

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

DESCRIPTION

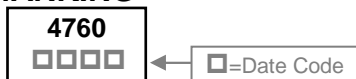
The SPRD4760-C is the highest performance trench Dual N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SPRD4760-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
DFN5x6-8D	3K	13 inch

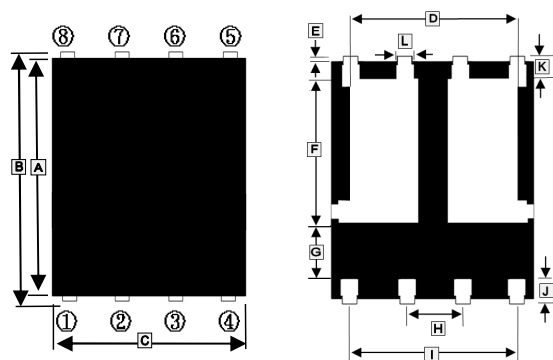
ORDER INFORMATION

Part Number	Type
SPRD4760-C	Lead (Pb)-free and Halogen-free

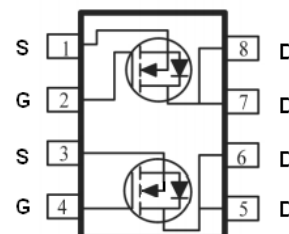
ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS}=10V$	I_D	$T_C=25^\circ C$	13
		$T_C=100^\circ C$	8.5
Pulsed Drain Current ³	I_{DM}	36	A
Total Power Dissipation	P_D	29	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Data			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	62.5	$^\circ C/W$
Thermal Resistance Junction-Ambient ²		110	
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	4.3	

DFN5x6-8D



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.70	5.80	H	1.27 BSC.	
B	5.90	6.10	I	3.61	3.96
C	4.80	5.00	J	0.51	0.71
D	3.61	3.96	K	0.41	0.61
E	0.06	0.20	L	0.33	0.51
F	3.38	3.78	M	0.20	0.30
G	1.10	-	N	0.90	1.10



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}	60	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transfer Conductance	g_{fs}	-	13	-	S	$V_{DS}=5\text{V}, I_D=2\text{A}$	
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	$V_{DS}=48\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		
Static Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	-	100	m Ω	$V_{GS}=10\text{V}, I_D=5\text{A}$	
		-	-	120		$V_{GS}=4.5\text{V}, I_D=5\text{A}$	
Total Gate Charge	Q_g	-	5	-	nC	$I_D=5\text{A}$ $V_{DS}=48\text{V}$ $V_{GS}=4.5\text{V}$	
Gate-Source Charge	Q_{gs}	-	1.68	-			
Gate-Drain Charge	Q_{gd}	-	1.9	-			
Turn-on Delay Time	$T_{d(on)}$	-	1.6	-	nS	$V_{DS}=30\text{V}$ $I_D=5\text{A}$ $V_{GS}=10\text{V}$ $R_G=3.3\Omega$	
Rise Time	T_r	-	7.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	25	-			
Fall Time	T_f	-	14.4	-			
Input Capacitance	C_{iss}	-	511	-	pF	$V_{GS}=0$ $V_{DS}=15\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	38	-			
Reverse Transfer Capacitance	C_{rss}	-	25	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	13	A		
Pulsed Source Current ³	I_{SM}	-	-	36			
Forward on Voltage ⁴	V_{SD}	-	-	1.2	V	$I_S=1\text{A}, V_{GS}=0, T_J=25^\circ\text{C}$	

Notes:

- Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- When mounted on Min. copper pad.
- Pulse width limited by maximum junction temperature, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

CHARACTERISTIC CURVES

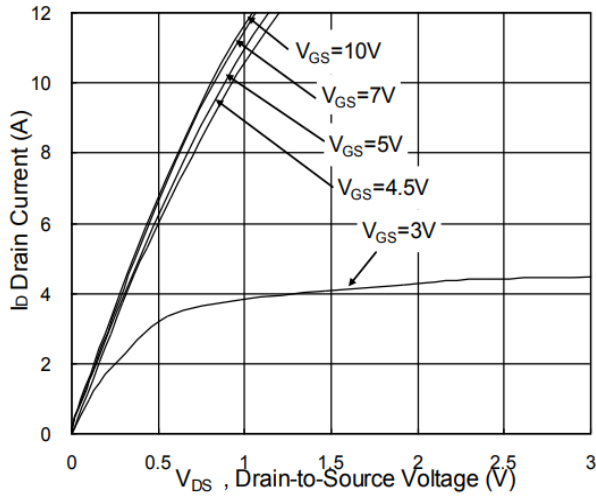


Fig.1 Typical Output Characteristics

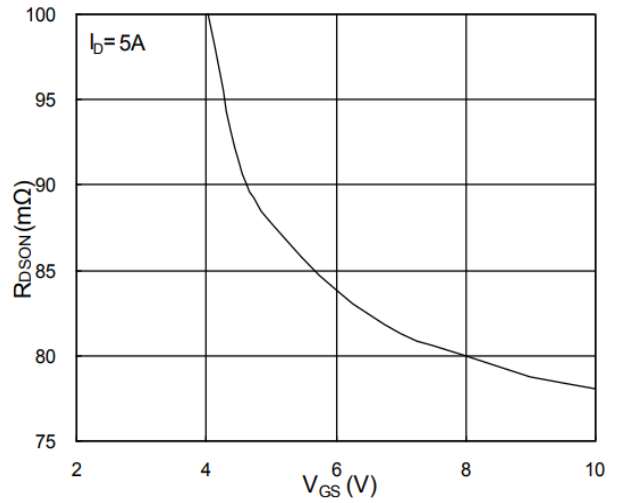


Fig.2 On-Resistance v.s Gate-Source

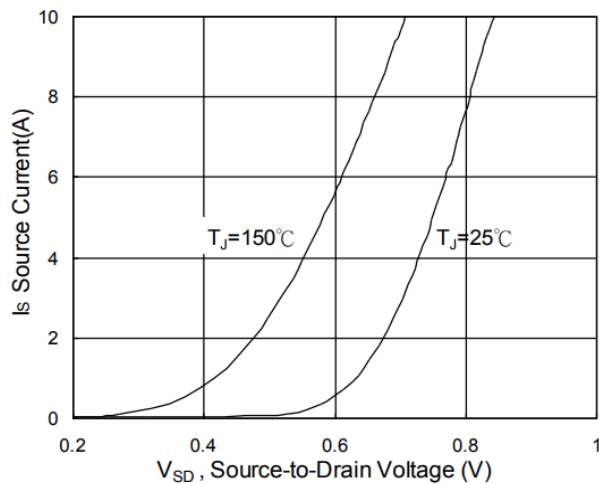


Fig.3 Forward Characteristics of Reverse

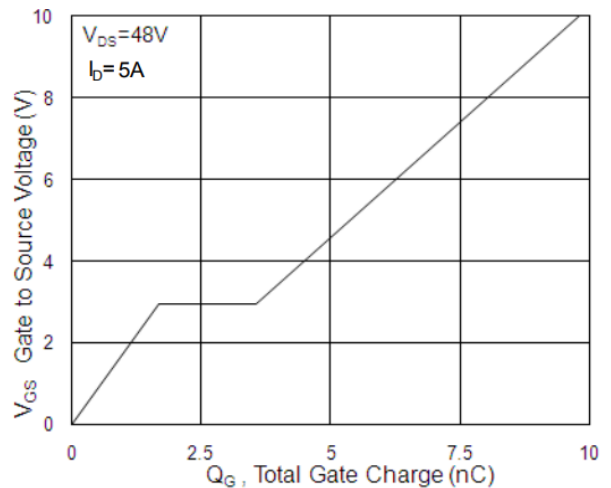


Fig.4 Gate-Charge Characteristics

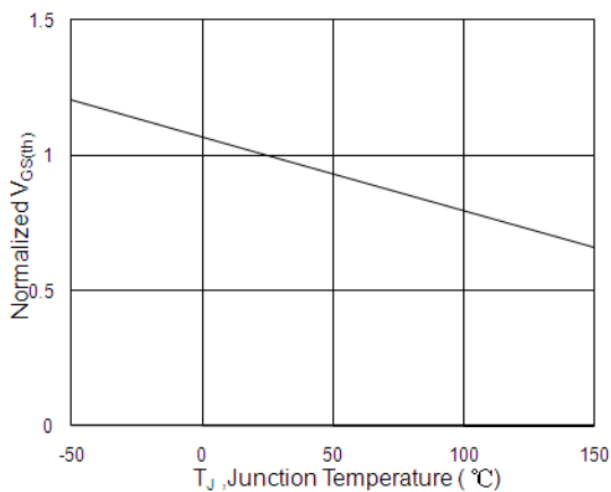


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

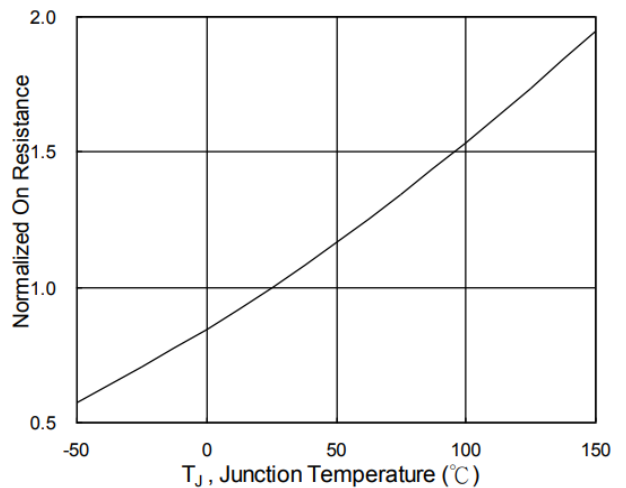


Fig.6 Normalized $R_{DS(ON)}$ v.s T_J

CHARACTERISTIC CURVES

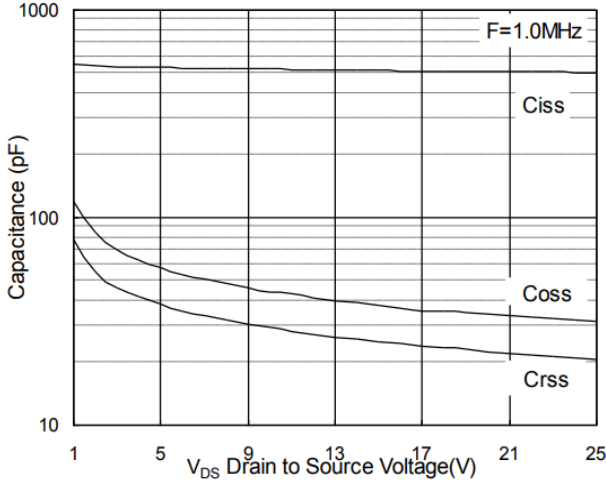


Fig.7 Capacitance

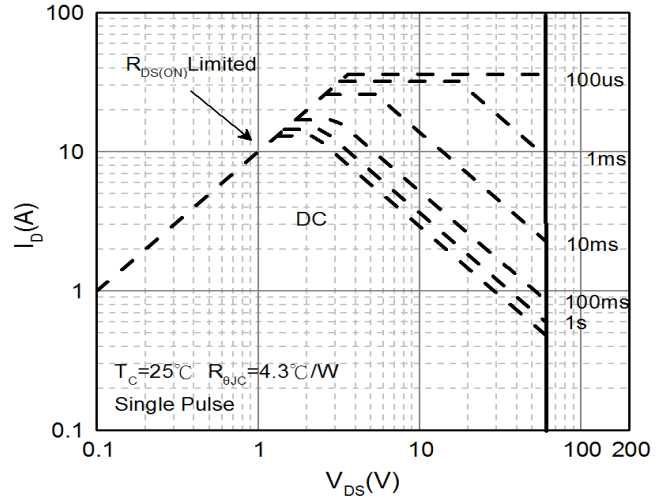


Fig.8 Safe Operating Area

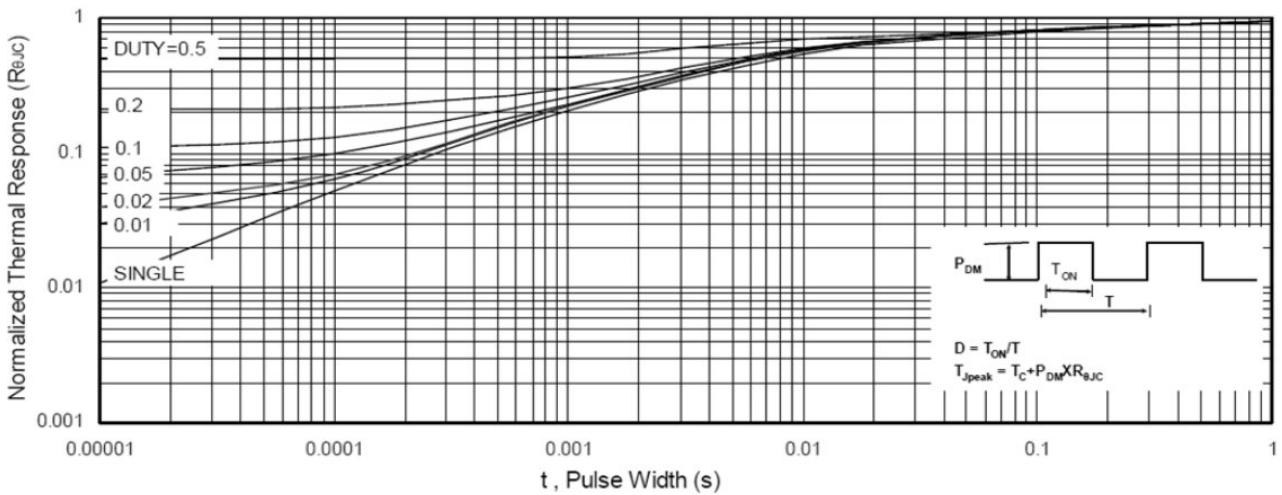


Fig.9 Normalized Maximum Transient Thermal Impedance

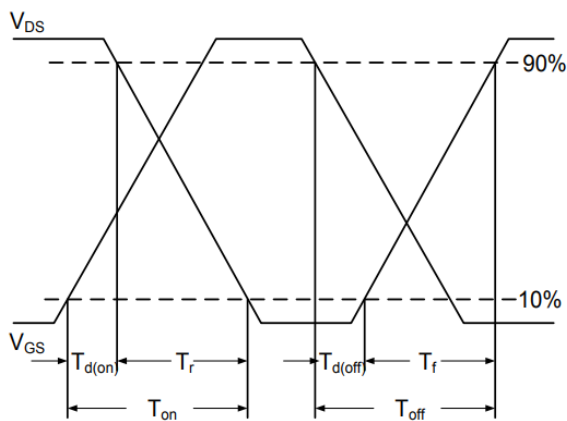


Fig.10 Switching Time Waveform

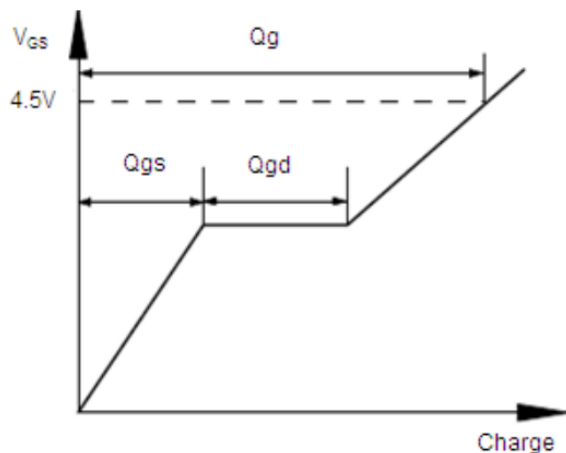


Fig.11 Gate Charge Waveform