

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

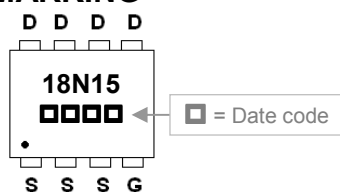
DESCRIPTION

The SPR18N15-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 SPR18N15-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

- Advanced High Cell Density Technology
- Super Low Gate Charge

MARKING



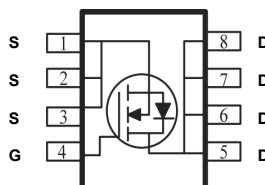
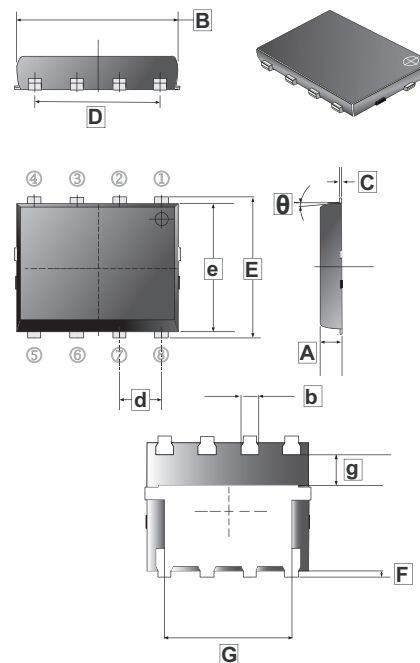
PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SPR18N15-C	Lead (Pb)-free and Halogen-free

PR-8PP



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.9	1.1	θ	0°	12°
B	4.9	5.1	b	0.33	0.51
C	0.2	0.3	d	1.27 BSC	
D	3.81	4	e	5.7	5.9
E	5.95	6.2	g	1.1	1.4
F	0.1	0.2			
G	3.81	4			

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ $V_{GS}=10V$ ¹	I_D	$T_C=25^\circ C$	18
		$T_C=100^\circ C$	11.4
		$T_A=25^\circ C$	4
		$T_A=70^\circ C$	3.2
Pulsed Drain Current ²	I_{DM}	72	A
Maximum Power Dissipation ¹	P_D	$T_C=25^\circ C$	50
		$T_C=100^\circ C$	20
		$T_A=25^\circ C$	2.5
		$T_A=70^\circ C$	1.6
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹ (Max).	$R_{\theta JA}$	$t \leq 10s, 50$	$^\circ C/W$
		Steady State, 83	
Thermal Resistance Junction-Ambient (Max).		125	
Thermal Resistance Junction-Case ¹ (Max).	$R_{\theta JC}$	2.5	

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

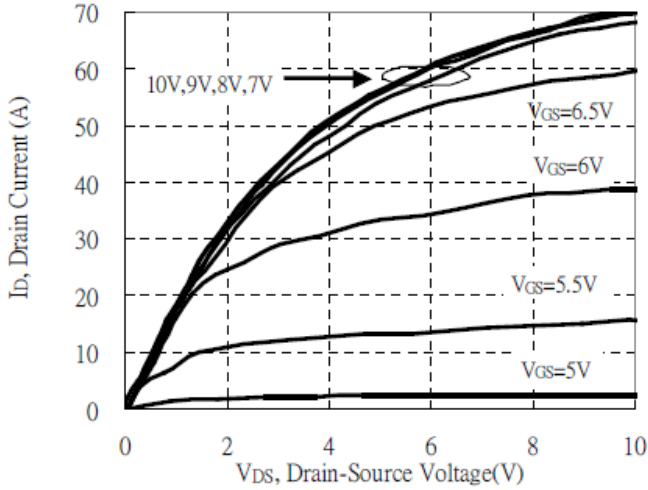
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	150	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=120\text{V}, V_{GS}=0$
		$T_J=125^\circ\text{C}$	-	-	25		$V_{DS}=120\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$		-	55	70	m Ω	$V_{GS}=10\text{V}, I_D=15\text{A}$
			-	65	85		$V_{GS}=7\text{V}, I_D=10\text{A}$
Total Gate Charge	Q_g	-	20	-	nC	$I_D=15\text{A}$ $V_{DS}=80\text{V}$ $V_{GS}=10\text{V}$	
Gate-Source Charge	Q_{gs}	-	5.5	-			
Gate-Drain Charge	Q_{gd}	-	7	-			
Turn-on Delay Time	$T_{d(on)}$	-	6	-	nS	$V_{DD}=80\text{V}$ $I_D=10\text{A}$ $V_{GS}=10\text{V}$ $R_G=3\Omega$	
Rise Time	T_r	-	5	-			
Turn-off Delay Time	$T_{d(off)}$	-	13	-			
Fall Time	T_f	-	6	-			
Input Capacitance	C_{iss}	-	1274	-	pF	$V_{GS}=0$ $V_{DS}=30\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	117	-			
Reverse Transfer Capacitance	C_{rss}	-	49	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	18	A		
Pulsed Source Current ²	I_{SM}	-	-	72	A		
Diode Forward Voltage ³	V_{SD}	-	-	1.2	V	$V_{GS}=0, I_S=10\text{A}, T_J=25^\circ\text{C}$	
Reverse Recovery Time	t_{rr}	-	30	-	nS	$I_F=10\text{A}, dI/dt=100\text{A}/\mu\text{s},$ $T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	100	-	nC		

Notes:

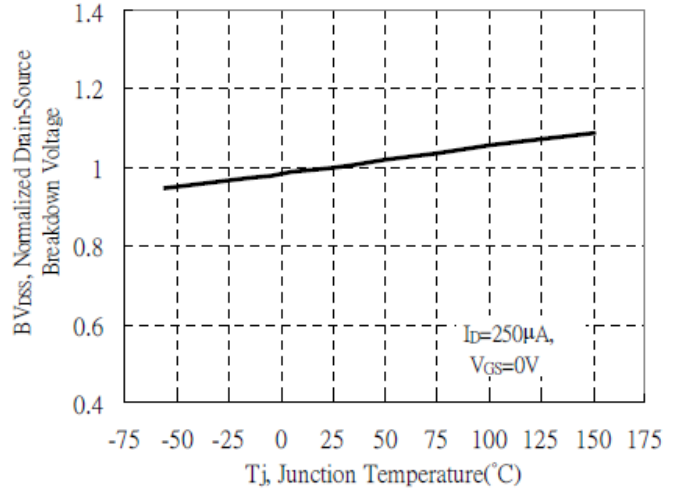
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The power dissipation is limited by 150°C junction temperature.
3. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CHARACTERISTIC CURVES

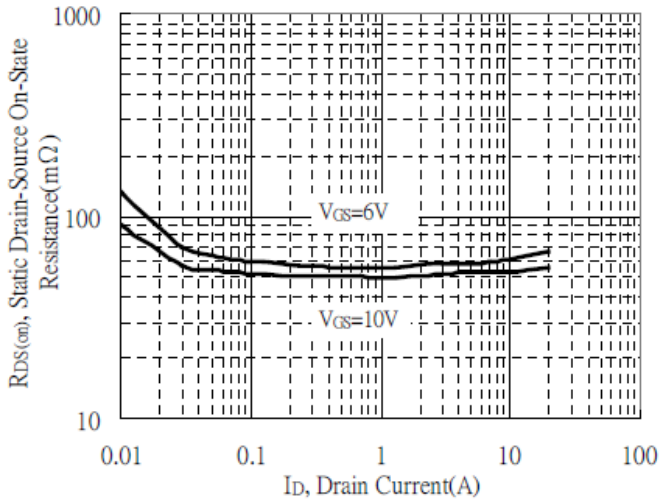
Typical Output Characteristics



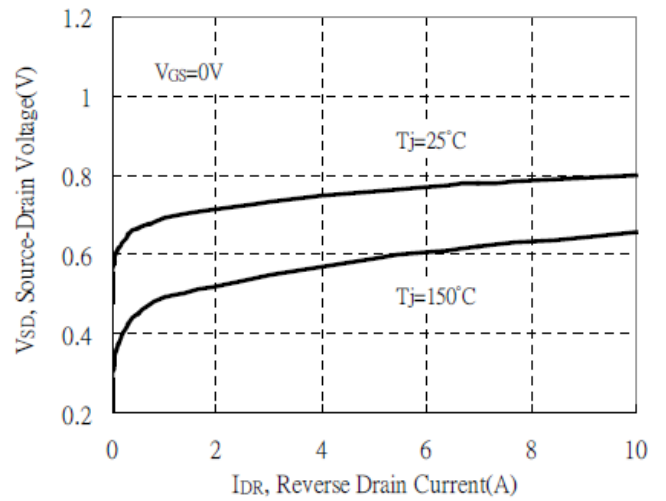
Brekdown Voltage vs Ambient Temperature



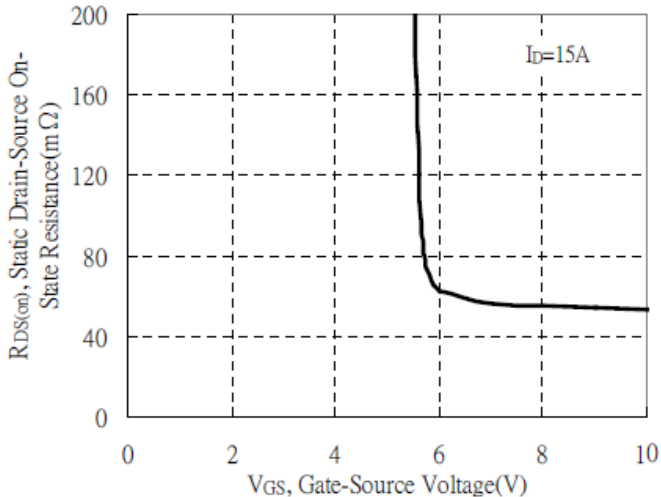
Static Drain-Source On-State resistance vs Drain Current



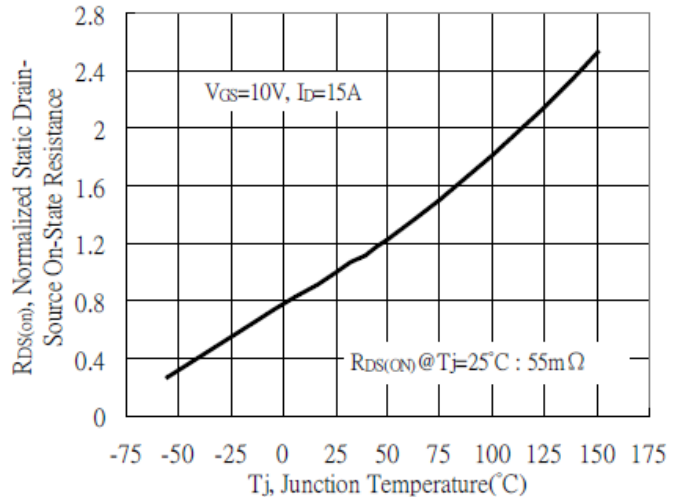
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

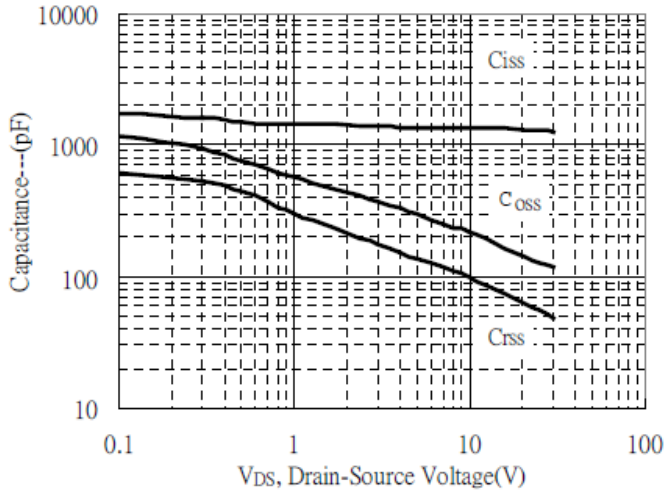


Drain-Source On-State Resistance vs Junction Temperature

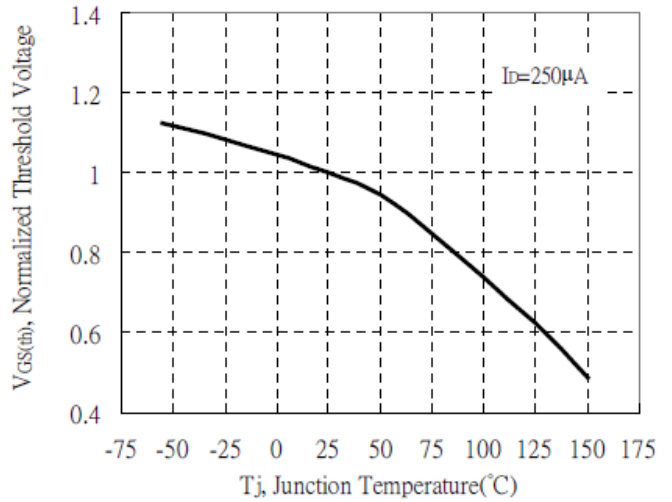


CHARACTERISTIC CURVES

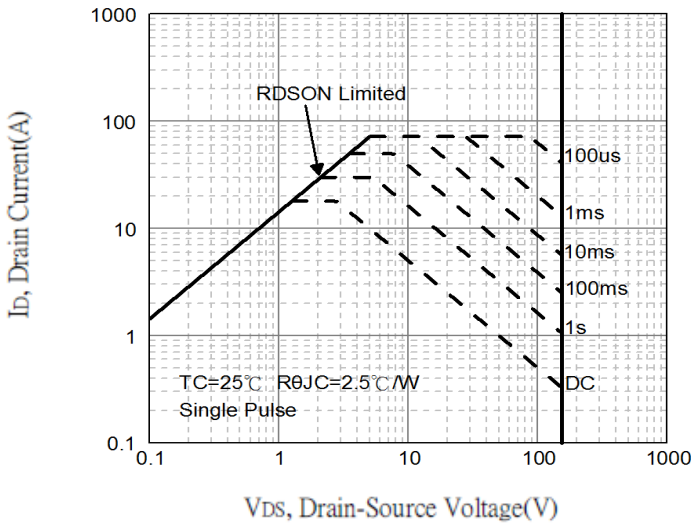
Capacitance vs Drain-to-Source Voltage



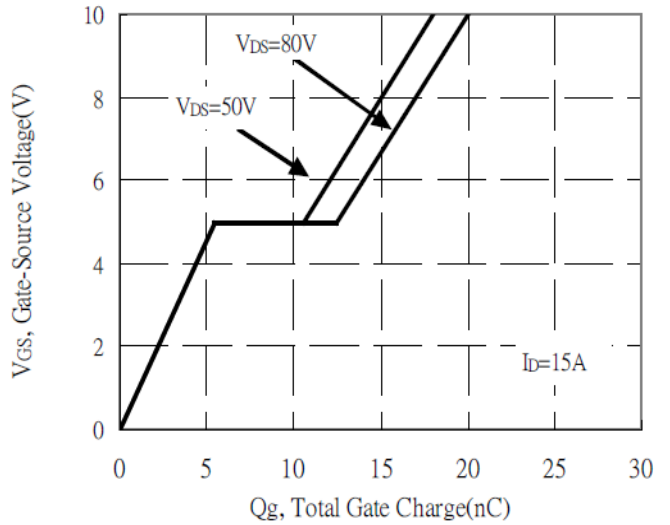
Threshold Voltage vs Junction Temperature



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves

