Elektronische Bauelemente

SSPRDJ4614E-C

14.3A, 100V, $R_{DS(ON)}$ 55mΩ

Dual N-Ch Enhancement Mode Power MOSFET

RoHS Compliant Product

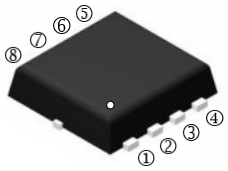
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSPRDJ4614E-C is the highest performance trench Dual 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 SSPRDJ4614E-C meet the RoHS and Green Product requirement with full function reliability approved.

DFN3x3-8DJ



FEATURES

- Advanced Trench MOS Technology
- ESD Protection
- Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available

MARKING

J4614E

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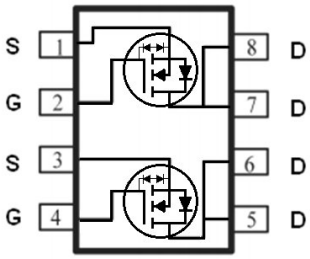
□= Date Code

PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN3x3-8DJ	5K	13 inch



ORDER INFORMATION

Part Number	Type
SSPRDJ4614E-C	Lead (Pb)-free and Halogen-free

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	T_C=25℃	I_D	14.3	A
	T_C=100℃		8	
	T_A=25℃		4	
	T_A=70℃		3.2	
Pulsed Drain Current [2]		I_{DM}	30	A
Single Pulse Avalanche Energy [3]		E_{AS}	25	mJ
Avalanche Current		I_{AS}	10	A
Total Power Dissipation [4]	T_C=25℃	P_D	20.8	W
	T_A=25℃		1.67	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Data				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	75	℃/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	6	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0V, 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}	-	-	±10	μA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0V
	T_J=55℃		-	-	10		
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	39	55	mΩ	V_{GS}=10V, I_D=3A
			-	55	73		V_{GS}=6V, I_D=2A
Gate Resistance		R_g	-	2.7	-	Ω	V_{DS}=V_{GS}=0V, f=1MHz
Total Gate Charge		Q_g	-	6.6	-	nC	V_{DS}=50V V_{GS}=10V I_D=7A
Gate-Source Charge		Q_{gs}	-	1.8	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	2.1	-		
Turn-on Delay Time		$T_{d(on)}$	-	5.5	-	nS	V_{DD}=50V V_{GS}=10V I_D=7A R_G=3.3Ω
Rise Time		T_r	-	22.5	-		
Turn-off Delay Time		$T_{d(off)}$	-	8.5	-		
Fall Time		T_f	-	18.5	-		
Input Capacitance		C_{iss}	-	336	-	pF	V_{DS}=50V V_{GS}=0V f=1MHz
Output Capacitance		C_{oss}	-	82	-		
Reverse Transfer Capacitance		C_{rss}	-	5	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	14.3	A	V_G=V_D=0V, Force Current
Forward on Voltage [2]		V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A
Reverse Recovery Time		t_{rr}	-	30	-	nS	I_F=7A, di/dt=100A/μs
Reverse Recovery Charge		Q_{rr}	-	30	-	nC	

Notes:

1. Surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. Pulse Test: pulse width≦300μs, duty cycle≦2%.
3. The E_{AS} data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=10A.
4. The power dissipation is limited by 150℃ juncti on temperature.

TYPICAL CHARACTERISTIC CURVE

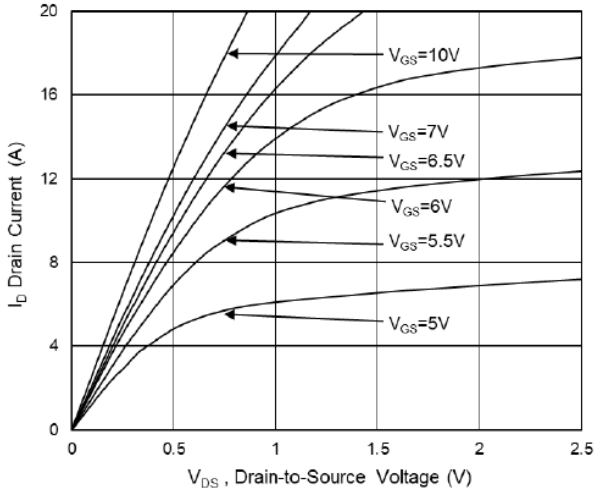


Fig.1 Typical Output Characteristics

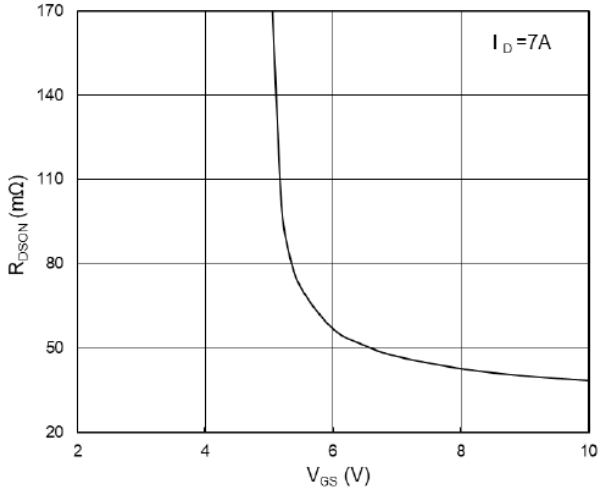


Fig.2 On-Resistance vs G-S Voltage

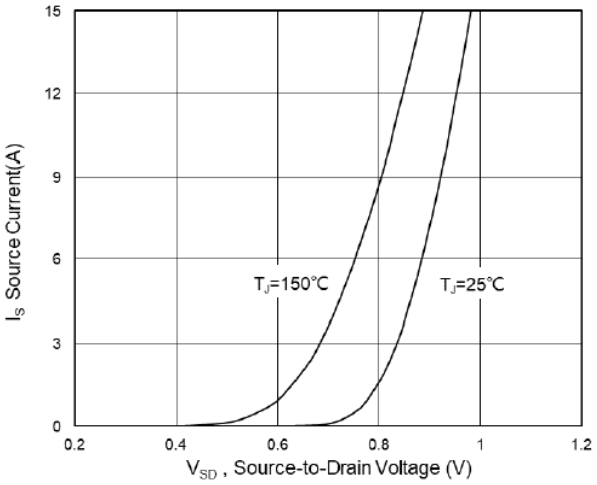


Fig.3 Source Drain Forward Characteristics

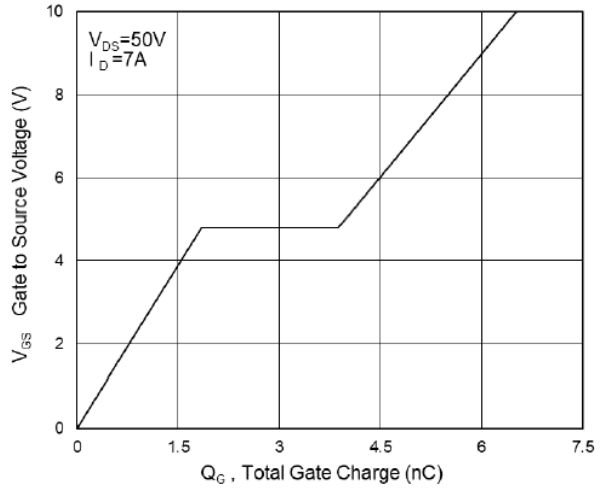


Fig.4 Gate-Charge Characteristics

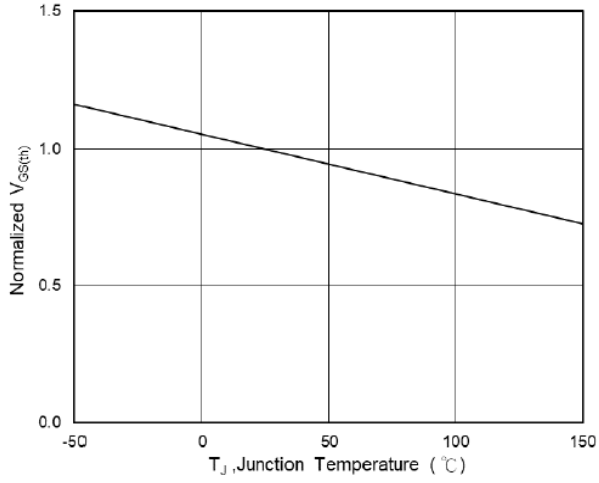


Fig.5 Normalized $V_{GS(th)}$ vs T_J

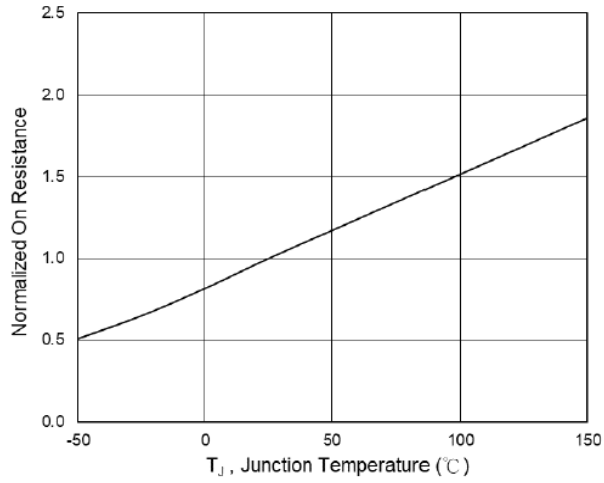


Fig.6 Normalized R_{DSON} vs T_J

TYPICAL CHARACTERISTIC CURVE

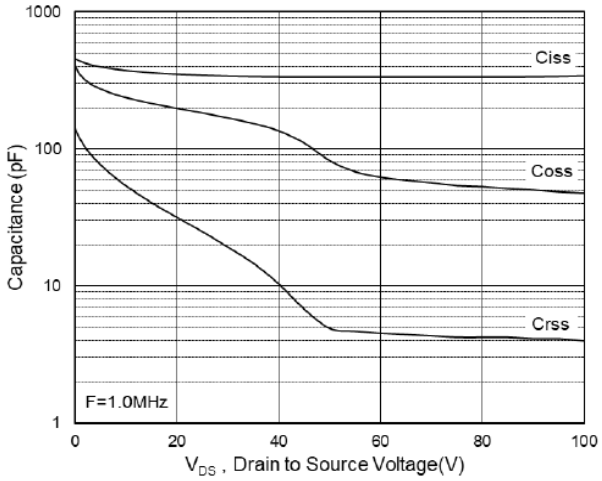


Fig.7 Capacitance

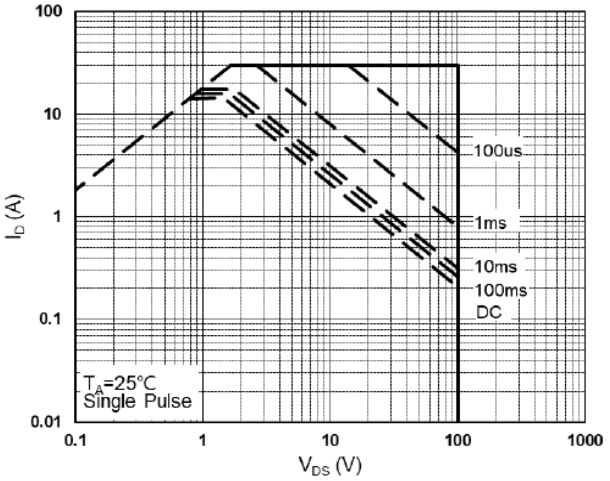


Fig.8 Safe Operating Area

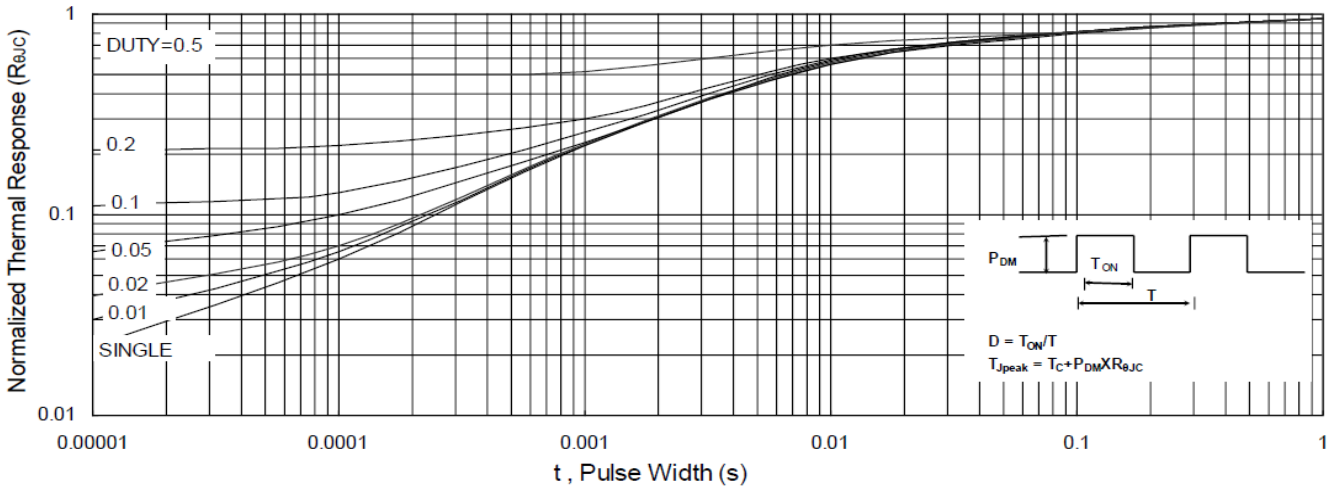


Fig.9 Normalized Maximum Transient Thermal Impedance

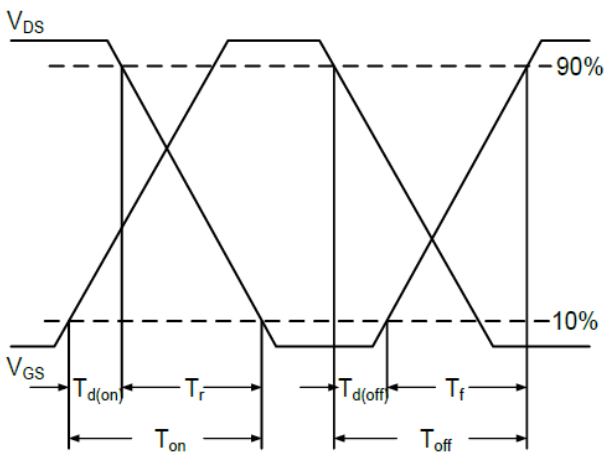


Fig.10 Switching Time Waveform

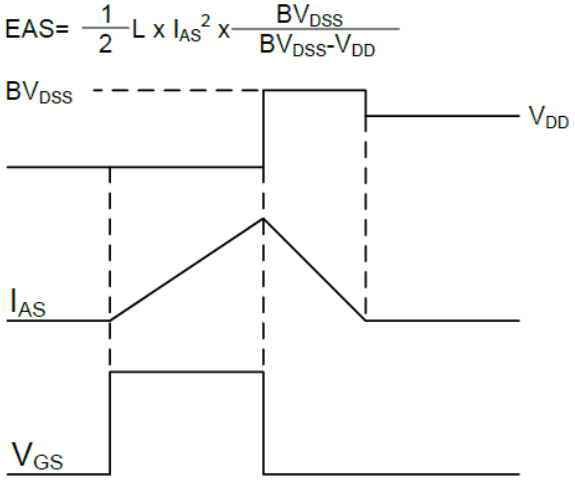
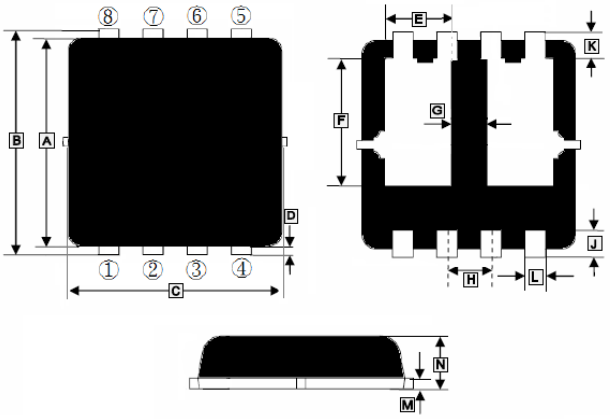


Fig.11 Unclamped Inductive Waveform

PACKAGE OUTLINE DIMENSIONS

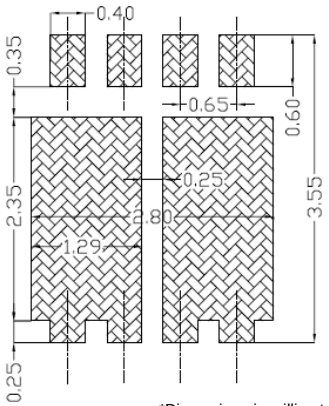
DFN3x3-8DJ



REF.	Millimeter	
	Min.	Max.
A	2.90	3.10
B	3.15	3.45
C	2.90	3.10
D	0.15 BSC.	
E	0.935	1.135
F	1.535	1.935
G	0.28	0.48
H	0.55	0.75
J	0.30	0.50
K	0.315	0.515
L	0.20	0.40
M	0.152 REF.	
N	0.65	0.85

MOUNTING PAD LAYOUT

DFN3x3-8DJ



*Dimensions in millimeters