Elektronische Bauelemente

SPR4A6N15-C

4.6A , 150V , $R_{DS(ON)}$ 160 mΩ

N-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

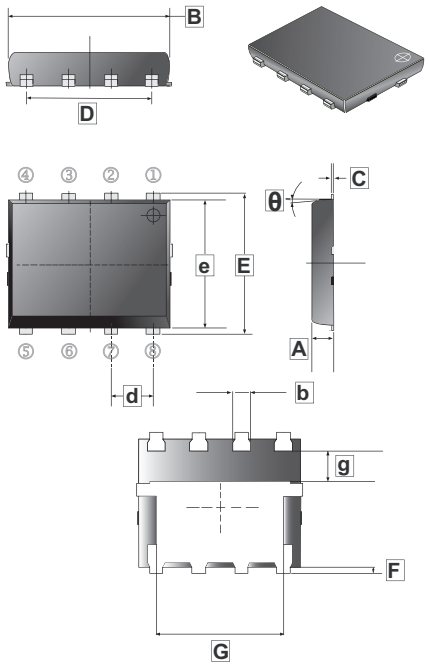
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SPR4A6N15-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 SPR4A6N15-C meet the RoHS and Green Product requirement with full function reliability approved.

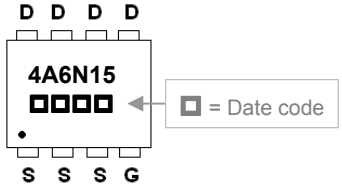
PR-8PP



FEATURES

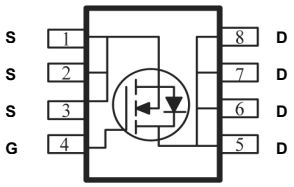
- Advanced High Cell Density Technology
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

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



REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter 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	Rating	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_A=25°C	I_D	4.6	A
	T_A=70°C		3.7	
Pulsed Drain Current [3]		I_{DM}	16	A
Total Power Dissipation	T_A=25°C	P_D	5	W
	T_A=70°C		3.2	
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦10s, 25	°C / W
			Steady State, 62	
Thermal Resistance Junction-Ambient [2]			125	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	3.1	°C / W

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

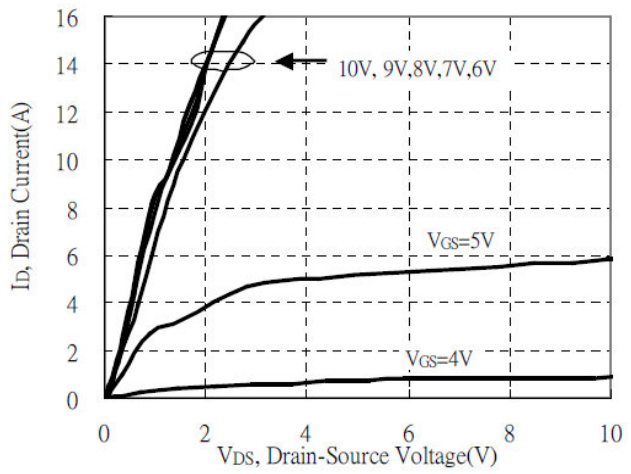
Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	150	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=120V, V_{GS}=0, T_J=25°C
		-	-	25		V_{DS}=120V, V_{GS}=0, T_J=125°C
Static Drain-Source On-Resistance [4]	$R_{DS(ON)}$	-	122	160	mΩ	V_{GS}=10V, I_D=3.9A
		-	140	180		V_{GS}=6.5V, I_D=3.3A
Total Gate Charge	Q_g	-	12	-	nC	I_D=3.9A V_{DS}=75V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	2.3	-		
Gate-Drain Change	Q_{gd}	-	5	-		
Turn-on Delay Time	$T_{d(on)}$	-	6	-	nS	V_{DD}=25V I_D=1A V_{GS}=10V R_G=6Ω
Rise Time	T_r	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	17	-		
Fall Time	T_f	-	4	-		
Input Capacitance	C_{iss}	-	553	-	pF	V_{GS}=0 V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	58	-		
Reverse Transfer Capacitance	C_{rss}	-	22	-		
Source-Drain Diode						
Continuous Source Current [1]	I_S	-	-	2.8	A	
Pulsed Source Current [3]	I_{SM}	-	-	11.2	A	
Diode Forward Voltage [4]	V_{SD}	-	-	1.2	V	I_S=2.8A, V_{GS}=0V, T_J=25°C
Reverse Recovery Time	t_{rr}	-	22	-	nS	I_F=2.8A, dI/dt=100A/μs, T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	10	-	nC	

Notes:

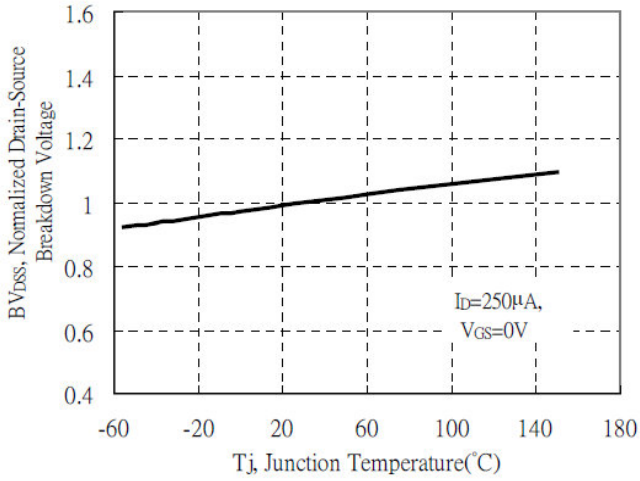
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature
4. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

CHARACTERISTIC CURVES

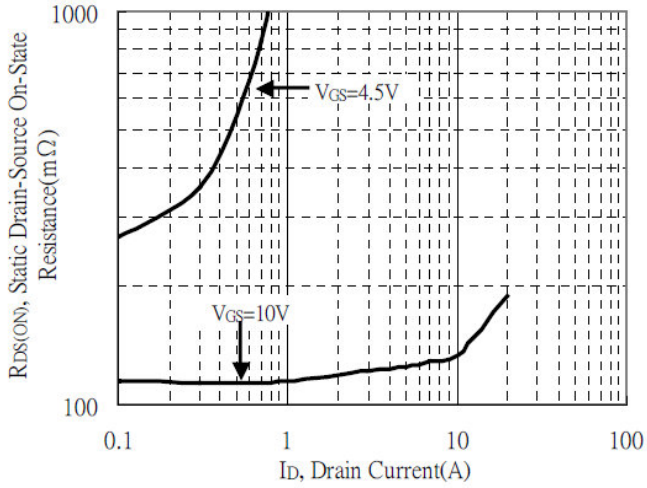
Typical Output Characteristics



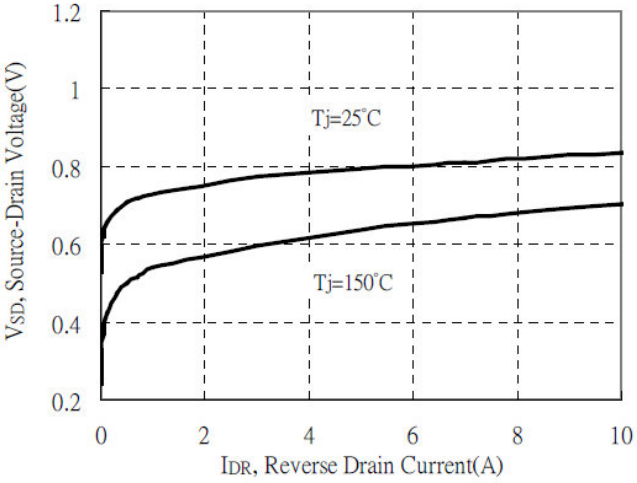
Brekdown Voltage vs Ambient Temperature



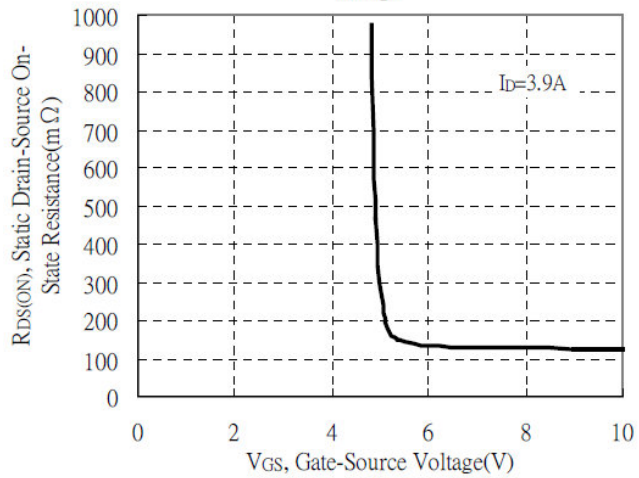
Static Drain-Source On-State resistance vs Drain Current



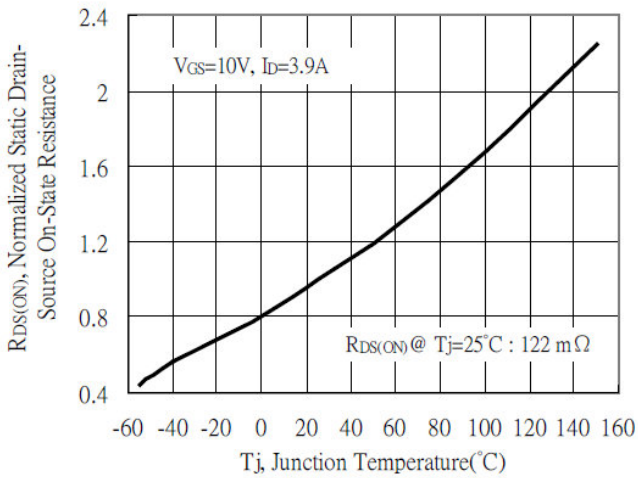
Reverse Drain Current vs Source-Drain Voltage



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

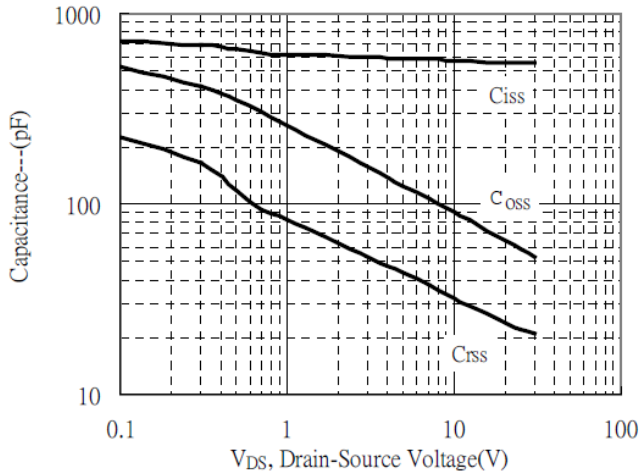


Drain-Source On-State Resistance vs Junction Tempearture

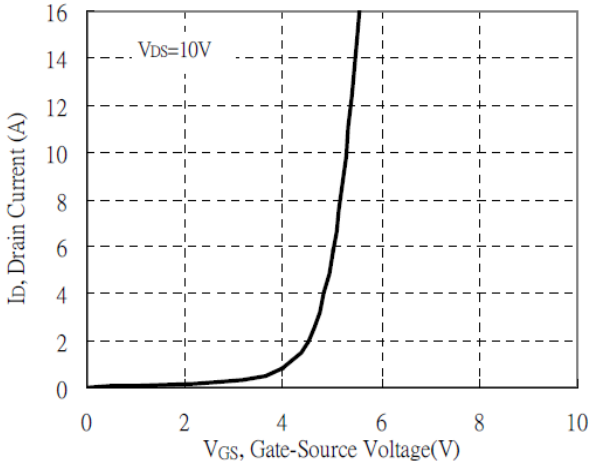


CHARACTERISTIC CURVES

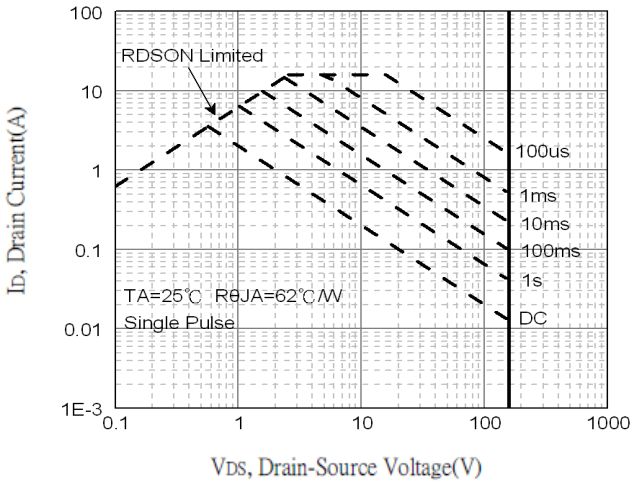
Capacitance vs Drain-to-Source Voltage



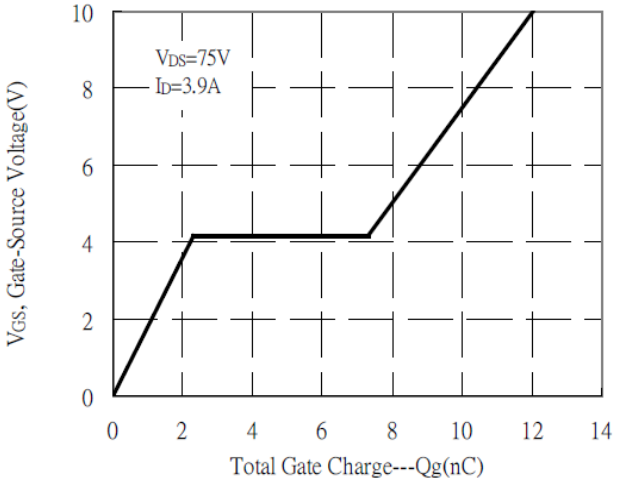
Typical Transfer Characteristics



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves