

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

DESCRIPTION

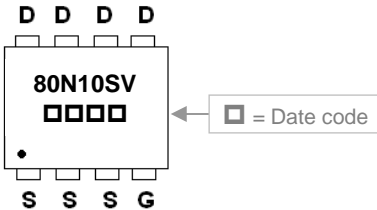
The SPR80N10SV-C is the Shielded Gate Technology N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous rectification applications.

The SPR80N10SV-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



PACKAGE INFORMATION

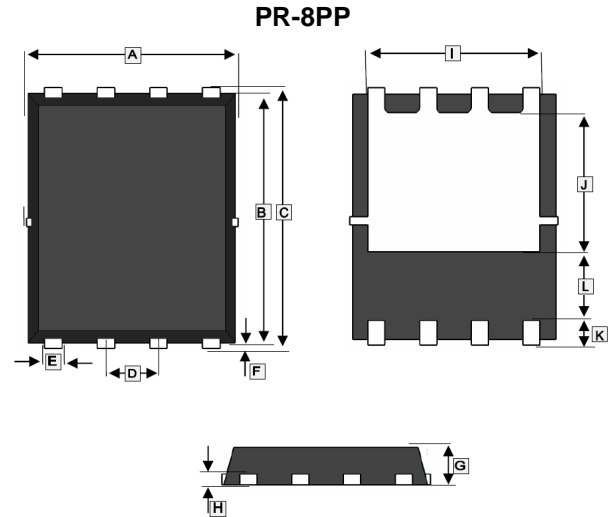
Package	MPQ	Leader Size
PR-8PP	3K	13 inch

ORDER INFORMATION

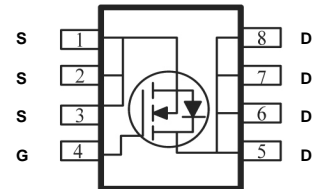
Part Number	Type
SPR80N10SV-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10\text{V}$	I_D	$T_C=25^\circ\text{C}$	80
		$T_C=100^\circ\text{C}$	61
Pulsed Drain Current ²	I_{DM}	140	A
Total Power Dissipation ³	P_D	108	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$
Thermal Data			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$t \leq 10\text{sec}, 25$	$^\circ\text{C/W}$
		Steady State, 55	
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	1.15	



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.9	5.1	G	0.8	1.0
B	5.7	5.9	H	0.254 REF.	
C	5.95	6.2	I	4.0 REF.	
D	1.27 BSC.		J	3.4 REF.	
E	0.35	0.49	K	0.6 REF.	
F	0.1	0.2	L	1.4 REF.	



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	$V_{GS}=0V, I_D=250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Forward Transfer Conductance	g_{fs}	-	80	-	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	$V_{DS}=80V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	5		$V_{DS}=80V, V_{GS}=0V$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	6.6	8.8	m Ω	$V_{GS}=10V, I_D=13.5A$	
Total Gate Charge	Q_g	-	52	-	nC	$I_D=20A$ $V_{DS}=50V$ $V_{GS}=10V$	
Gate-Source Charge	Q_{gs}	-	13.5	-			
Gate-Drain Charge	Q_{gd}	-	16	-			
Turn-on Delay Time	$T_{d(on)}$	-	10	-	nS	$V_{DD}=50V$ $I_D=13.5A$ $V_{GS}=10V$ $R_G=3\Omega$	
Rise Time	T_r	-	6.5	-			
Turn-off Delay Time	$T_{d(off)}$	-	45	-			
Fall Time	T_f	-	7.5	-			
Input Capacitance	C_{iss}	-	3148	-	pF	$V_{GS}=0V$ $V_{DS}=50V$ $f=1MHz$	
Output Capacitance	C_{oss}	-	693	-			
Reverse Transfer Capacitance	C_{rss}	-	26	-			
Source-Drain Diode							
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$I_S=1A, V_{GS}=0V$	
Continuous Source Current ¹	I_S	-	-	80	A		
Reverse Recovery Time	T_{rr}	-	33	-	nS	$I_F=13.5A, dI/dt=100A/\mu s,$ $T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	150	-	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

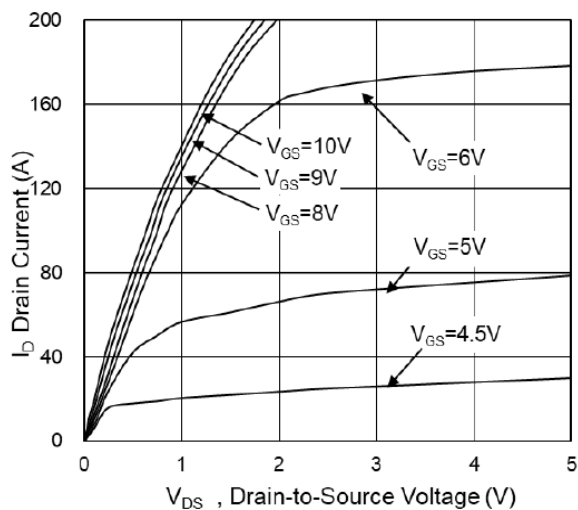


Fig.1 Typical Output Characteristics

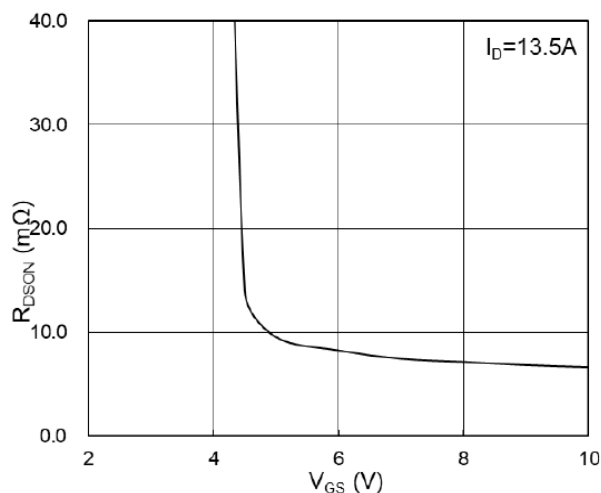


Fig.2 On-Resistance vs G-S Voltage

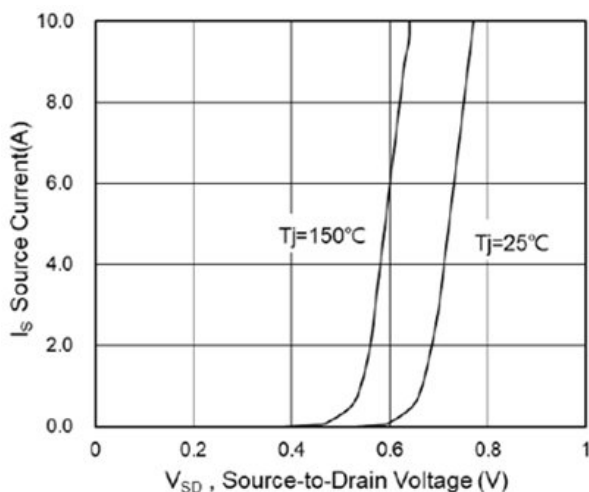


Fig.3 Source-Drain Forward Characteristics

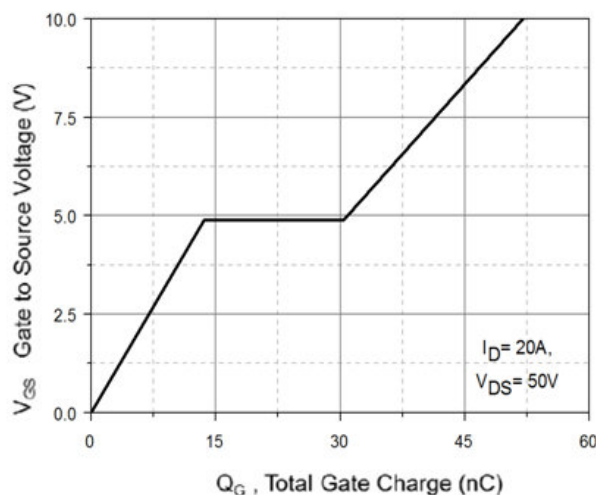


Fig.4 Gate-Charge Characteristics

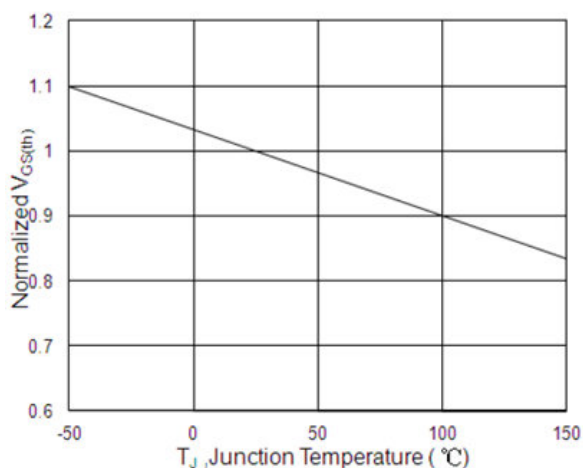


Fig.5 Normalized $V_{GS(th)}$ vs T_J

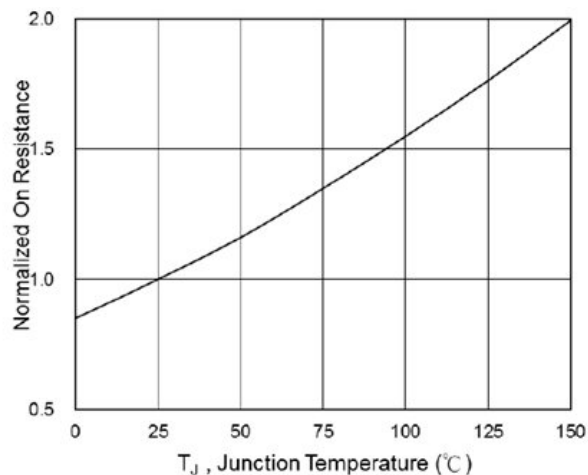


Fig.6 Normalized $R_{DS(on)}$ vs T_J

CHARACTERISTIC CURVES

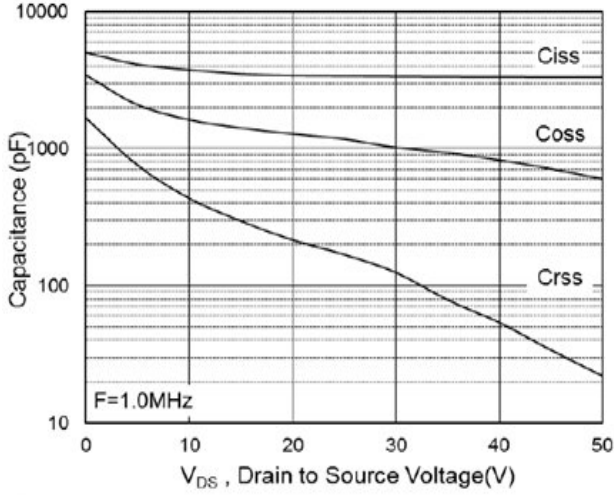


Fig.7 Capacitance

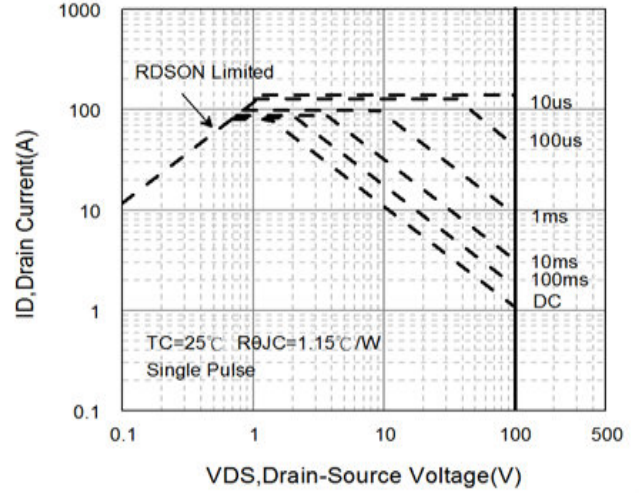


Fig.8 Safe Operating Area

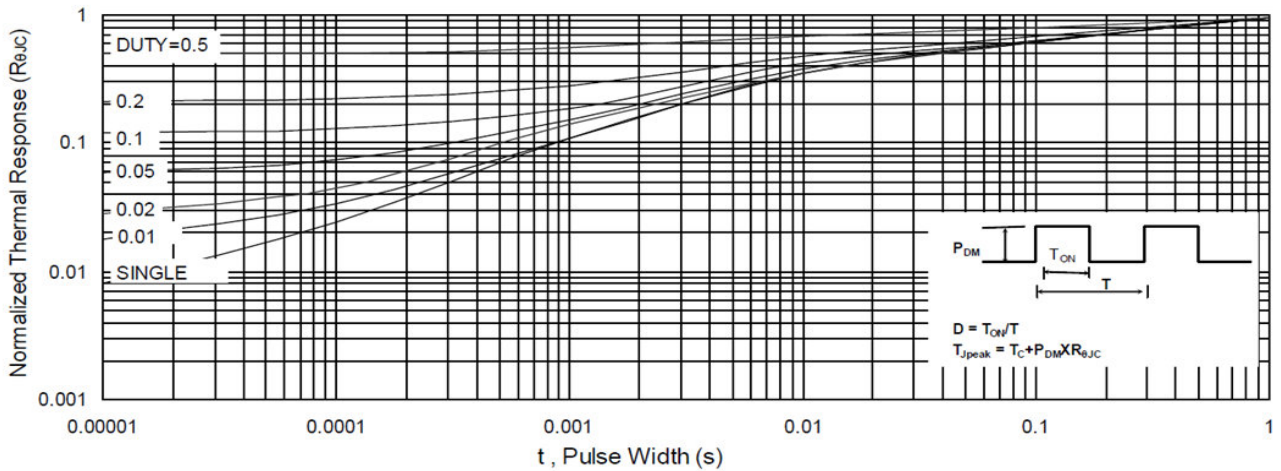


Fig.9 Normalized Maximum Transient Thermal Impedance

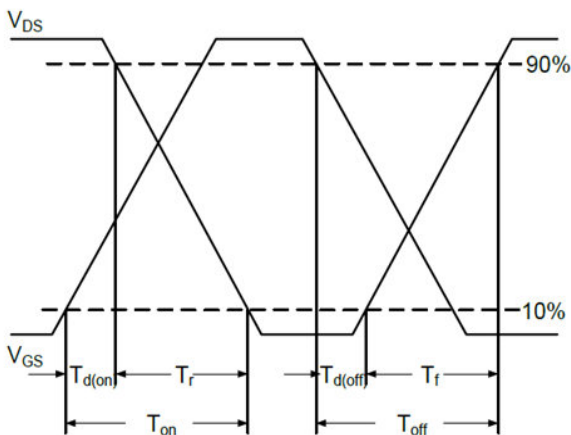


Fig.10 Switching Time Waveform

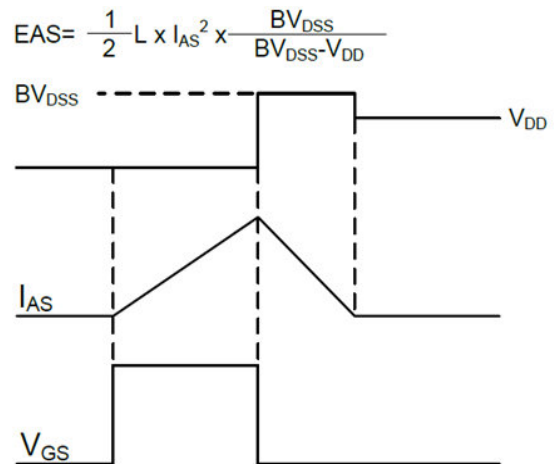


Fig.11 Unclamped Inductive Switching Waveform