

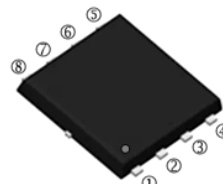
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SPR128N10SV-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 SPR128N10SV-C meet the RoHS and Green Product requirement with full function reliability approved.

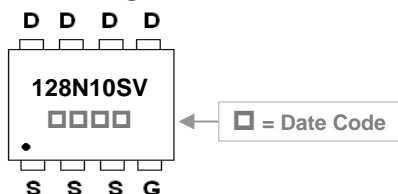
PR-8PP



FEATURES

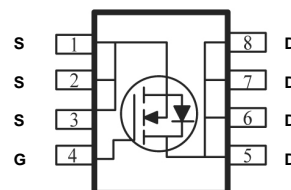
- Shielded Gate Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

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



ORDER INFORMATION

Part Number	Type
SPR128N10SV-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	$T_C=25^\circ\text{C}$	128	A
	$T_C=100^\circ\text{C}$	81	
Pulsed Drain Current ²	I_{DM}	400	A
Power Dissipation	$T_C=25^\circ\text{C}$	P_D	125 W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	55	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Transconductance	g_{fs}	-	50	-	S	$V_{DS}=5V, I_D=20A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=100V, V_{GS}=0V$
		$T_J=100^\circ\text{C}$	-	-	100		
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	3.7	4.2	m Ω	$V_{GS}=10V, I_D=20A$	
Gate Resistance	R_g	-	1.3	-	Ω	$f=1\text{MHz}$	
Total Gate Charge	Q_g	-	75	-	nC	$I_D=20A$ $V_{DD}=50V$ $V_{GS}=10V$	
Gate-Source Charge	Q_{gs}	-	10	-			
Gate-Drain Charge	Q_{gd}	-	34	-			
Turn-on Delay Time	$T_{d(on)}$	-	13	-	nS	$V_{DD}=50V$ $I_D=20A$ $V_{GS}=10V$ $R_G=10\Omega$	
Rise Time	T_r	-	19	-			
Turn-off Delay Time	$T_{d(off)}$	-	45	-			
Fall Time	T_f	-	27	-			
Input Capacitance	C_{iss}	-	3650	-	pF	$V_{GS}=0V$ $V_{DS}=50V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	1110	-			
Reverse Transfer Capacitance	C_{rss}	-	43	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	0.9	1.2	V	$I_F=20A, V_{GS}=0V$	
Reverse Recovery Time	T_{rr}	-	50	-	nS	$I_F=20A, V_R=50V,$ $di/dt=500A/\mu s$	
Reverse Recovery Charge	Q_{rr}	-	275	-	nC		

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.

CHARACTERISTIC CURVES

Fig 1. Typical Output Characteristics

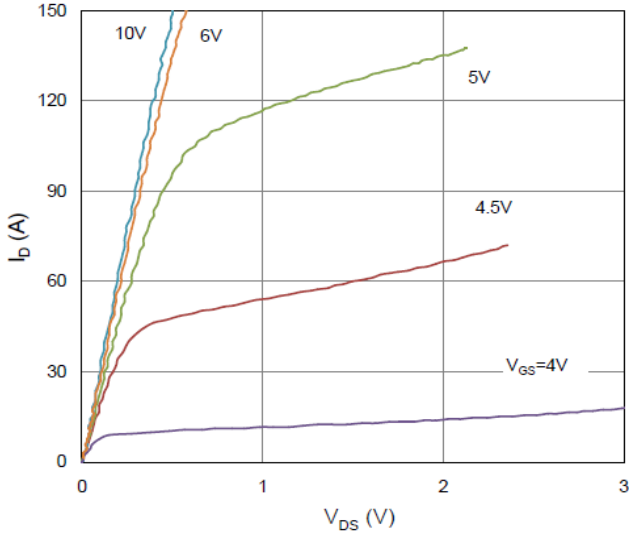


Figure 2. On-Resistance vs. Gate-Source Voltage

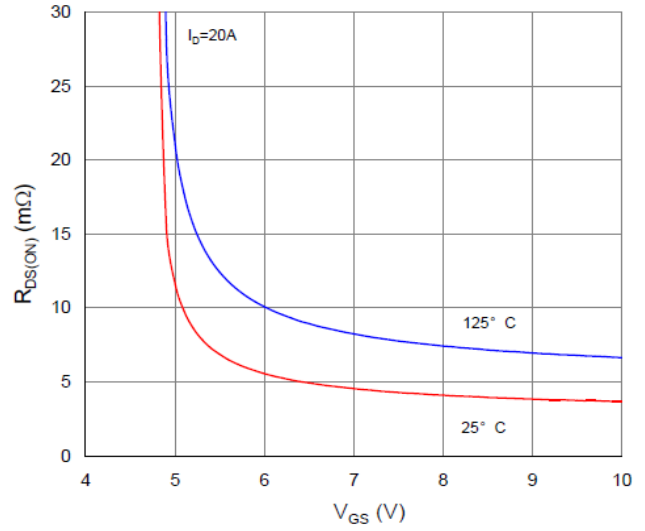


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

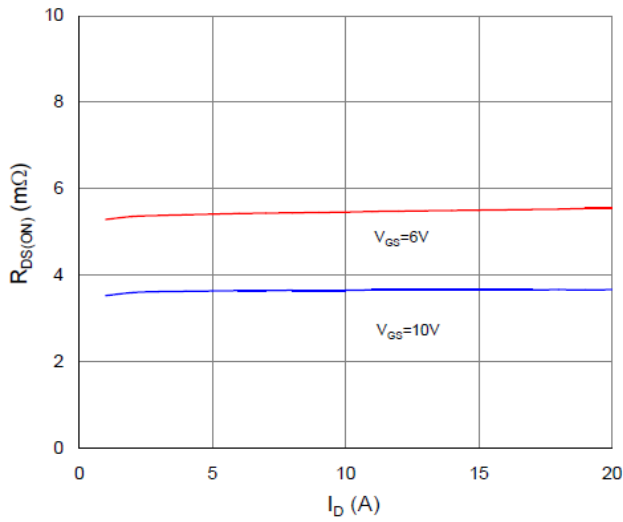


Figure 4. Normalized On-Resistance vs. Junction Temperature

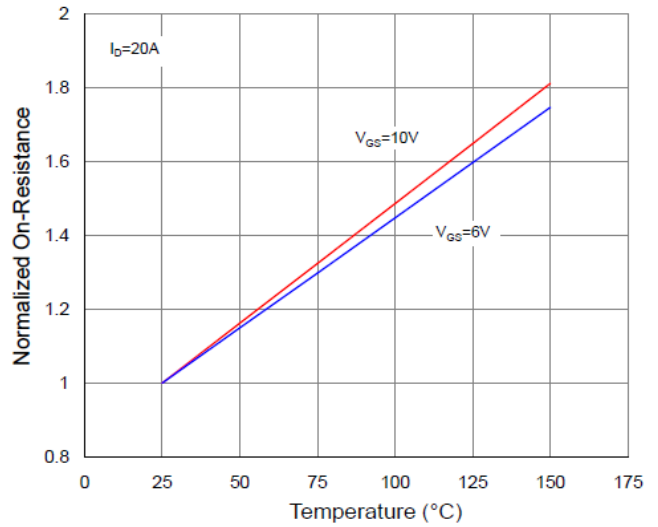


Figure 5. Typical Transfer Characteristics

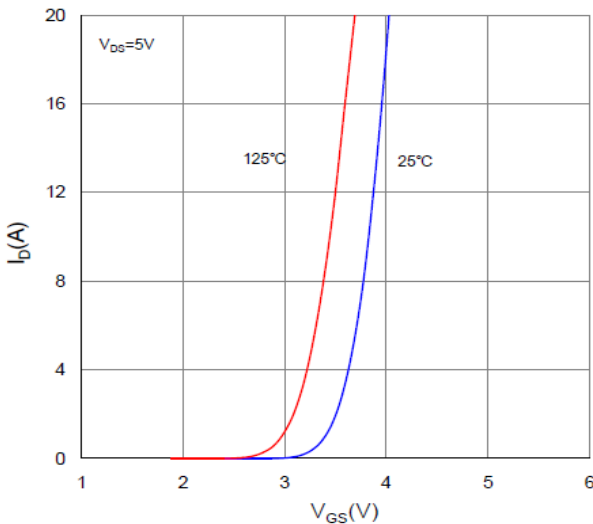
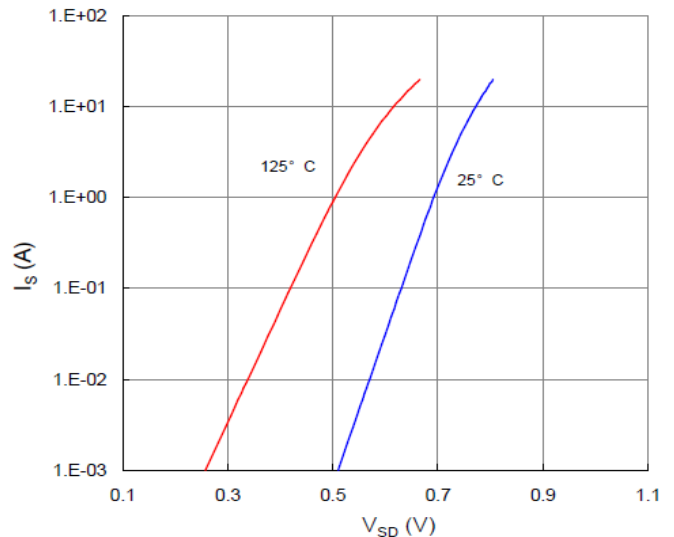


Figure 6. Typical Source-Drain Diode Forward Voltage



CHARACTERISTIC CURVES

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

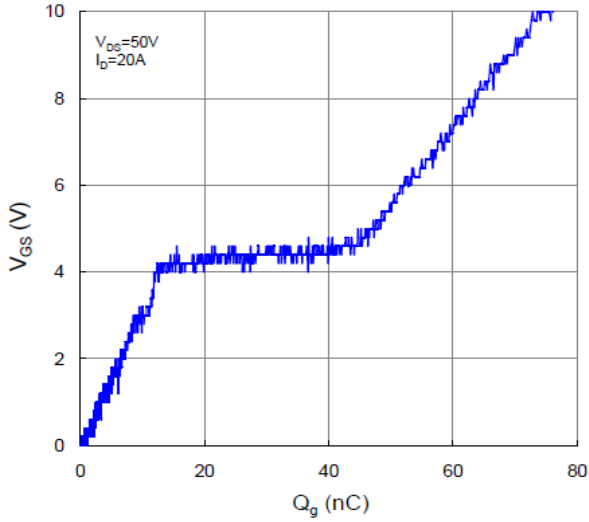


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

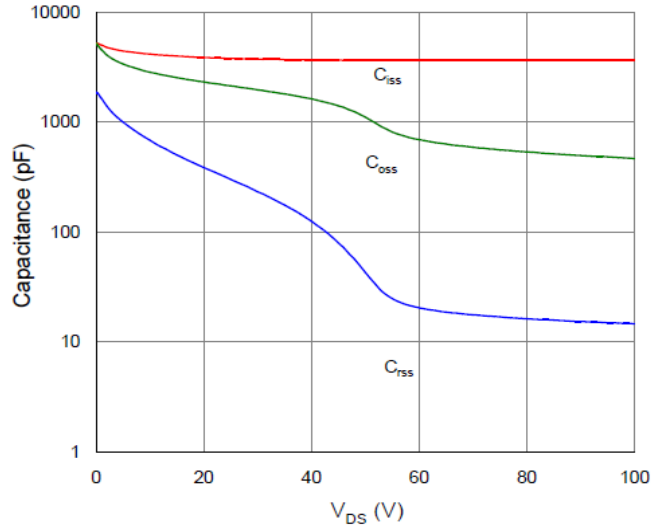


Figure 9. Maximum Safe Operating Area

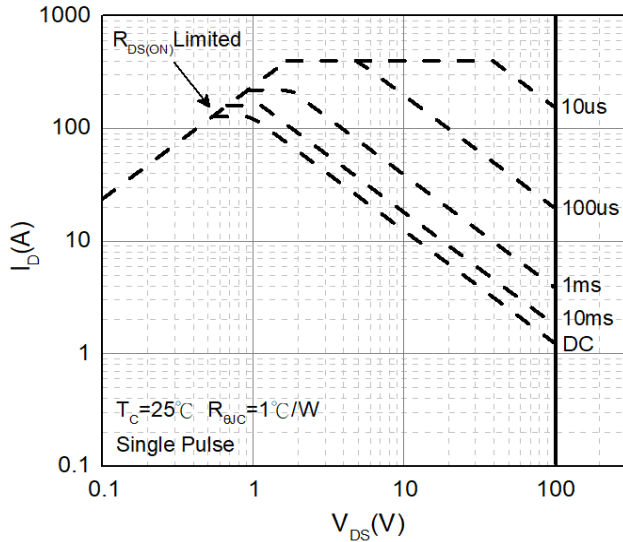


Figure 10. Maximum Drain Current vs. Case Temperature

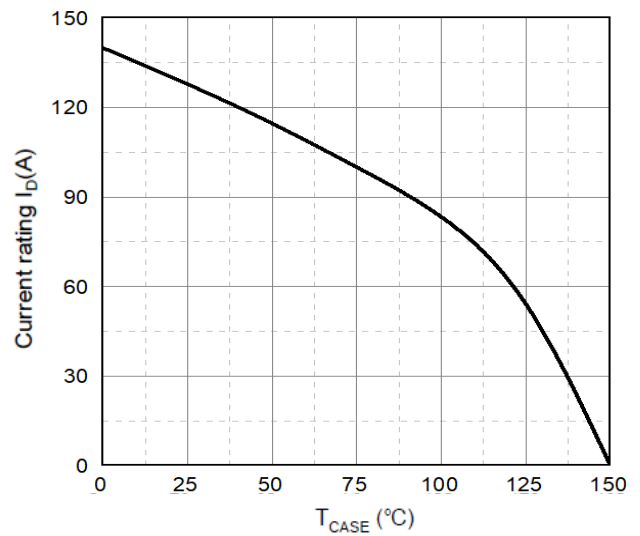
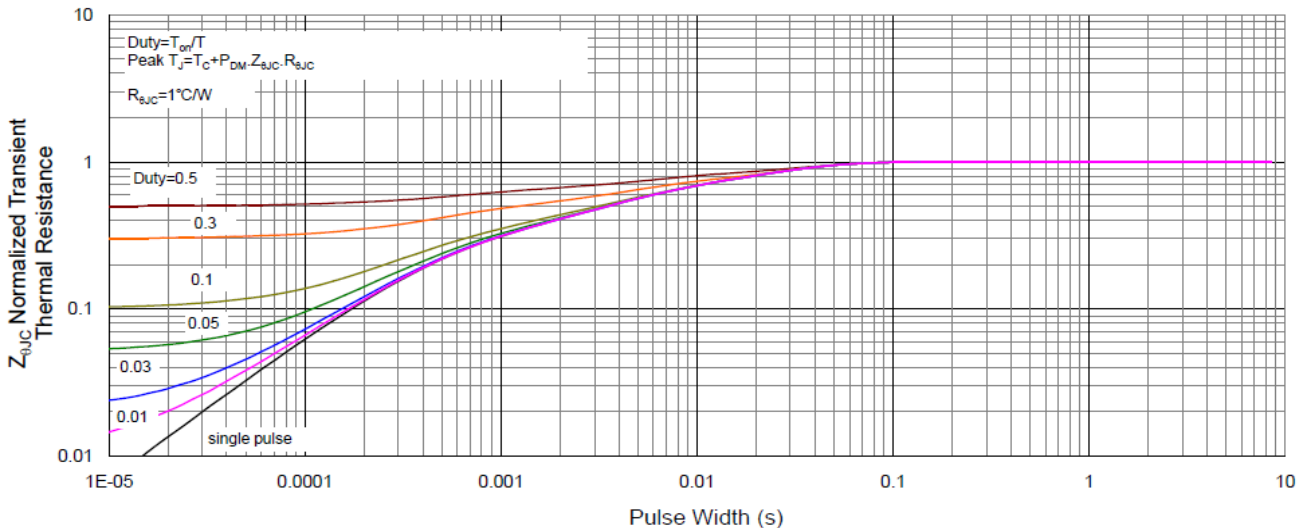
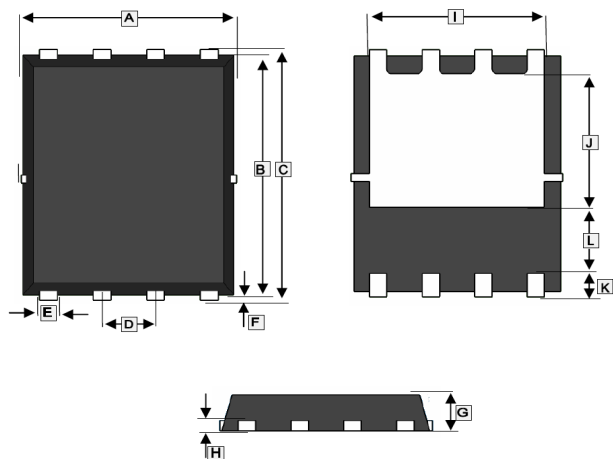


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



PACKAGE OUTLINE DIMENSIONS

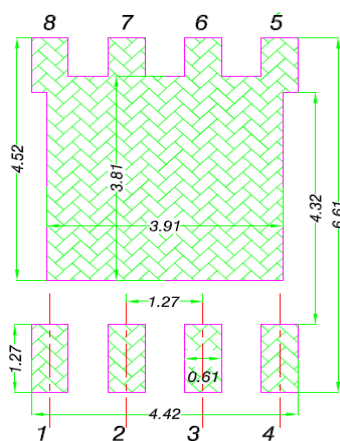
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REF.	Millimeter	
	Min.	Max.
A	4.90	5.10
B	5.70	5.90
C	5.90	6.20
D	1.27 BSC.	
E	0.33	0.51
F	0.06	0.20
G	0.80	1.10
H	0.254 REF.	
I	4.00 REF.	
J	3.40 REF.	
K	0.60 REF.	
L	1.40 REF.	

MOUNTING PAD LAYOUT

PR-8PP



*Dimensions in millimeters