80		V_{GS}=2.5V, I_D=3.1A
Total Gate Charge	Q_g	-	6.2	-	nC	I_D=3A V_{DS}=15V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	0.36	-		
Gate-Drain Change	Q_{gd}	-	1.56	-		
Turn-on Delay Time	$T_{d(on)}$	-	1.4	-	nS	V_{DS}=10V V_{GS}=4.5V R_G=3.3Ω I_D=3A
Rise Time	T_r	-	40	-		
Turn-off Delay Time	$T_{d(off)}$	-	17	-		
Fall Time	T_f	-	5.6	-		
Input Capacitance	C_{iss}	-	382	-	pF	V_{GS}=0 V_{DS}=15V f =1.0MHz
Output Capacitance	C_{oss}	-	41	-		
Reverse Transfer Capacitance	C_{rss}	-	33	-		
Source-Drain Diode						
Continuous Source Current (Body Diode) [1]	I_S	-	-	2.1	A	
Pulsed Source Current [3]	I_{SM}	-	-	8	A	
Forward On Voltage [4]	V_{SD}	-	-	1.2	V	I_S=0.94A, V_{GS}=0
Reverse Recovery Time	T_{rr}	-	5.7	-	ns	I_S=3A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	1.8	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR4 board with 2OZ copper.
2. Surface mounted on FR4 board.
3. Pulse width limited by Max. junction temperature.
4. Pulse width≦300μs, duty cycle≦2%.

CHARACTERISTIC CURVE

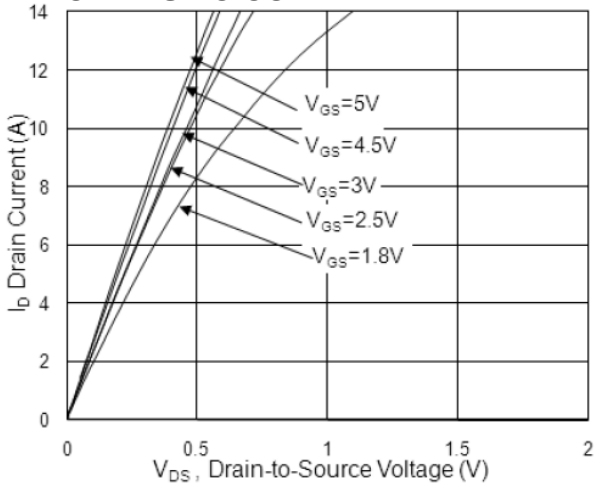


Fig.1 Typical Output Characteristics

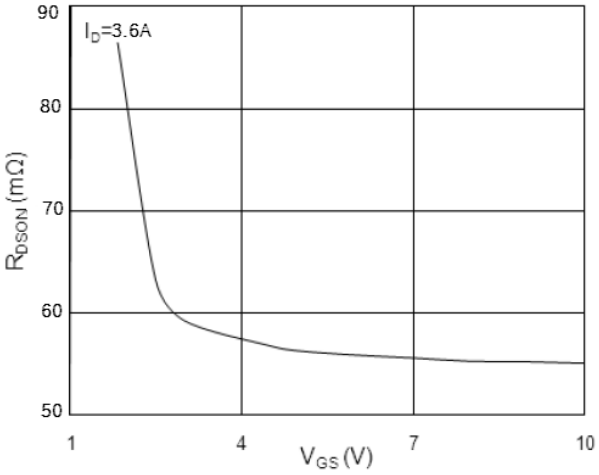


Fig.2 On-Resistance vs. Gate-Source

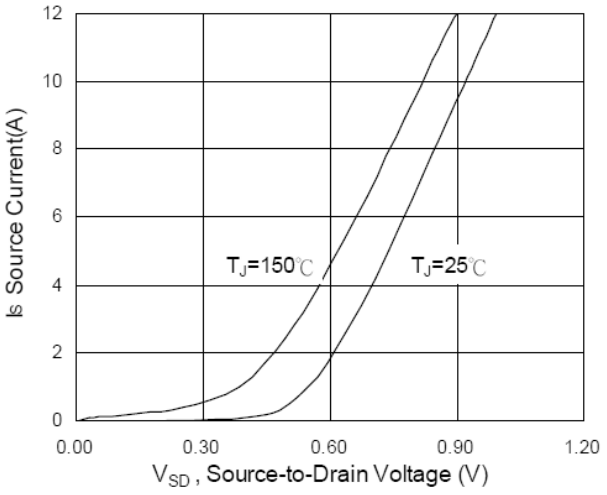


Fig.3 Forward Characteristics Of Reverse

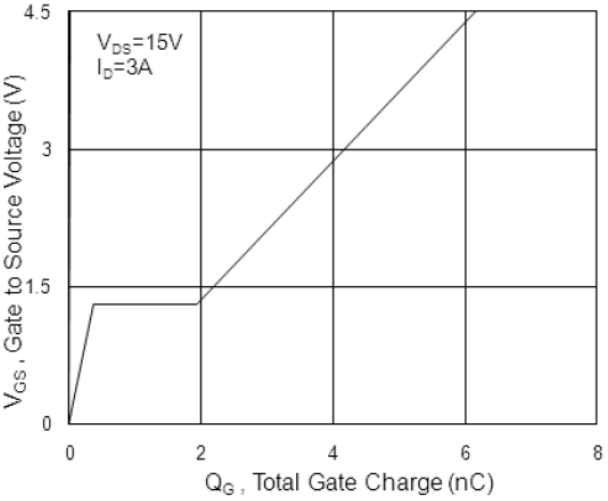


Fig.4 Gate-Charge Characteristics

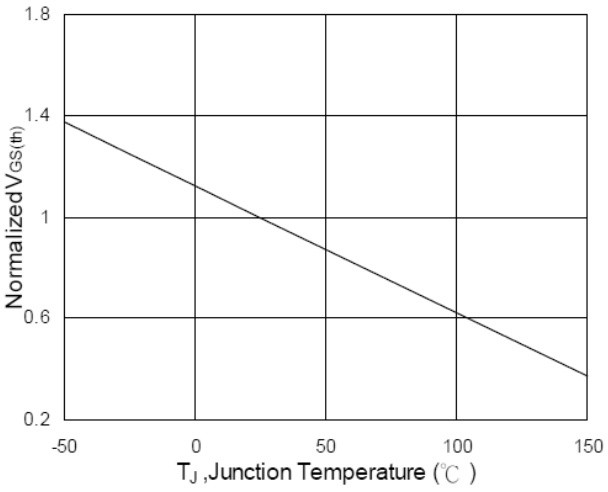


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

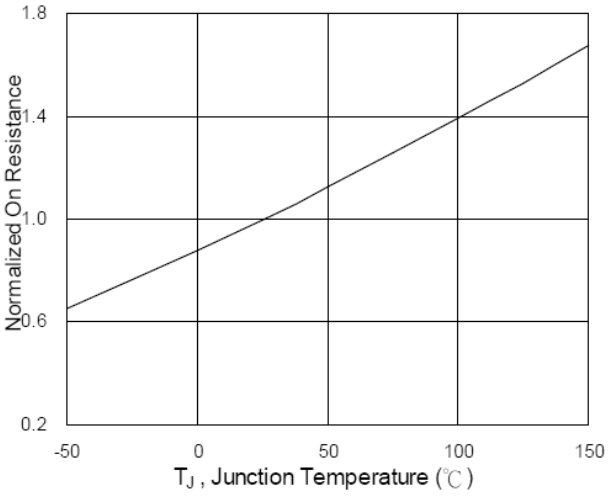


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVE

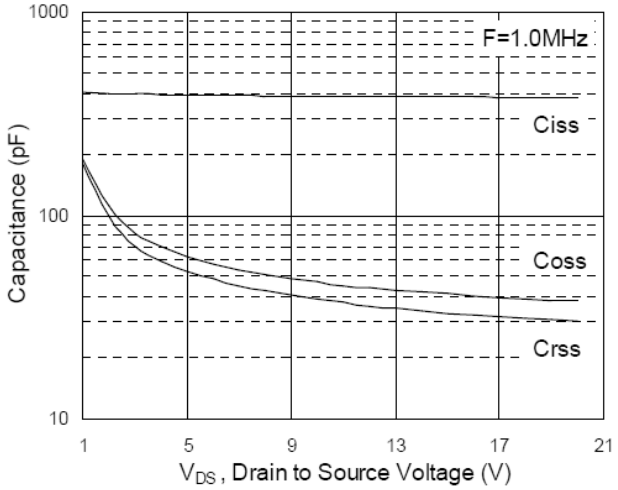


Fig.7 Capacitance

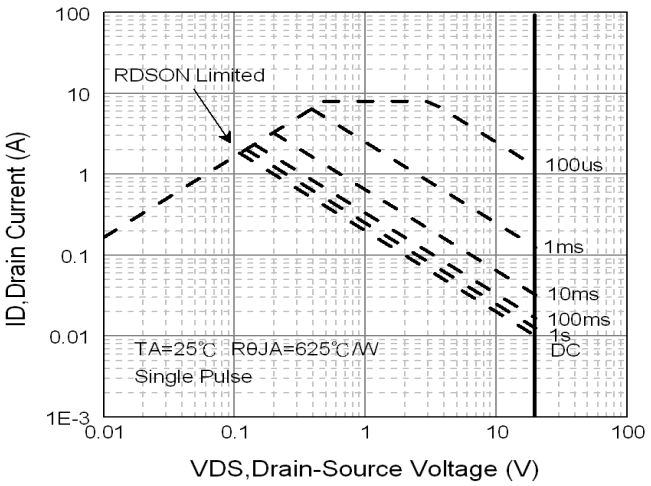


Fig.8 Safe Operating Area

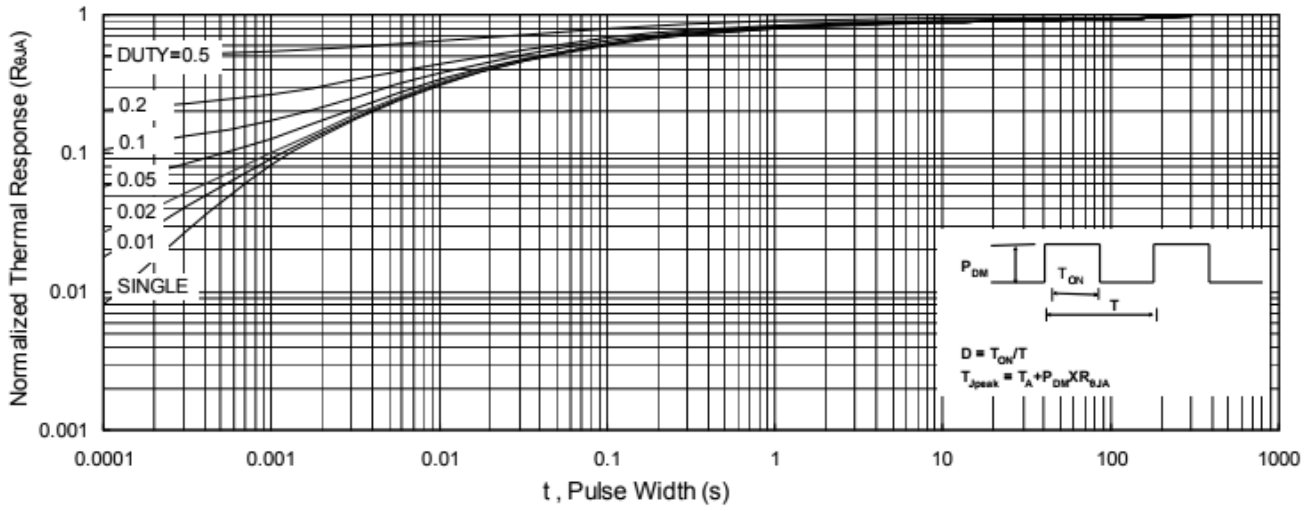


Fig.9 Normalized Maximum Transient Thermal Impedance

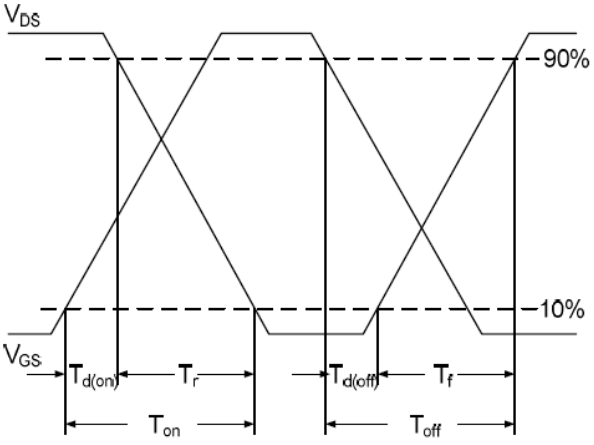


Fig.10 Switching Time Waveform

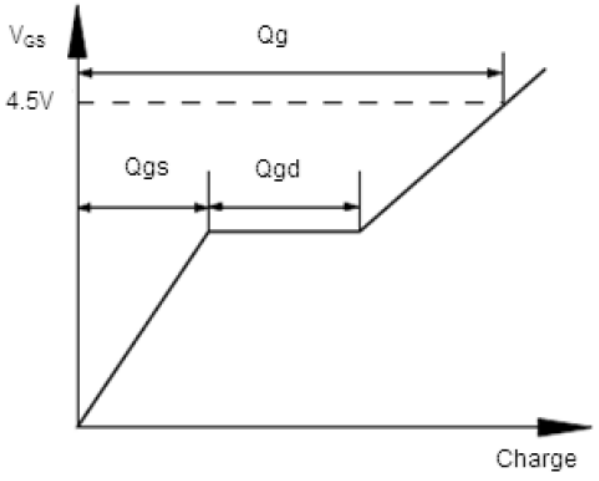


Fig.11 Gate Charge Waveform