Elektronische Bauelemente

SPR42N10-C

42A, 100V, $R_{DS(ON)}$ 24mΩ

N-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

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

DESCRIPTION

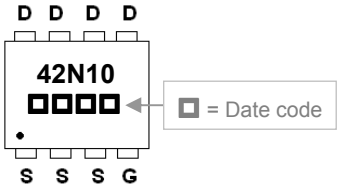
The SPR42N10-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ for most of the synchronous buck converter applications.

The SPR42N10-C meet the RoHS and Green Product requirement with full function reliability approved.

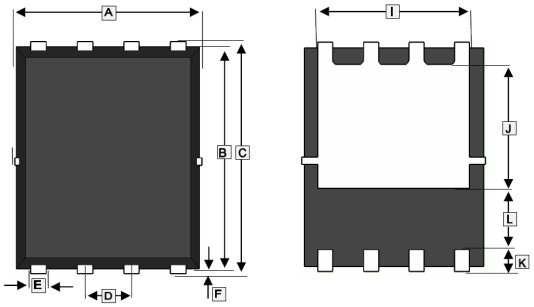
FEATURES

- Advanced High Cell Density Technology
- Super Low Gate Charge

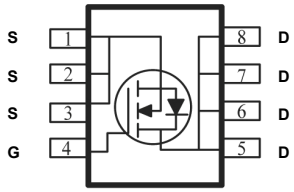
MARKING



PR-8PP



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.9	5.1	G	0.8	1.0
B	5.7	5.9	H	0.254 Ref.	
C	5.95	6.2	I	4.0 Ref.	
D	1.27 BSC.		J	3.4 Ref.	
E	0.35	0.49	K	0.6 Ref.	
F	0.1	0.2	L	1.4 Ref.	



PACKAGE INFORMATION

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

ORDER INFORMATION

Part Number	Type
SPR42N10-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°C	I_D	42	A
	T_C=100°C		27	
Pulsed Drain Current [3]		I_{DM}	110	A
Total Power Dissipation	T_C=25°C	P_D	62.5	W
	T_A=25°C		2	
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	62.5	°C/W
Thermal Resistance Junction-Ambient [2]			110	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	2	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1.2	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0
	T_J=55°C		-	-	5		V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	24	mΩ	V_{GS}=10V, I_D=20A
			-	-	30		V_{GS}=4.5V, I_D=10A
Total Gate Charge		Q_g	-	57	-	nC	I_D=10A V_{DS}=30V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	8.7	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	14	-		
Turn-on Delay Time		$T_{d(on)}$	-	16.2	-	ns	V_{DD}=30V I_D=1A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	41.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	56.4	-		
Fall Time		T_f	-	16.2	-		
Input Capacitance		C_{iss}	-	3307	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance		C_{oss}	-	201	-		
Reverse Transfer Capacitance		C_{rss}	-	151	-		
Source-Drain Diode							
Diode Forward Voltage [4]		V_{SD}	-	-	1.2	V	I_S=1A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	42	A	
Pulsed Source Current [3]		I_{SM}	-	-	110	A	
Reverse Recovery Time		T_{rr}	-	44	-	nS	I_S=10A,V_{GS}=0, dI/dt=100A/μs
Reverse Recovery Charge		Q_{rr}	-	25	-	nC	

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

TYPICAL CHARACTERISTICS CURVES

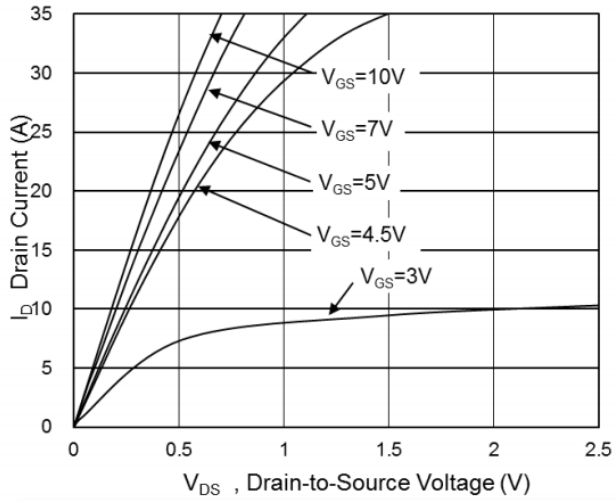


Fig.1 Typical Output Characteristics

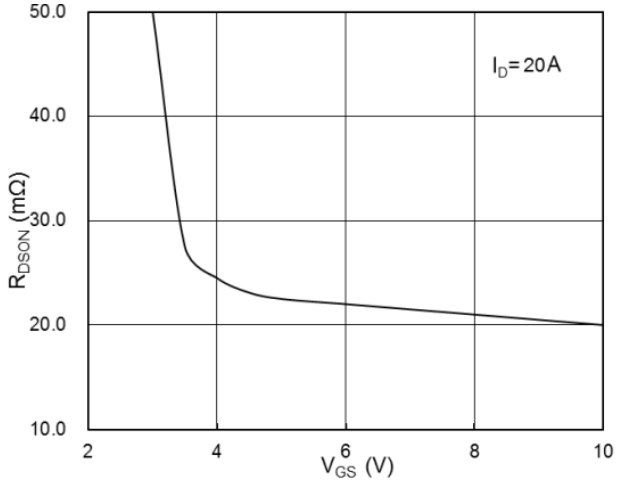


Fig.2 On-Resistance vs. G-S Voltage

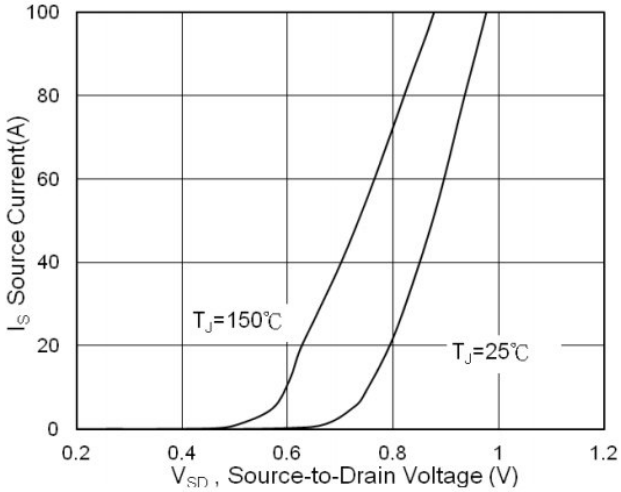


Fig.3 Source-Drain Diode Forward Voltage

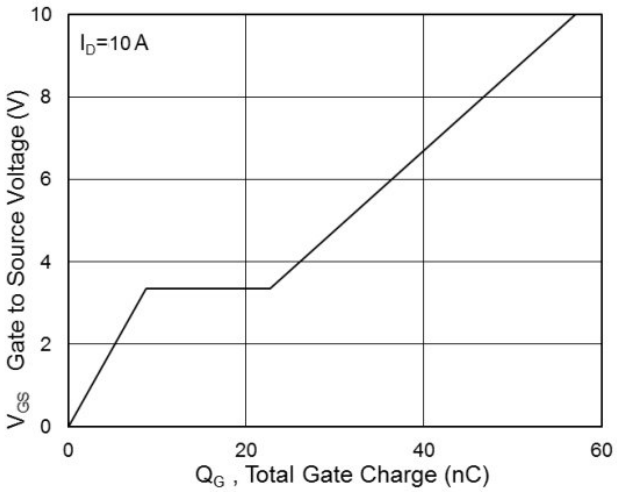


Fig.4 Gate-Charge Characteristics

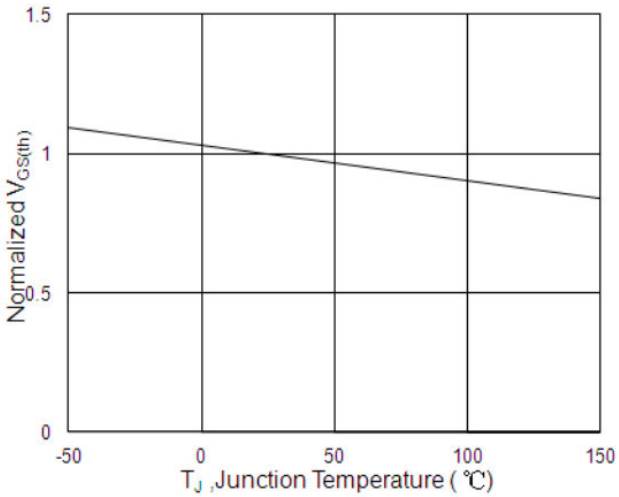


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

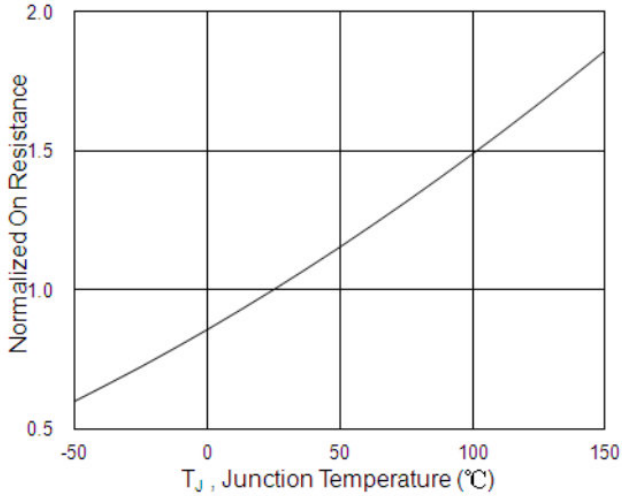


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS CURVES

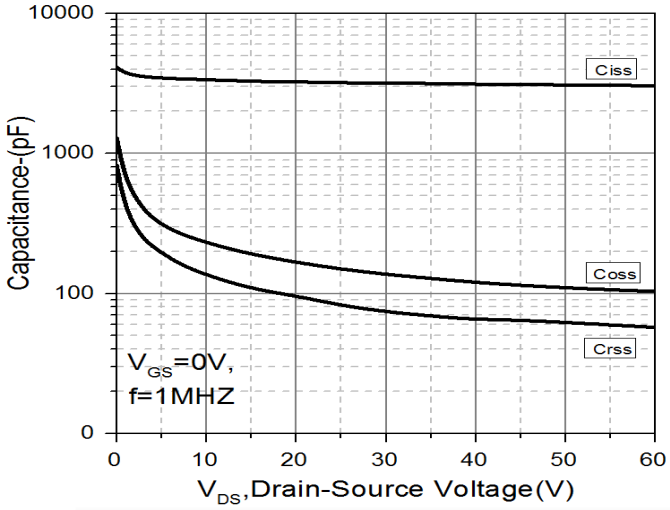


Fig.7 Capacitance

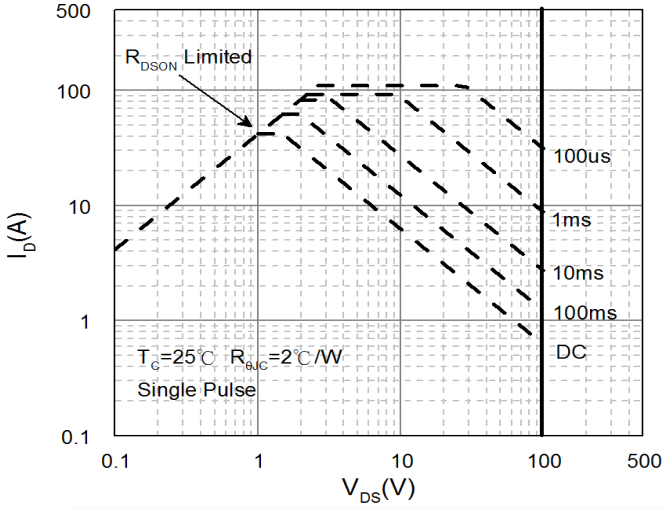


Fig.8 Safe Operating Area

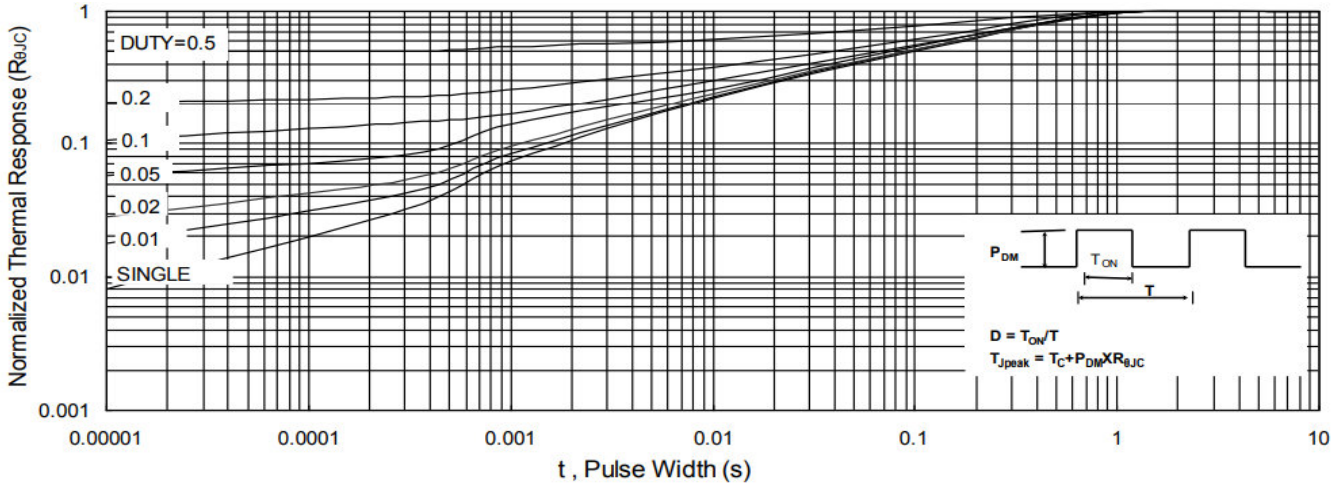


Fig.9 Normalized Maximum Transient Thermal Impedance

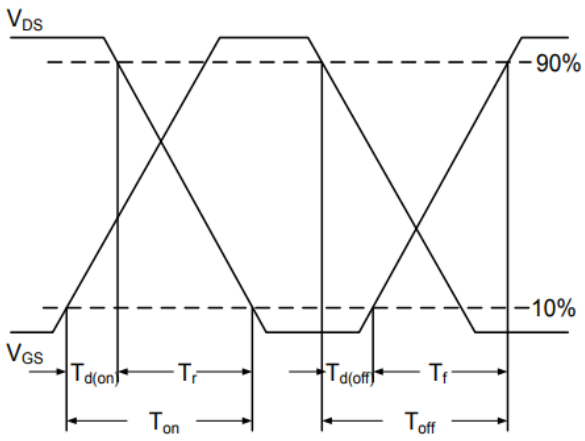


Fig.10 Switching Time Waveform

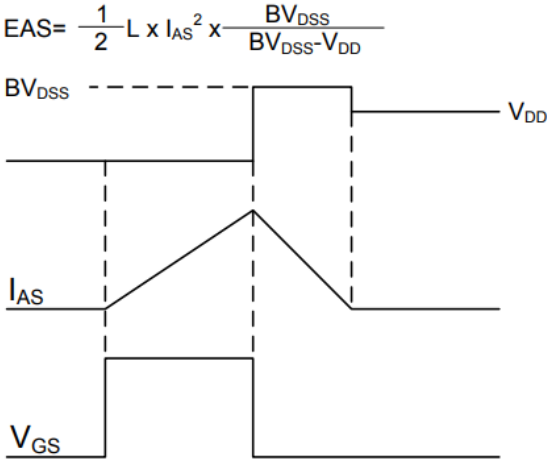


Fig.11 Unclamped Inductive Switching Waveform