Elektronische Bauelemente

SPR25P10-C

-25A, -100V, $R_{DS(ON)}$ 50mΩ

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

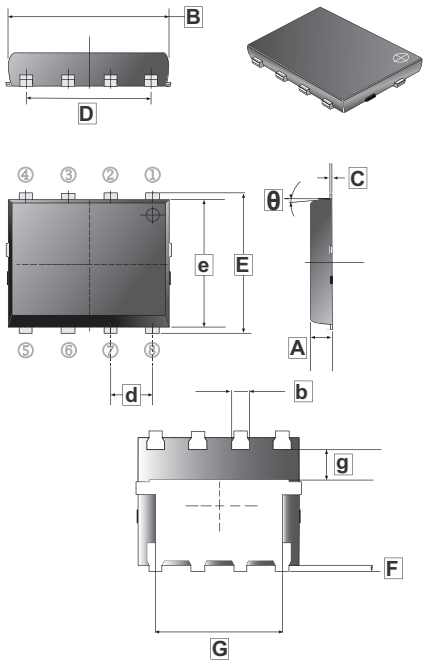
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SPR25P10-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 SPR25P10-C meet the RoHS and Green Product requirement with full function reliability approved.

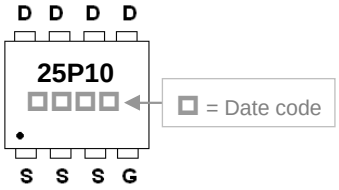
PR-8PP



FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING

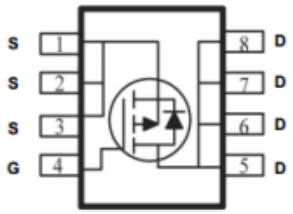


PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SPR25P10-C	Lead (Pb)-free and Halogen-free



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	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	-25	A
	T_C=100℃		-17.5	
	T_A=25℃		-4.8	
	T_A=70℃		-3.8	
Pulsed Drain Current [3]		I_{DM}	-70	A
Total Power Dissipation	T_C=25℃	P_D	52	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Case [1]		$R_{θJC}$	2.4	℃/W
Thermal Resistance Junction-Ambient [1]		$R_{θJA}$	65	
Thermal Resistance Junction-Ambient [2]			135	

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}=0, I_D= -250uA
Gate Threshold Voltage		$V_{GS(th)}$	-1	-	-2.5	V	V_{DS}=V_{GS}, I_D= -250uA
Forward Transconductance		g_{fs}	-	32	-	S	V_{DS}= -10V, I_D= -10A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	uA	V_{DS}= -80V, V_{GS}=0
	T_J=70℃		-	-	-10		V_{DS}= -80V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	50	mΩ	V_{GS}= -10V, I_D= -15A
			-	-	60		V_{GS}= -4.5V, I_D= -12A
Total Gate Charge		Q_g	-	92	-	nC	I_D= -15A V_{DS}= -80V V_{GS}= -10V
Gate-Source Charge		Q_{gs}	-	17.5	-		
Gate-Drain Change		Q_{gd}	-	14	-		
Turn-on Delay Time		$T_{d(on)}$	-	20.5	-	nS	V_{DD}= -50V I_D= -15A V_{GS}= -10V R_G=3.3Ω
Rise Time		T_r	-	32.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	123	-		
Fall Time		T_f	-	63.7	-		
Input Capacitance		C_{iss}	-	6516	-	pF	V_{GS}=0 V_{DS}= -25V f=1MHz
Output Capacitance		C_{oss}	-	223	-		
Reverse Transfer Capacitance		C_{rss}	-	125	-		
Source-Drain Diode							
Diode Forward Voltage [4]		V_{SD}	-	-	-1.2	V	I_S= -2A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	-25	A	
Pulsed Source Current [3]		I_{SM}	-	-	-70		
Reverse Recovery Time		t_{rr}	-	28.4	-	nS	I_F= -15A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	40.9	-	nC	

Notes:
1. Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. When mounted on Min. Copper pad.
3. Pulse width limited by maximum junction temperature.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

CHARACTERISTIC CURVES

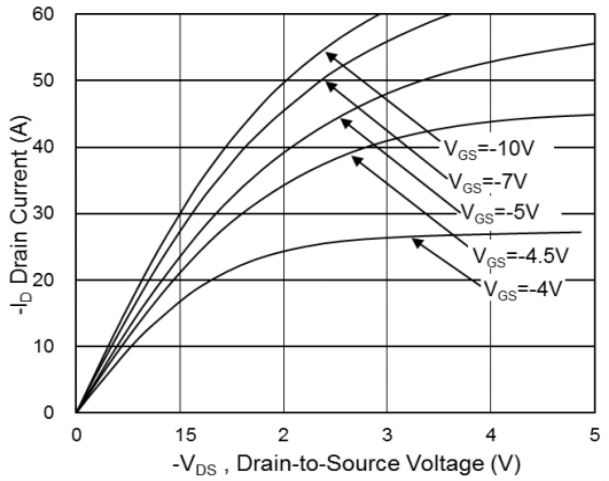


Fig.1 Typical Output Characteristics

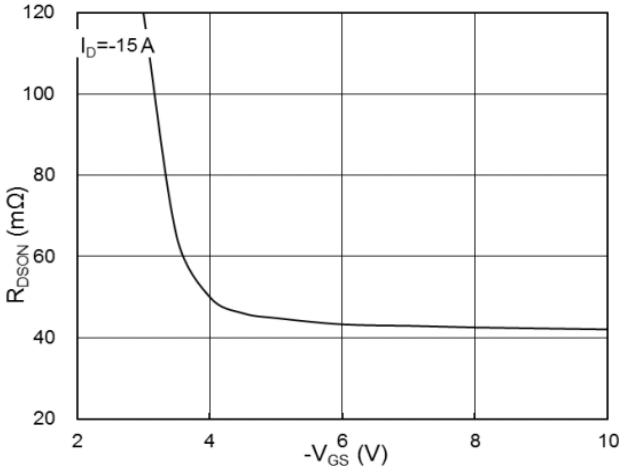


Fig.2 On-Resistance vs. G-S Voltage

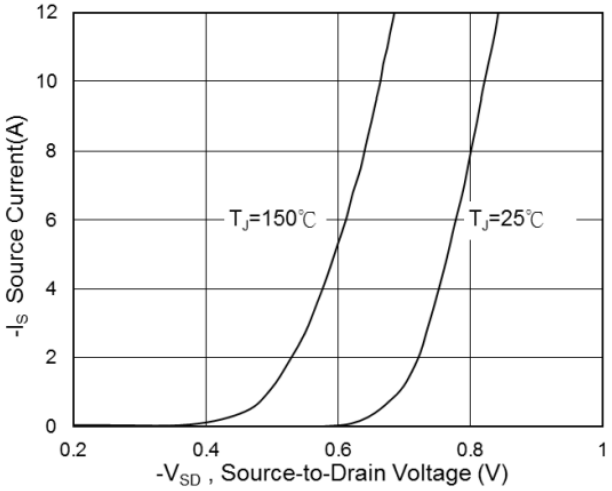


Fig.3 Typical S-D Diode Forward Voltage

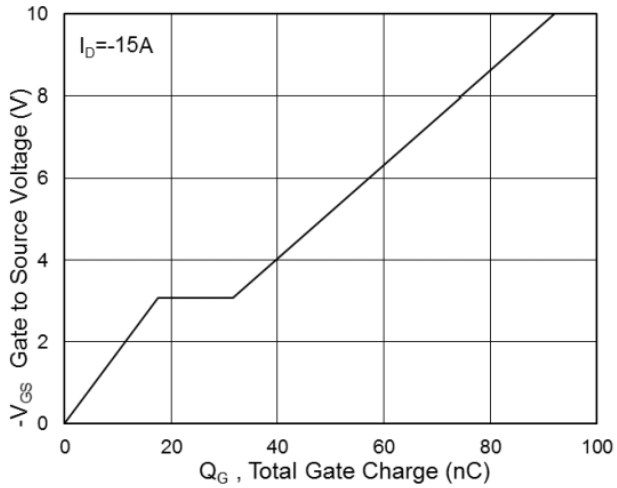


Fig.4 Gate-Charge Characteristics

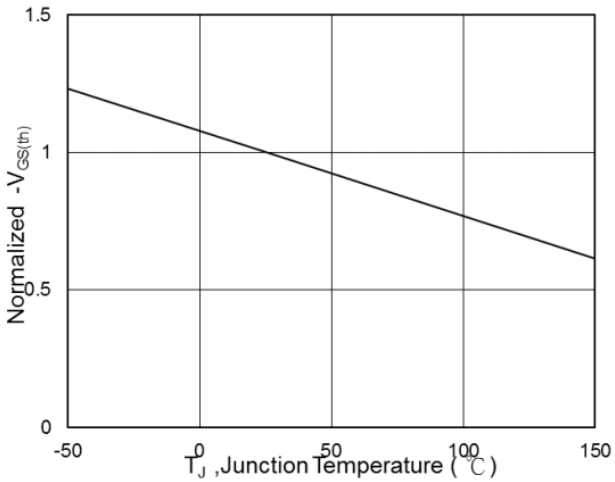


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

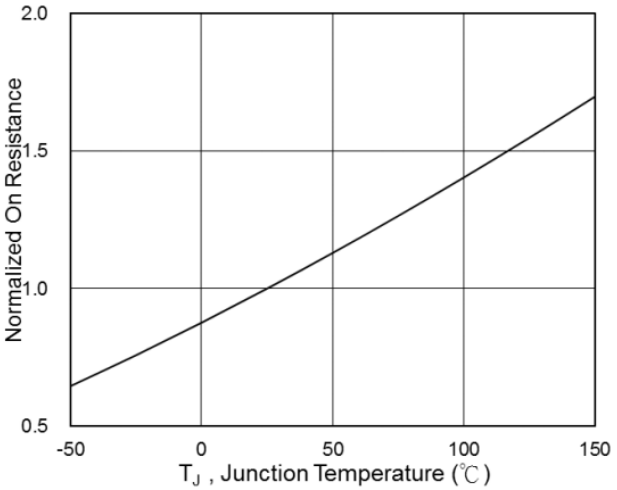


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

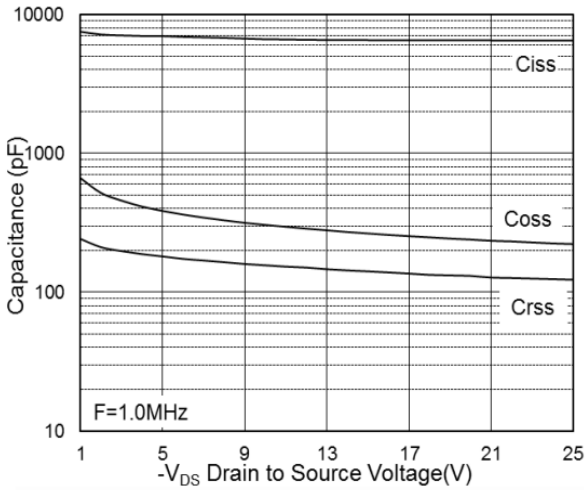


Fig.7 Capacitance

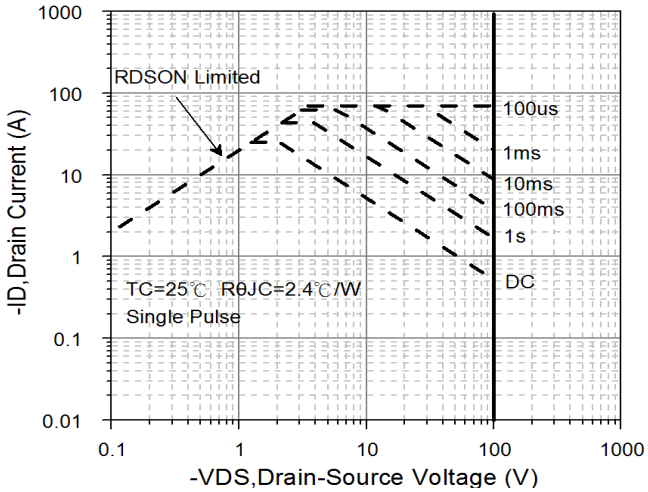


Fig.8 Safe Operating Area

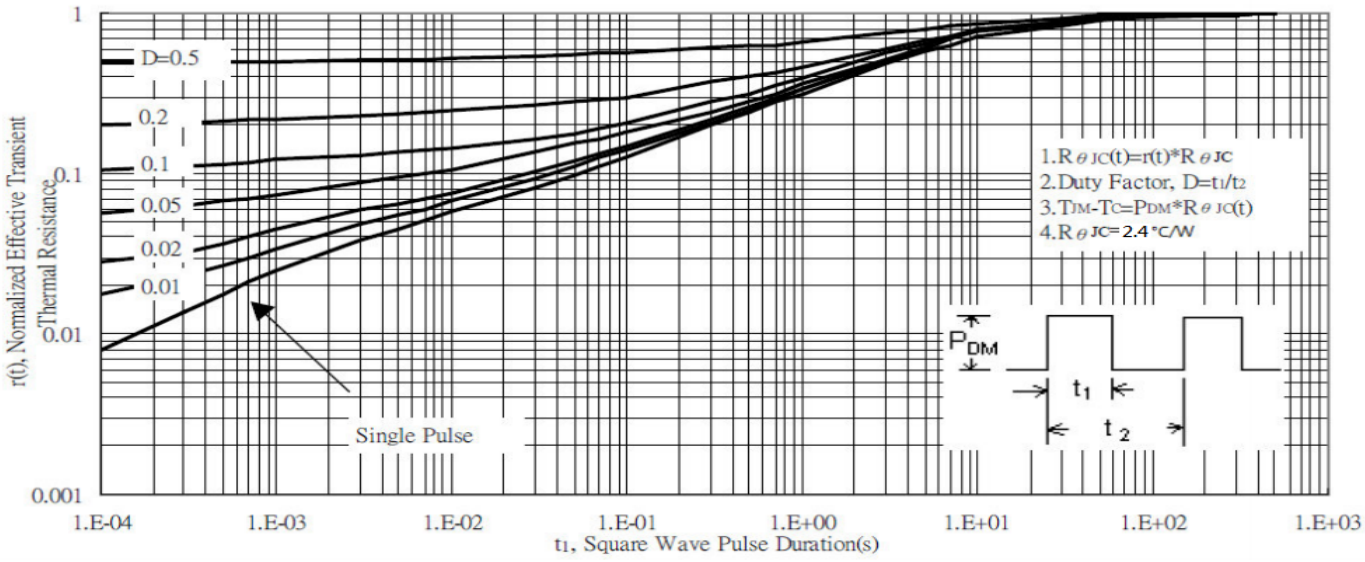


Fig.9 Normalized Maximum Transient Thermal Impedance

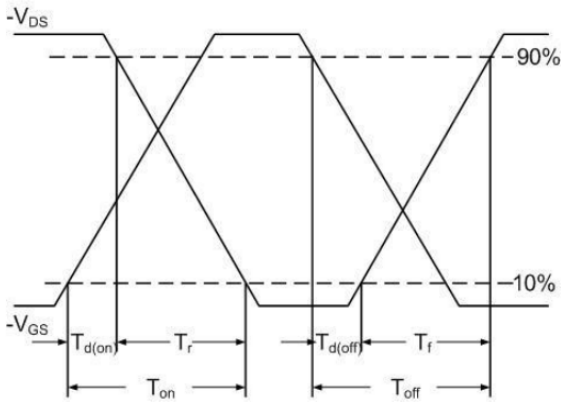


Fig.10 Switching Time Waveform

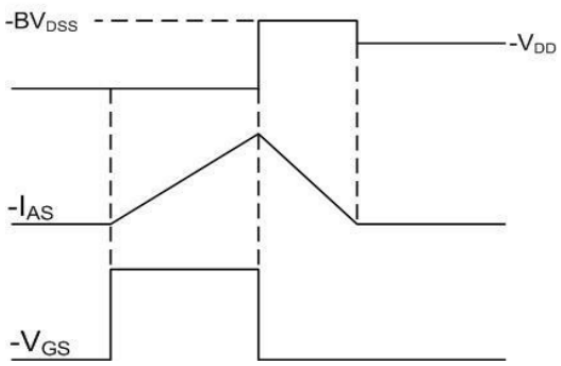


Fig.11 Unclamped Inductive Waveform