

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

DESCRIPTION

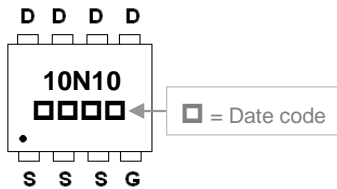
The SSPR10N10-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSPR10N10-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

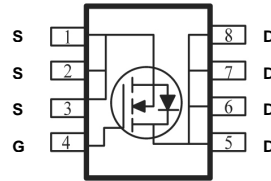


PACKAGE INFORMATION

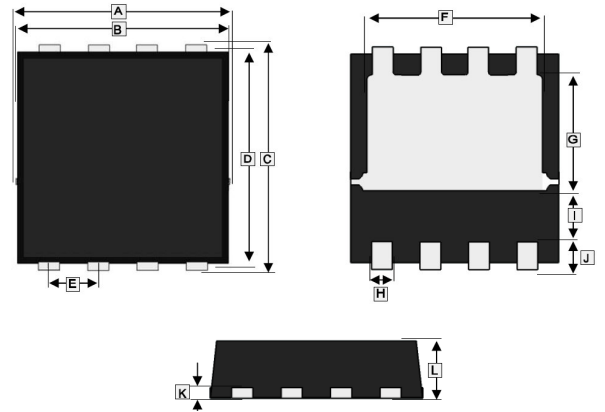
Package	MPQ	Leader Size
SPR-8PP	3K	13 inch

ORDER INFORMATION

Part Number	Type
SSPR10N10-C	Lead (Pb)-free and Halogen-free

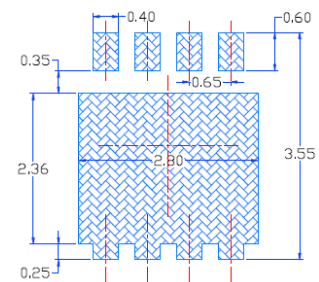


SPR-8PP



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

Mounting Pad Layout



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10V$	I_D	$T_C=25^\circ C$	10
		$T_C=100^\circ C$	7
Pulsed Drain Current ³	I_{DM}	30	A
Total Power Dissipation	P_D	15.6	W
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	75	$^\circ C/W$
Thermal Resistance Junction-Ambient ²		135	
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	8	

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}	100	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transconductance	g_{fs}	-	5.8	-	S	$V_{DS}=5\text{V}, I_D=3\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=80\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		$V_{DS}=80\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	-	70	m Ω	$V_{GS}=10\text{V}, I_D=5\text{A}$	
		-	-	80		$V_{GS}=4.5\text{V}, I_D=3\text{A}$	
Total Gate Charge	Q_g	-	19	-	nC	$I_D=3\text{A}$ $V_{DS}=80\text{V}$ $V_{GS}=4.5\text{V}$	
Gate-Source Charge	Q_{gs}	-	7.3	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	7	-			
Turn-on Delay Time	$T_{d(on)}$	-	9.2	-	nS	$V_{DD}=50\text{V}$ $I_D=3\text{A}$ $V_{GS}=10\text{V}$ $R_G=3.3\Omega$	
Rise Time	T_r	-	22	-			
Turn-off Delay Time	$T_{d(off)}$	-	41	-			
Fall Time	T_f	-	19.6	-			
Input Capacitance	C_{iss}	-	2400	-	pF	$V_{GS}=0$ $V_{DS}=15\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	100	-			
Reverse Transfer Capacitance	C_{rss}	-	82	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	10	A		
Pulsed Source Current ³	I_{SM}	-	-	30			
Diode Forward Voltage ⁴	V_{SD}	-	-	1.2	V	$I_S=1\text{A}, V_{GS}=0$	
Reverse Recovery Time	t_{rr}	-	41	-	nS	$I_F=3\text{A}, dI/dt=100\text{A}/\mu\text{s}$	
Reverse Recovery Charge	Q_{rr}	-	25	-	nC	$T_J=25^\circ\text{C}$	

Notes:

- Surface mounted on 1"x1" FR-4 board with 2OZ copper.
- When mounted on Min. Copper pad.
- Pulse width limited by maximum junction temperature, pulse width $\leq 100\mu\text{s}$, duty cycle $\leq 2\%$.
- The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

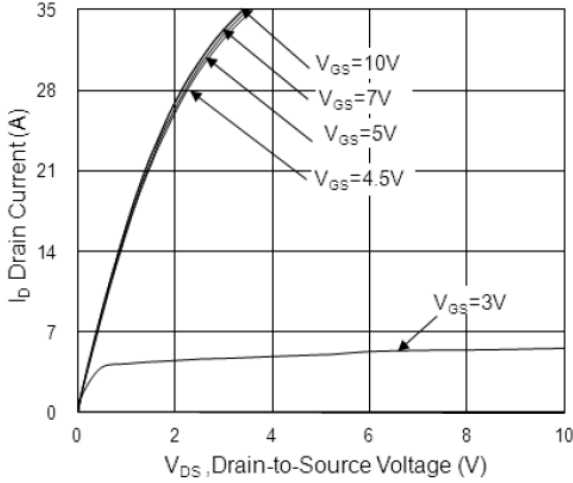


Fig.1 Typical Output Characteristics

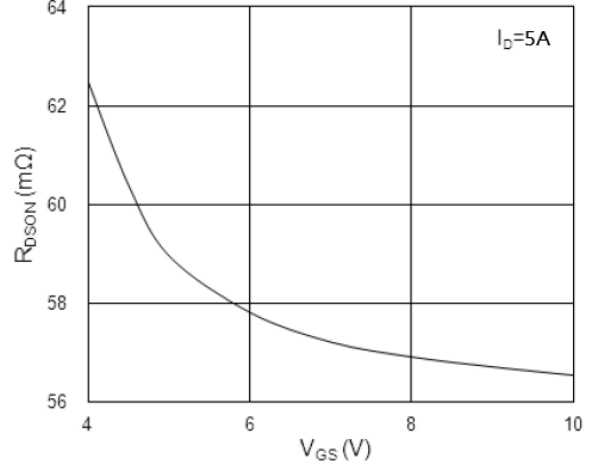


Fig.2 On-Resistance vs. Gate-Source

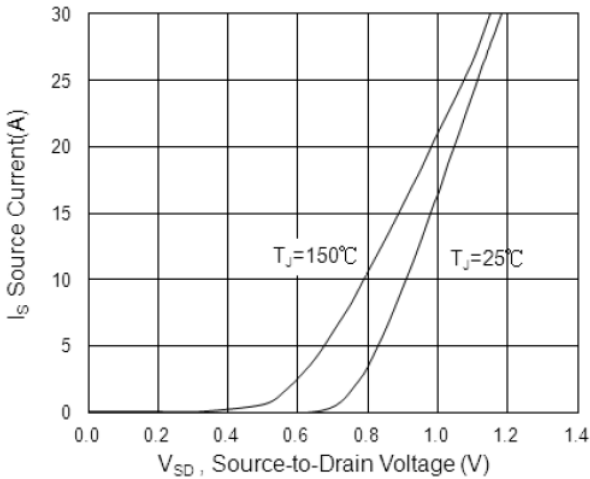


Fig.3 Forward Characteristics Of Reverse

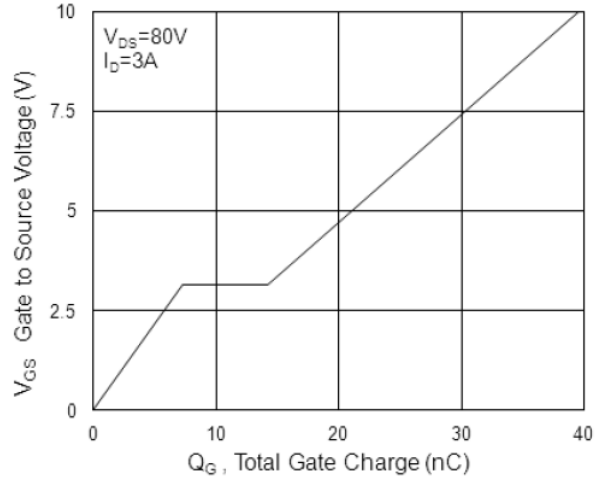


Fig.4 Gate-Charge Characteristics

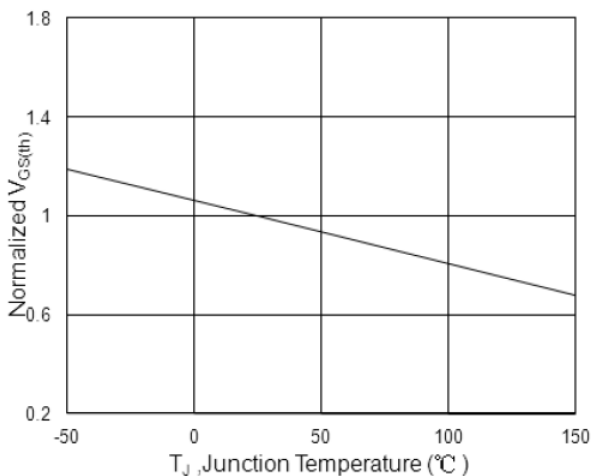


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

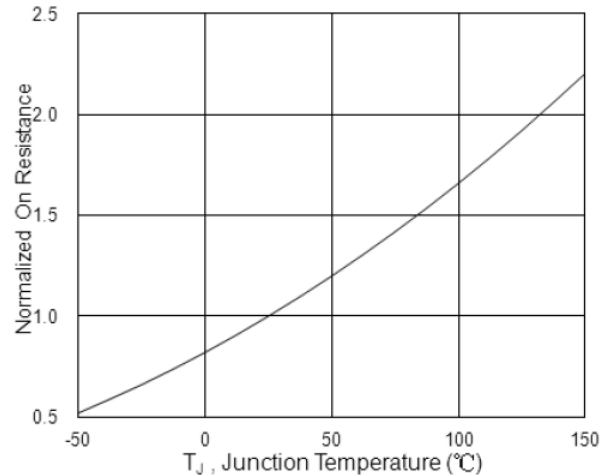


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

CHARACTERISTIC CURVES

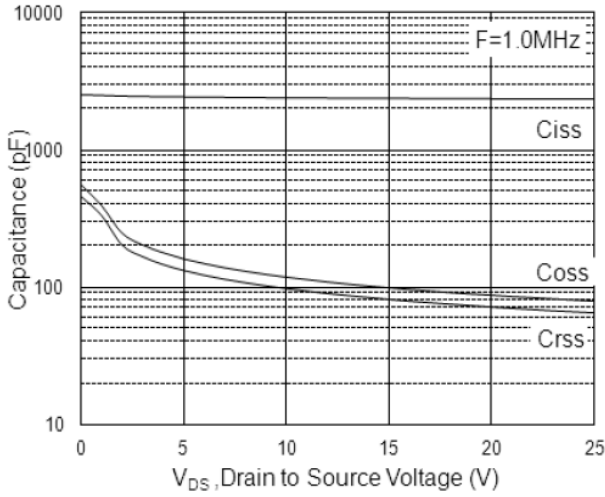


Fig.7 Capacitance

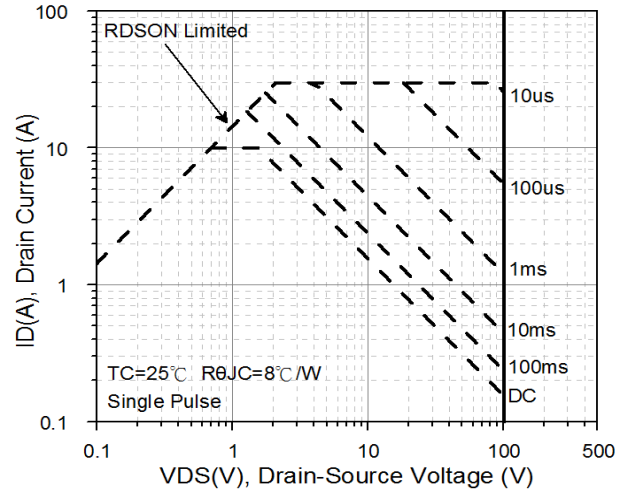


Fig.8 Safe Operating Area

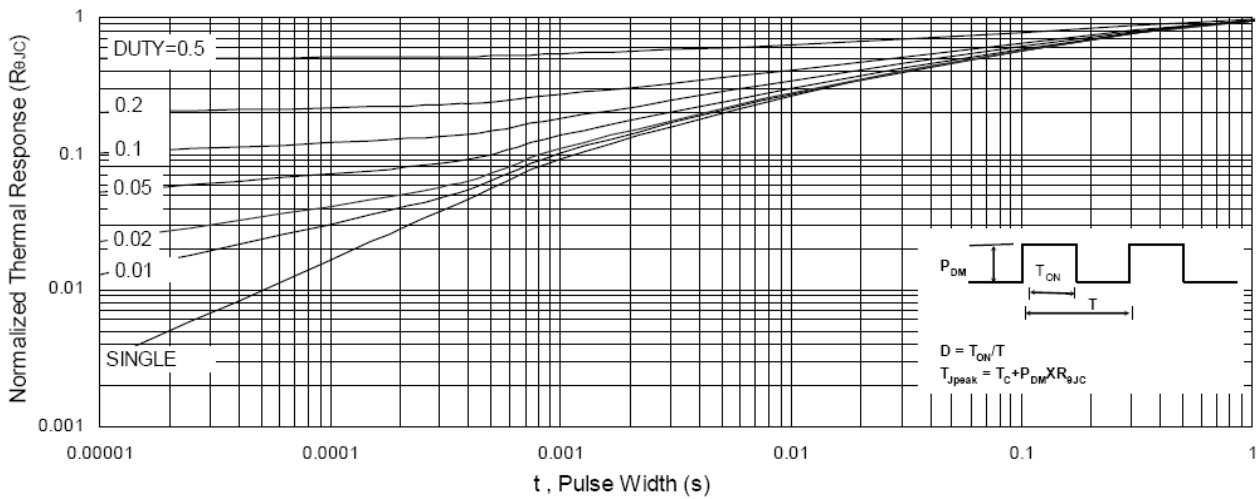


Fig.9 Normalized Maximum Transient Thermal Impedance

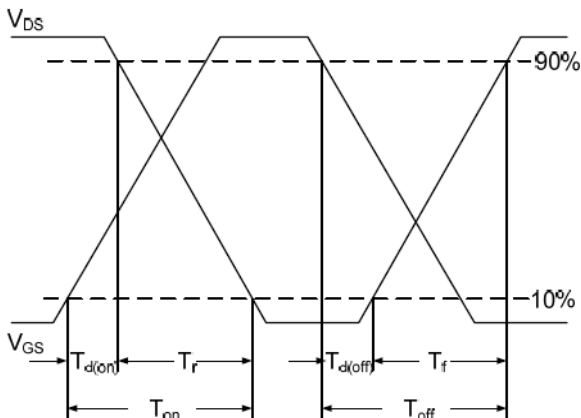


Fig.10 Switching Time Waveform

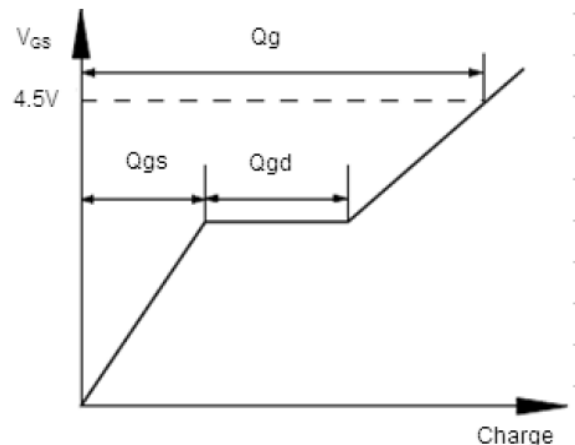


Fig.11 Gate Charge Waveform