

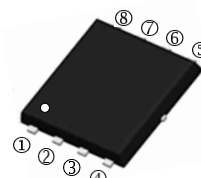
RoHS Compliant Product
 A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSPR50P03-C is the highest performance trench P-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 SSPR50P03-C meet the RoHS and Green Product requirement, 100% E_{AS} guaranteed with full function reliability approved.

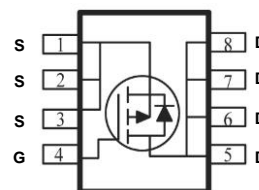
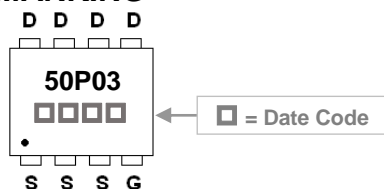
SPR-8PP



FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Excellent $C_{dv/dt}$ Effect Decline

MARKING



PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SSPR50P03-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ @ $V_{GS} = -10V$	I_D	$T_C = 25^\circ C$	-50
		$T_C = 100^\circ C$	-32
Pulsed Drain Current ²	I_{DM}	-200	A
Single Pulse Avalanche Energy ³	E_{AS}	125	mJ
Avalanche Current	I_{AS}	-50	A
Total Power Dissipation	P_D	38	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	65	$^\circ C/W$
Maximum Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	3.3	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS}=0, I_D = -250\mu A$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1.2	-	-2.5	V	$V_{DS}=V_{GS}, I_D = -250\mu A$	
Forward Transconductance	g_{fs}	-	25	-	S	$V_{DS} = -5V, I_D = -20A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V, V_{DS}=0$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ C$	-	-	-1	uA	$V_{DS} = -24V, V_{GS}=0$
		$T_J=55^\circ C$	-	-	-5		$V_{DS} = -24V, V_{GS}=0$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	7.3	9	m Ω	$V_{GS} = -10V, I_D = -20A$	
		-	11	13.5		$V_{GS} = -4.5V, I_D = -15A$	
Total Gate Charge	Q_g	-	30	-	nC	$I_D = -15A$ $V_{DS} = -15V$ $V_{GS} = -4.5V$	
Gate-Source Charge	Q_{gs}	-	10	-			
Gate-Drain Charge	Q_{gd}	-	10.4	-			
Turn-on Delay Time	$T_{d(on)}$	-	9.4	-	nS	$V_{DD} = -15V$ $I_D = -15A$ $V_{GS} = -10V$ $R_G = 3.3\Omega$	
Rise Time	T_r	-	10.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	117	-			
Fall Time	T_f	-	24	-			
Input Capacitance	C_{iss}	-	3206	-	pF	$V_{GS}=0$ $V_{DS} = -25V$ $f=1MHz$	
Output Capacitance	C_{oss}	-	418	-			
Reverse Transfer Capacitance	C_{rss}	-	362	-			
Source-Drain Diode							
Continuous Source Current ^{1 5}	I_S	-	-	-50	A	$V_G=V_D=0V, \text{Force Current}$	
Pulsed Source Current ²	I_{SM}	-	-	-200			
Forward on Voltage ²	V_{SD}	-	-	-1	V	$V_{GS}=0, I_S = -1A, T_J=25^\circ C$	
Reverse Recovery Time	T_{rr}	-	20	-	nS	$I_F = -15A, di/dt=100A/\mu s$	
Reverse Recovery Charge	Q_{rr}	-	9.5	-	nC	$T_J=25^\circ C$	

Notes:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
- The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- The E_{AS} data shows Max. rating. The test condition is $V_{DD} = -25V, V_{GS} = -10V, L=0.1mH, I_{AS} = -50A$.
- The power dissipation is limited by 150 $^\circ C$ junction temperature.
- The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

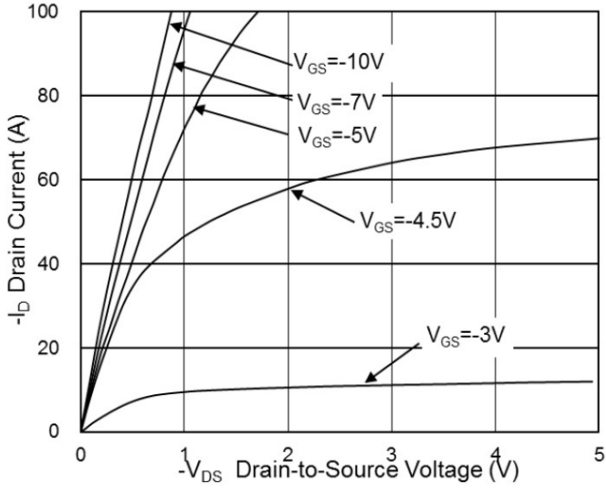


Fig.1 Typical Output Characteristics

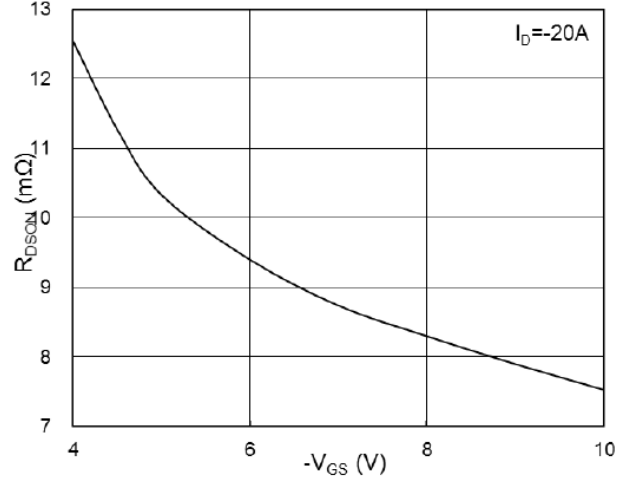


Fig.2 On-Resistance v.s Gate-Source

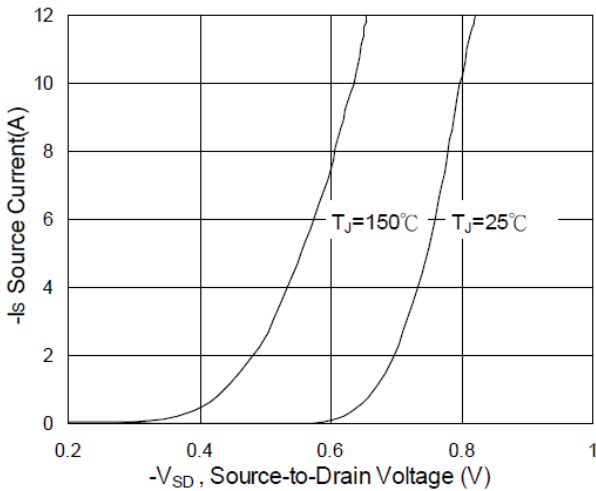


Fig.3 Forward Characteristics Of Reverse

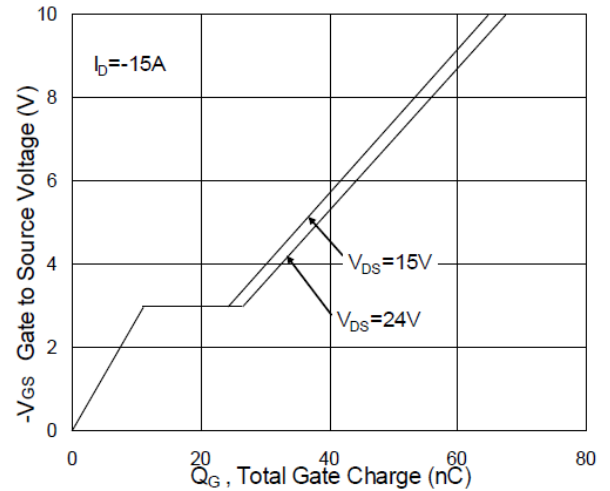


Fig.4 Gate-Charge Characteristics

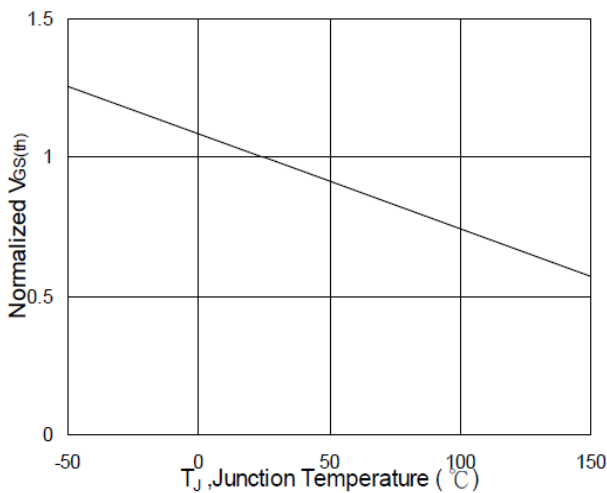


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

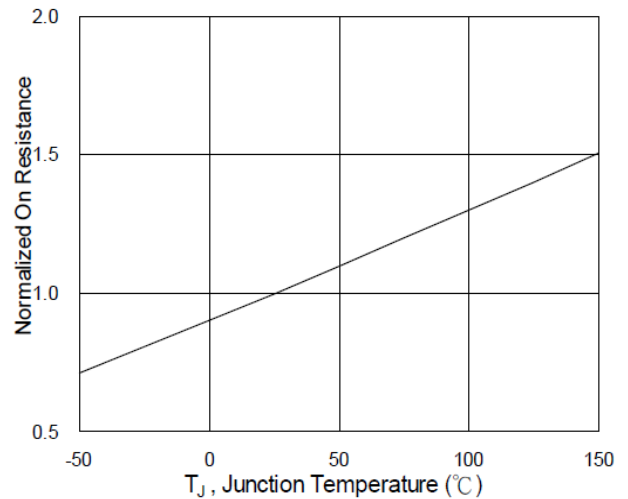


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

CHARACTERISTIC CURVES

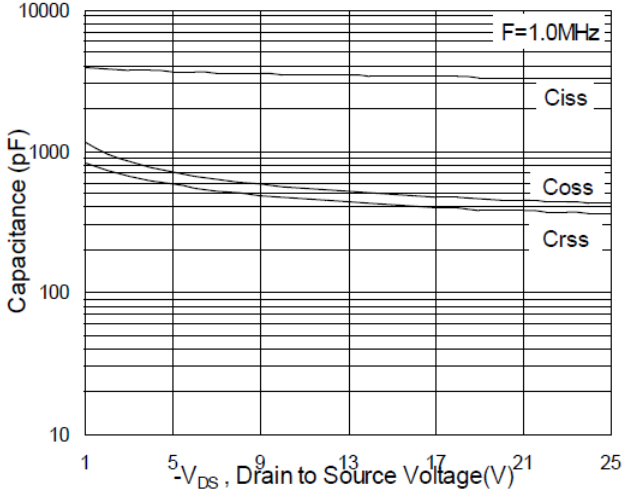


Fig.7 Capacitance

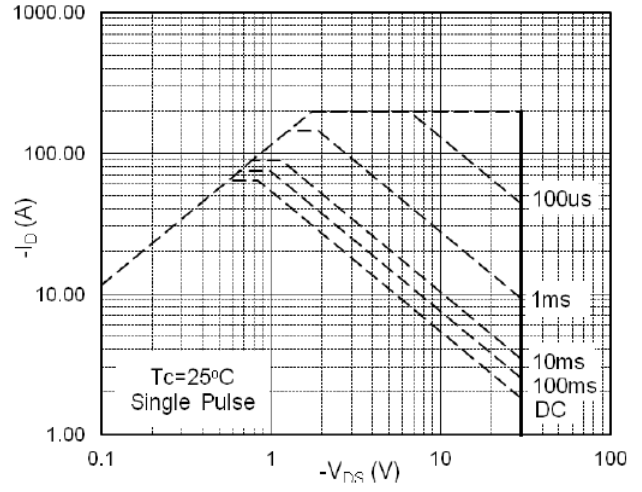


Fig.8 Safe Operating Area

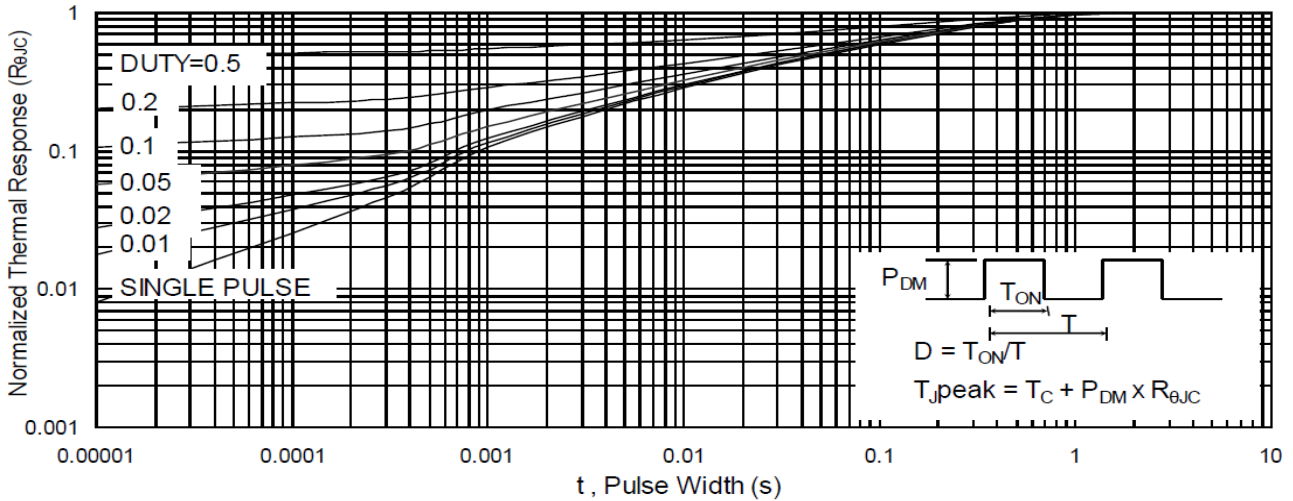


Fig.9 Normalized Maximum Transient Thermal Impedance

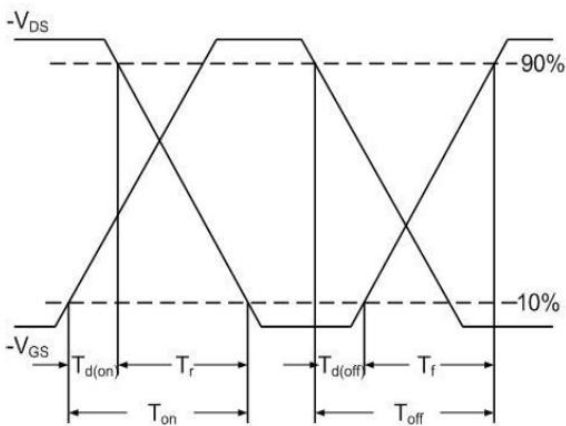


Fig.10 Switching Time Waveform

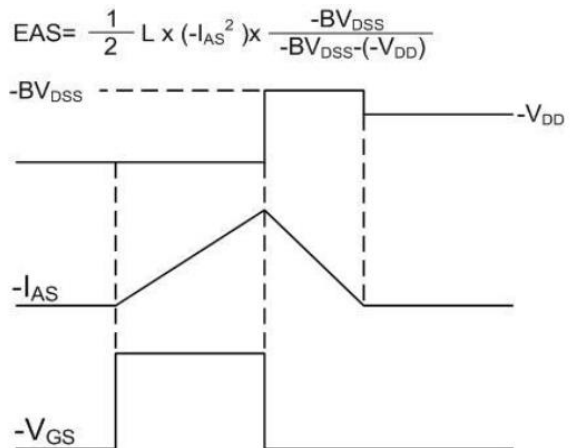
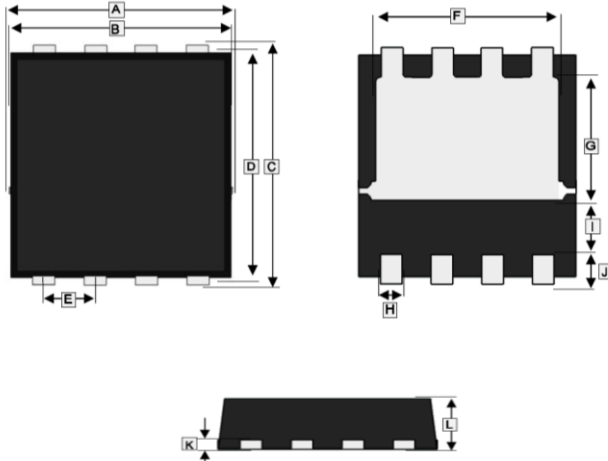


Fig.11 Unclamped Inductive Switching Waveform

PACKAGE OUTLINE DIMENSIONS

SPR-8PP



REF.	Millimeter	
	Min.	Max.
A	3.00	3.40
B	3.00	3.25
C	3.20	3.45
D	3.00	3.20
E	0.65 BSC.	
F	2.39	2.60
G	1.35	1.98
H	0.24	0.35
I	0.35 TYP.	
J	0.60 TYP.	
K	0.10	0.25
L	0.70	0.90

MOUNTING PAD LAYOUT

SPR-8PP

