

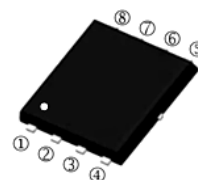
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSPR100N03S-C is the Shielded Gate Technology 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 SSPR100N03S-C meet the RoHS and Green Product requirement with full function reliability approved.

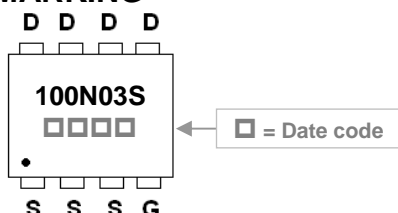
SPR-8PP



FEATURES

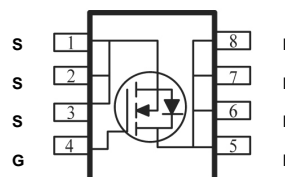
- Shielded Gate Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SPR-8PP	3K	13 inch



ORDER INFORMATION

Part Number	Type
SSPR100N03S-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹⁵ @ $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	100
		$T_C=100^\circ\text{C}$	65
Pulsed Drain Current ²	I_{DM}	240	A
Power Dissipation ³	P_D	41.6	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	70	$^\circ\text{C/W}$
Maximum Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	3	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	$V_{GS}=0V, I_D=250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Forward Transconductance	g_{fs}	-	40	-	S	$V_{DS}=5V, I_D=20A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=24V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	5		
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	2	2.4	m Ω	$V_{GS}=10V, I_D=20A$	
		-	2.9	3.8		$V_{GS}=4.5V, I_D=20A$	
Gate Resistance	R_g	-	2	-	Ω	$f=1\text{MHz}$	
Total Gate Charge (4.5V)	Q_g	-	26.1	-	nC	$I_D=20A$ $V_{DS}=15V$ $V_{GS}=4.5V$	
Total Gate Charge (10V)		-	51.5	-			
Gate-Source Charge	Q_{gs}	-	8	-			
Gate-Drain Change	Q_{gd}	-	10.6	-			
Turn-on Delay Time	$T_{d(on)}$	-	11.5	-	nS	$V_{DD}=15V$ $I_D=20A$ $V_{GS}=10V$ $R_G=3.3\Omega$	
Rise Time	T_r	-	45.5	-			
Turn-off Delay Time	$T_{d(off)}$	-	28.5	-			
Fall Time	T_f	-	7.1	-			
Input Capacitance	C_{iss}	-	2859	-	pF	$V_{GS}=0V$ $V_{DS}=15V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	1259	-			
Reverse Transfer Capacitance	C_{rss}	-	229	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$I_S=1A, V_{GS}=0V, T_J=25^\circ\text{C}$	
Continuous Source Current ^{1 4 5}	I_S	-	-	85	A	$V_G=V_D=0V, \text{Force Current}$	

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature.
4. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.
5. Package limitation current is 85A.

CHARACTERISTIC CURVES

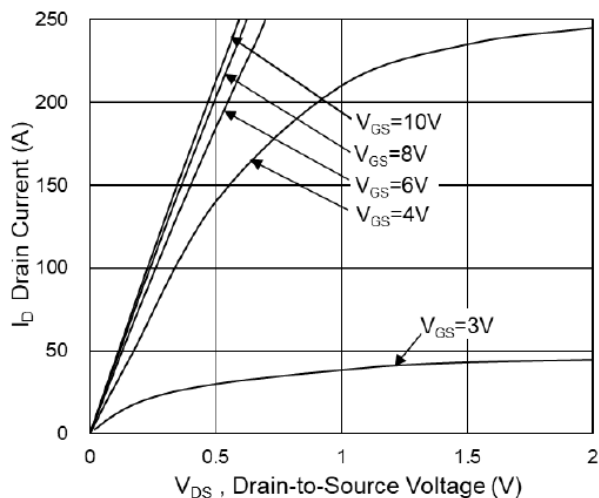


Fig.1 Typical Output Characteristics

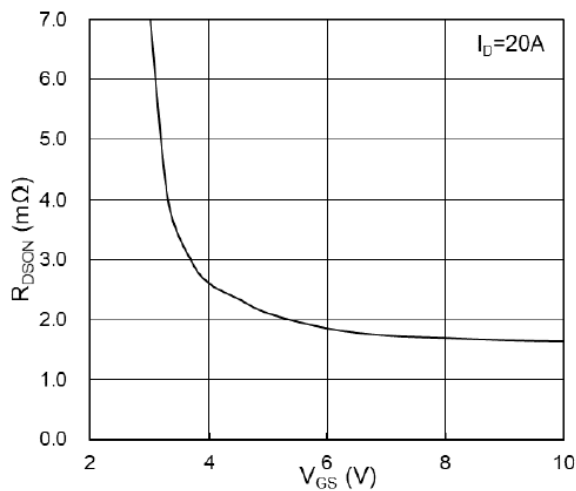


Fig.2 On-Resistance vs G-S Voltage

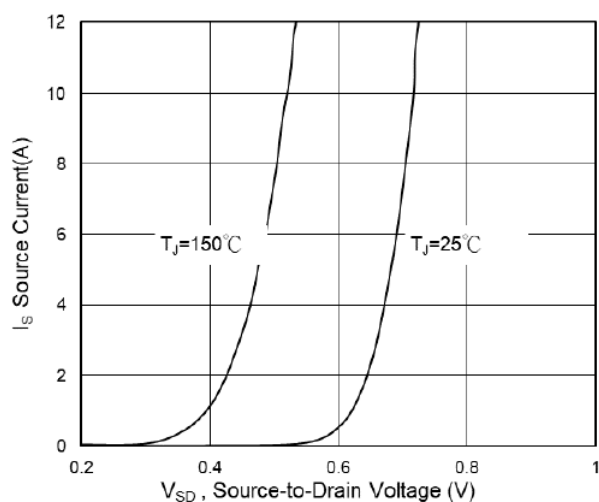


Fig.3 Source Drain Forward Characteristics

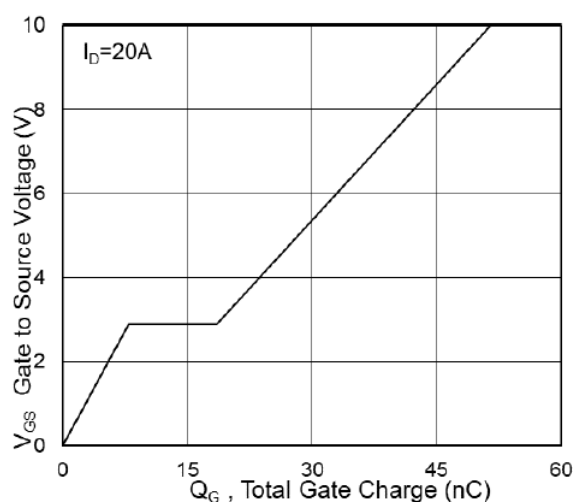


Fig.4 Gate-Charge Characteristics

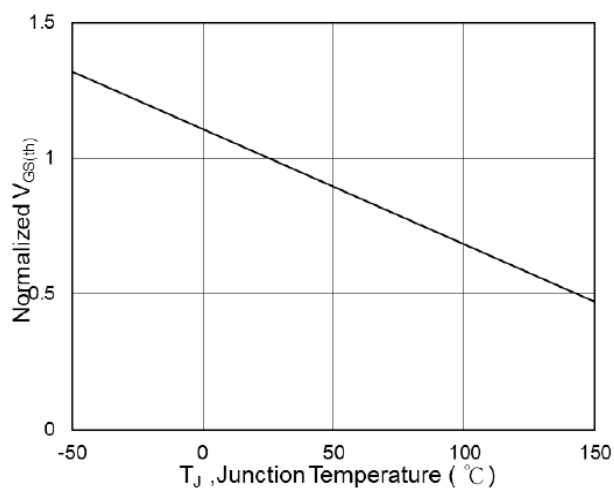


Fig.5 Normalized $V_{GS(th)}$ vs T_J

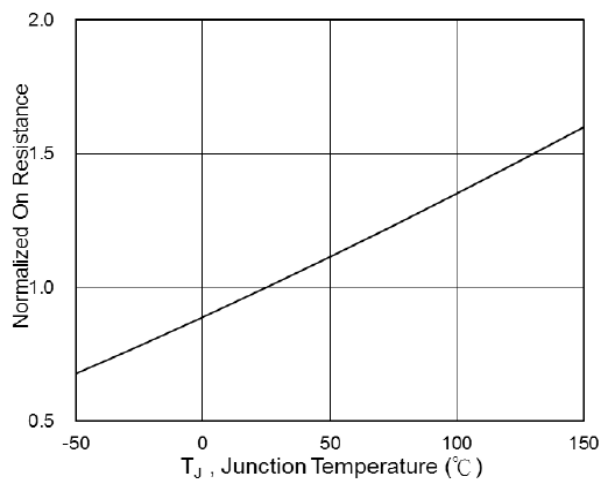


Fig.6 Normalized $R_{DS(ON)}$ vs T_J

CHARACTERISTIC CURVES

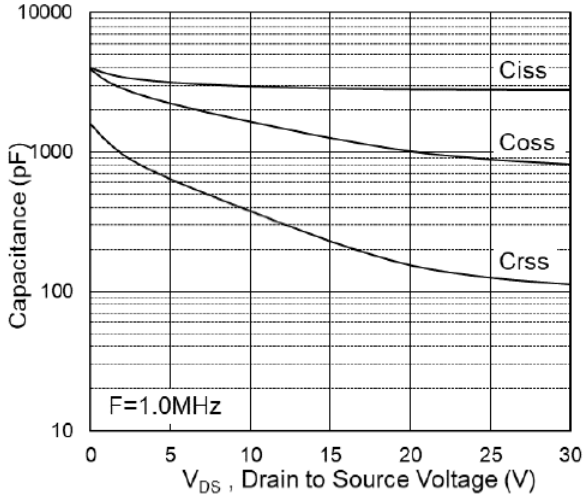


Fig.7 Capacitance

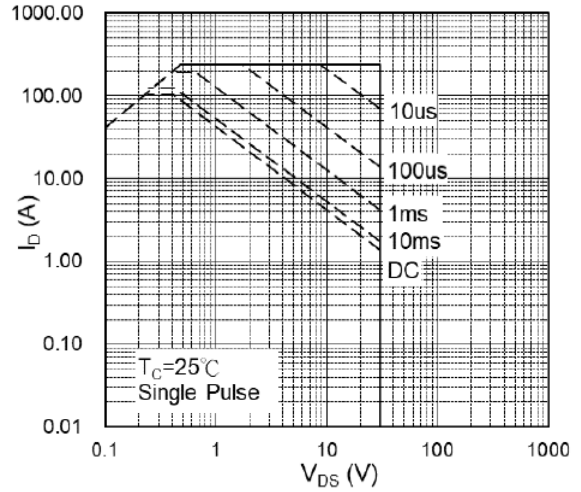


Fig.8 Safe Operating Area

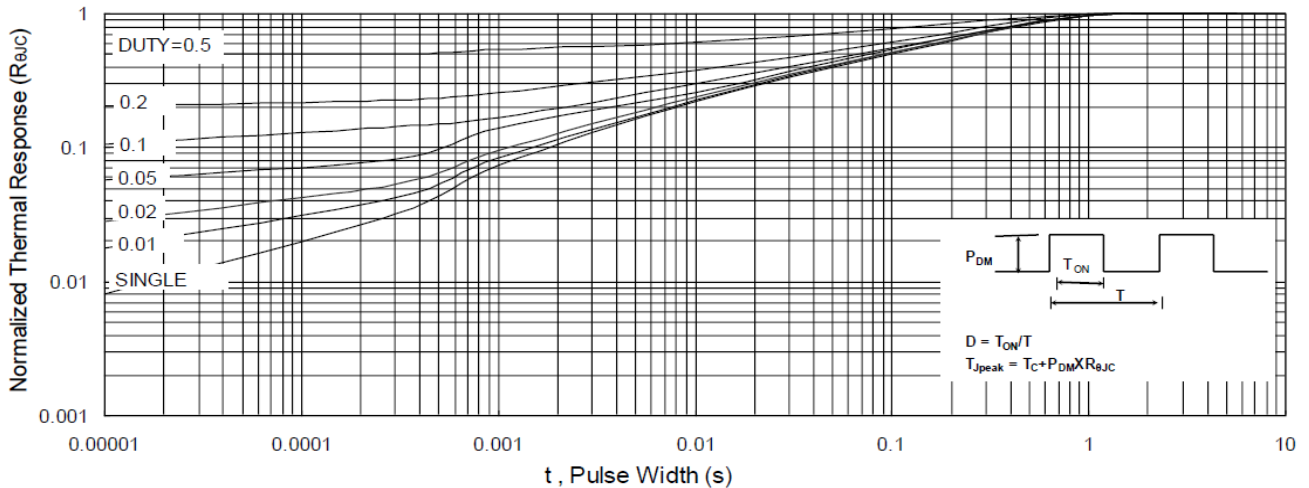


Fig.9 Normalized Maximum Transient Thermal Impedance

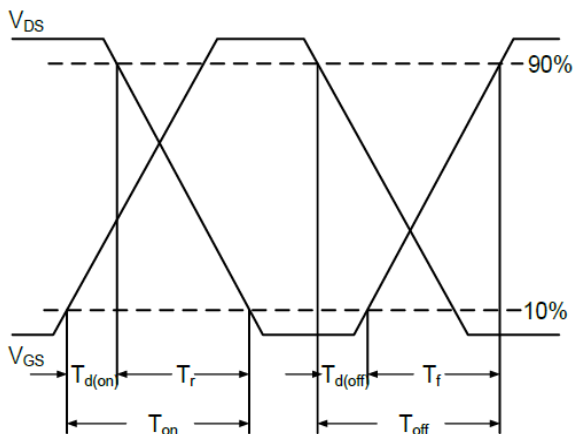


Fig.10 Switching Time Waveform

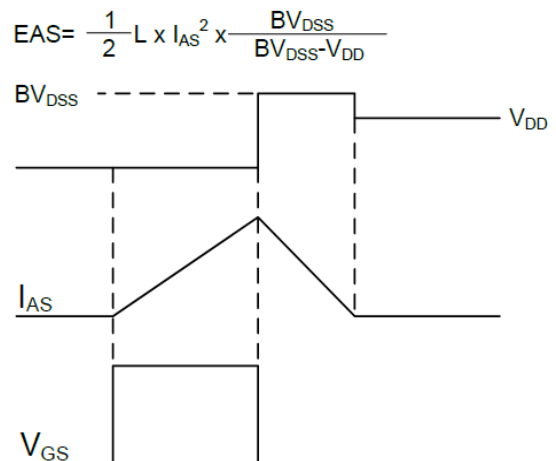
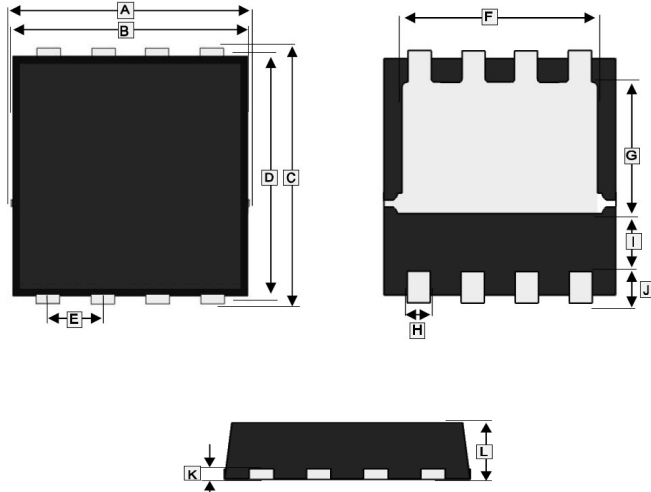


Fig.11 Unclamped Inductive Switching Waveform

PACKAGE OUTLINE DIMENSIONS

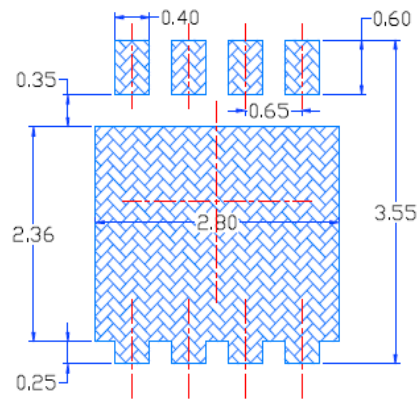
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REF.	Millimeter	
	Min.	Max.
A	3.00	3.40
B	3.00	3.25
C	3.20	3.45
D	3.00	3.20
E	0.65 BSC.	
F	2.39	2.60
G	1.35	1.98
H	0.24	0.35
I	0.35 TYP.	
J	0.60 TYP.	
K	0.10	0.25
L	0.70	0.90

MOUNTING PAD LAYOUT

SPR-8PP



*Dimensions in millimeters