Elektronische Bauelemente

SSPR5N06-C

5A, 60V, $R_{DS(ON)}$ 90mΩ

N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

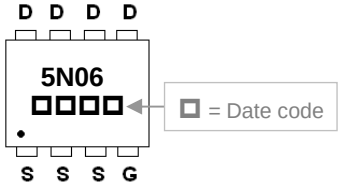
The SSPR5N06-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSPR5N06-C meet the RoHS and Green Product requirement with full function reliability approved.

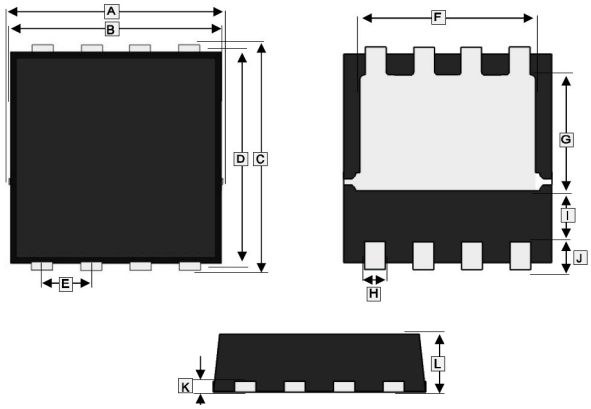
FEATURES

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

MARKING



SPR-8PP



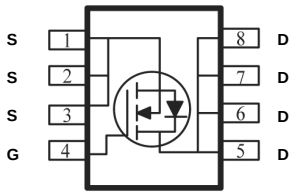
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	3.00	3.40	G	1.35	1.98
B	3.00	3.25	H	0.24	0.35
C	3.20	3.45	I	0.35 TYP.	
D	3.00	3.20	J	0.60 TYP.	
E	0.65 BSC.		K	0.10	0.25
F	2.39	2.60	L	0.70	0.90

PACKAGE INFORMATION

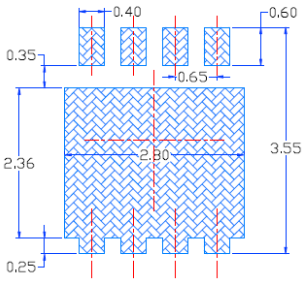
Package	MPQ	Leader Size
SPR-8PP	3K	13 inch

ORDER INFORMATION

Part Number	Type
SSPR5N06-C	Lead (Pb)-free and Halogen-free



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25℃	I_D	5	A
	T_C=100℃		3.5	
Pulsed Drain Current [3]		I_{DM}	12	A
Total Power Dissipation	T_C=25℃	P_D	4.5	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	85	℃/W
Thermal Resistance Junction-Ambient [2]			135	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	28	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	60	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	13	-	S	V_{DS}=5V, I_D=2A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0
	T_J=55℃		-	-	5		V_{DS}=48V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	90	mΩ	V_{GS}=10V, I_D=3A
			-	-	100		V_{GS}=4.5V, I_D=2A
Total Gate Charge		Q_g	-	5	-	nC	I_D=2A V_{DS}=48V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	1.68	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	1.9	-		
Turn-on Delay Time		$T_{d(on)}$	-	1.6	-	nS	V_{DD}=30V I_D=2A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	7.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	25	-		
Fall Time		T_f	-	14.4	-		
Input Capacitance		C_{iss}	-	511	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	38	-		
Reverse Transfer Capacitance		C_{rss}	-	25	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	5	A	
Pulsed Source Current [3]		I_{SM}	-	-	12	A	
Diode Forward Voltage [4]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0
Reverse Recovery Time		t_{rr}	-	9.7	-	nS	I_F=2A, dI/dt=100A/μs T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	5.8	-	nC	

Notes:
1. Surface mounted on 1”x1” FR-4 board with 2oz copper.
2. When mounted on Min. Copper pad.
3. Pulse width limited by maximum junction temperature, pulse width≦300μs, duty cycle≦2%.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

CHARACTERISTIC CURVES

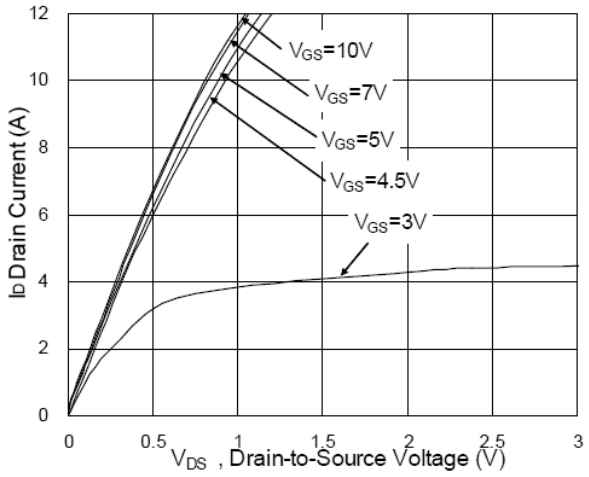


Fig.1 Typical Output Characteristics

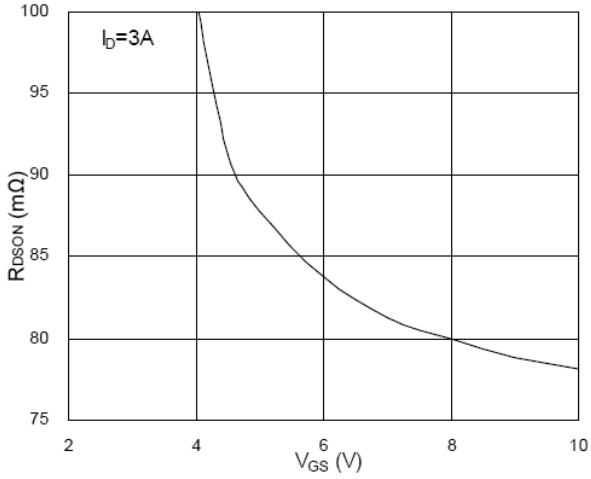


Fig.2 On-Resistance v.s Gate-Source

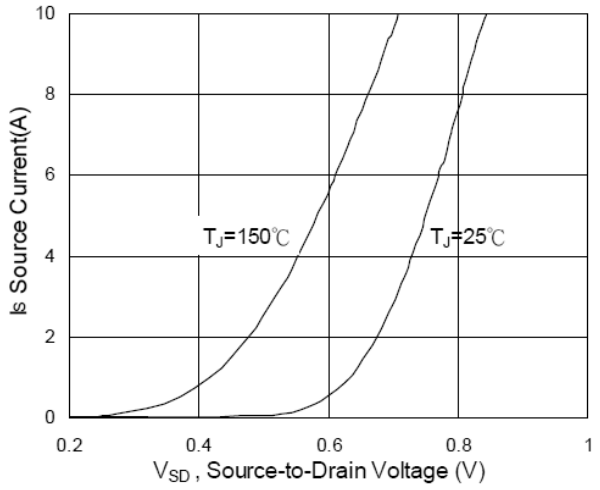


Fig.3 Forward Characteristics of Reverse

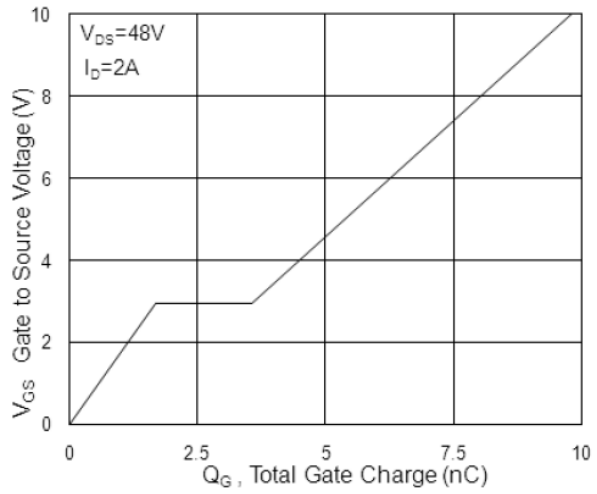


Fig.4 Gate-Charge Characteristics

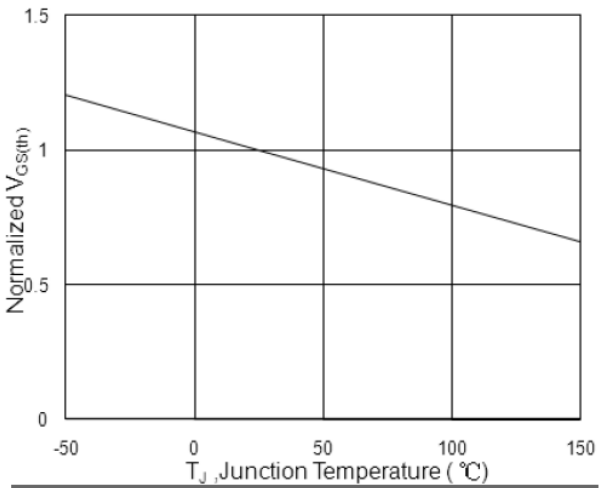


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

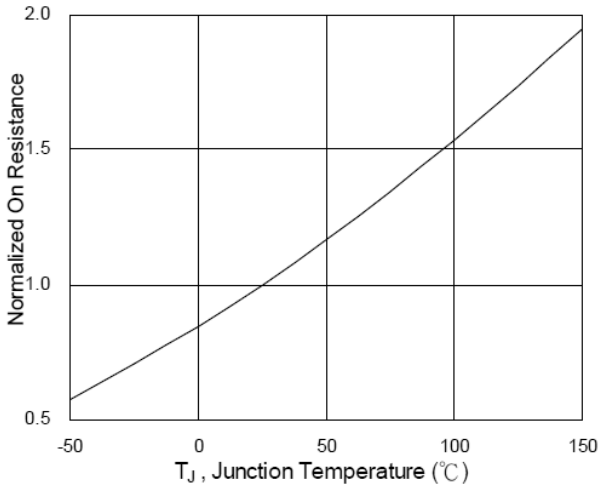


Fig.6 Normalized R_{DSON} v.s T_J

CHARACTERISTIC CURVES

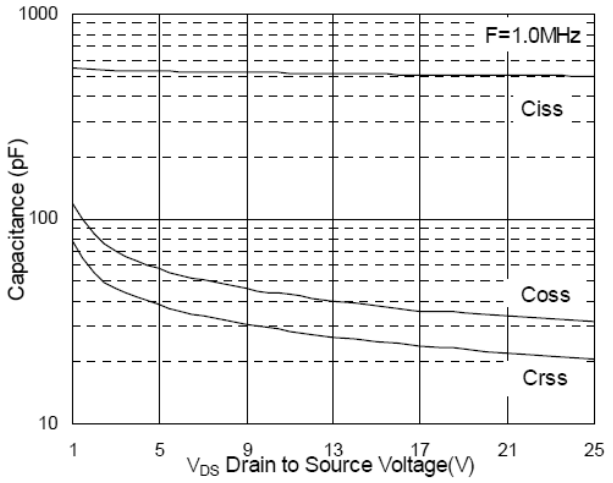


Fig.7 Capacitance

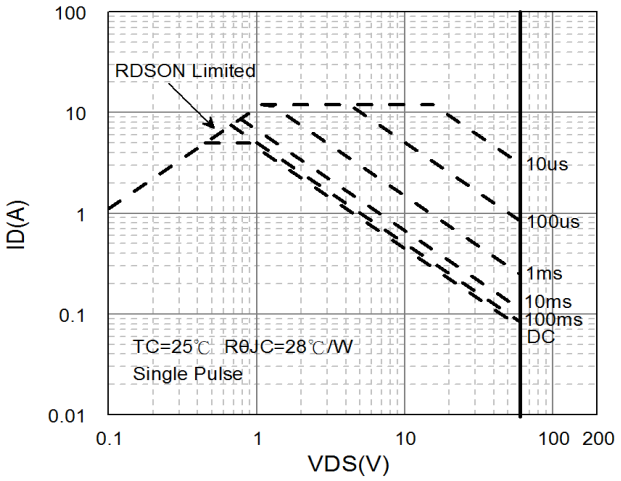


Fig.8 Safe Operating Area

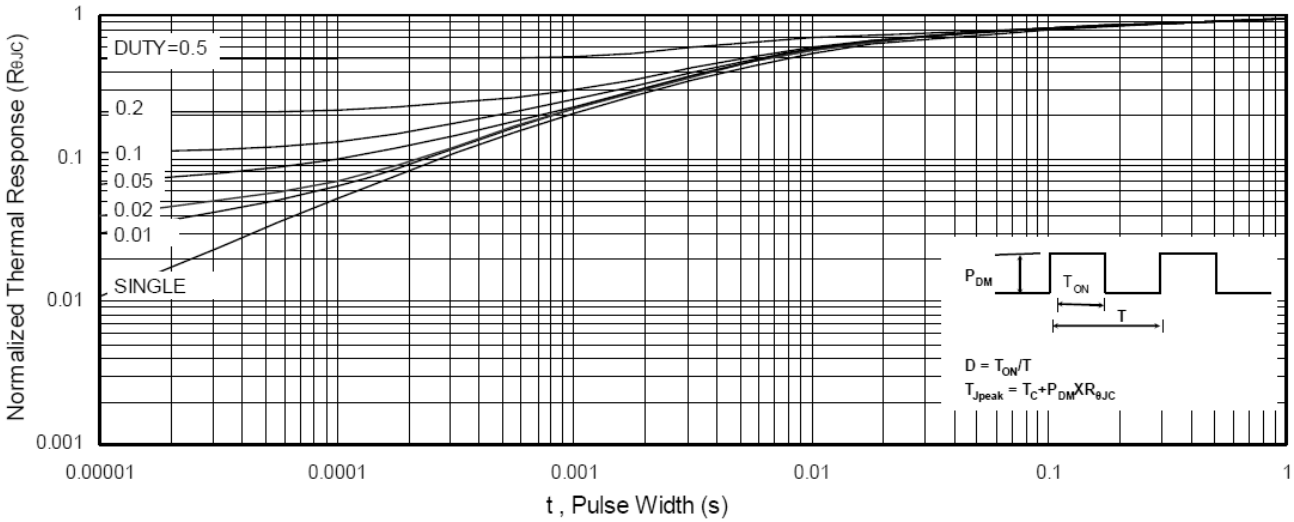


Fig.9 Normalized Maximum Transient Thermal Impedance

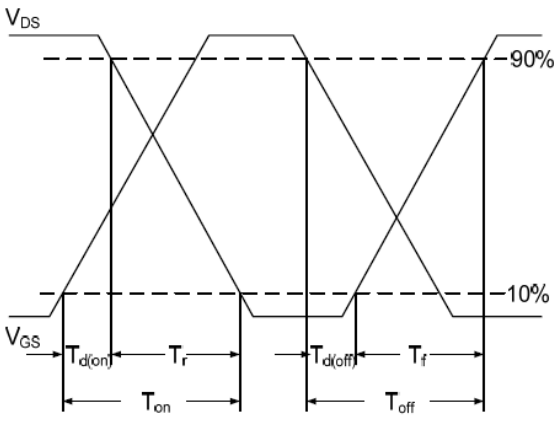


Fig.10 Switching Time Waveform

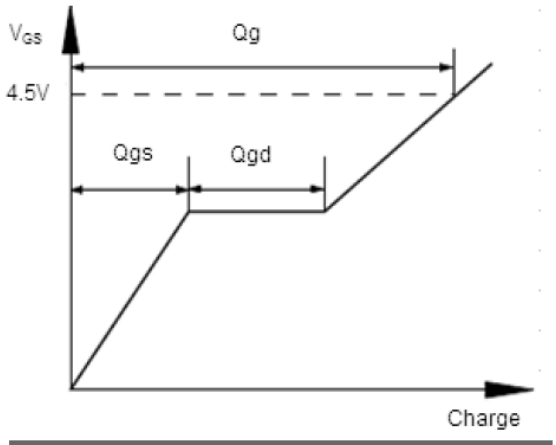


Fig.11 Gate Charge Waveform