Elektronische Bauelemente

SSPR46N03-C

46A, 30V, $R_{DS(ON)}$ 9mΩ

N-Channel Enhancement Mode Power MOSFET

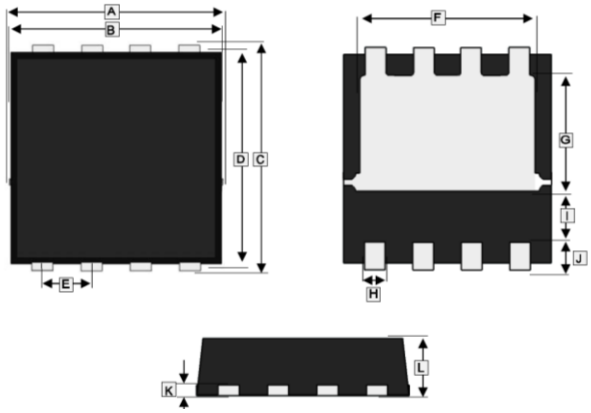
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSRS46N03-C provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SPR-8PP package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

SPR-8PP

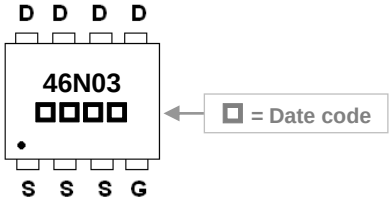


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	3.00	3.40	G	1.35	1.98
B	3.00	3.25	H	0.24	0.35
C	3.20	3.45	I	0.35 TYP.	
D	3.00	3.20	J	0.60 TYP.	
E	0.65 BSC.		K	0.10	0.25
F	2.39	2.60	L	0.70	0.90

FEATURES

- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING

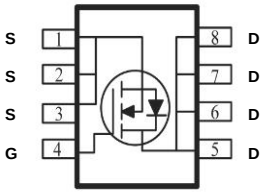


PACKAGE INFORMATION

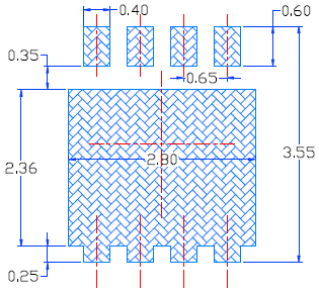
Package	MPQ	Leader Size
SPR-8PP	3K	13 inch

ORDER INFORMATION

Part Number	Type
SSPR46N03-C	Lead (Pb)-free and Halogen-free



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @V_{GS}=10V	T_C=25°C	I_D	46	A
	T_C=100°C		29	
	T_A=25°C		11	
	T_A=70°C		9	
Pulsed Drain Current [2]		I_{DM}	92	A
Single Pulse Avalanche Energy [3]		E_{AS}	57.8	mJ
Avalanche Current		I_{AS}	34	A
Power Dissipation [4]	T_C=25°C	P_D	29	W
	T_A=25°C		1.67	
Operating Junction & Storage Temperature		T_J, T_{STG}	55~150	°C
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	75	°C/W
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	4.32	

ELECTRICAL CHARACTERISTICS (T_J=25°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=250μA
Gate-Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	9.8	-	S	V_{DS}=5V, I_D=15A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{GS}=0
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0
	T_J=55°C		-	-	5		
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	9	mΩ	V_{GS}=10V, I_D=12A
			-	-	15		V_{GS}=4.5V, I_D=10A
Gate Resistance		R_g	-	2.6	-	Ω	f=1MHz
Total Gate Charge		Q_g	-	10.1	-	nC	I_D=12A V_{DS}=20V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	3.6	-		
Gate-Drain Change		Q_{gd}	-	4.3	-		
Turn-on Delay Time [2]		$T_{d(on)}$	-	6.1	-	nS	V_{DD}=12V I_D=5A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	2.5	-		
Turn-off Delay Time		$T_{d(off)}$	-	20.7	-		
Fall Time		T_f	-	4	-		
Input Capacitance		C_{iss}	-	1118	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	173	-		
Reverse Transfer Capacitance		C_{rss}	-	94	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	1	V	I_S=1A, V_{GS}=0, T_J=25°C
Continuous Source Current [1,5]		I_S	-	-	46	A	V_D=V_G=0, Force Current
Pulsed Source Current [2,5]		I_{SM}	-	-	92	A	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. The data tested by pulsed, pulse width≦ 300us, duty cycle≦ 2%.
3. The E_{AS} data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=34A.
4. The power dissipation is limited by 150°C junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

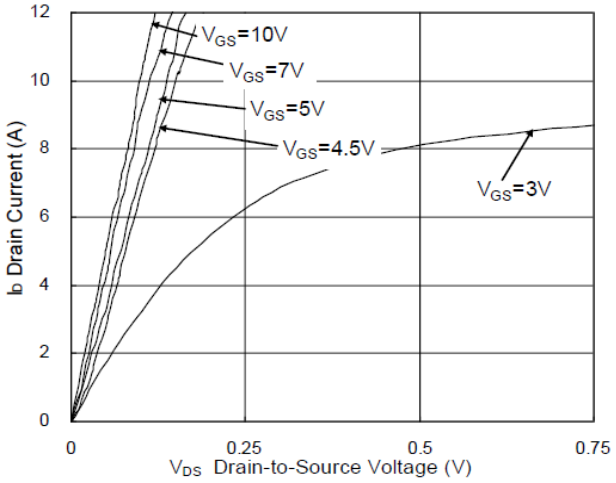


Fig.1 Typical Output Characteristics

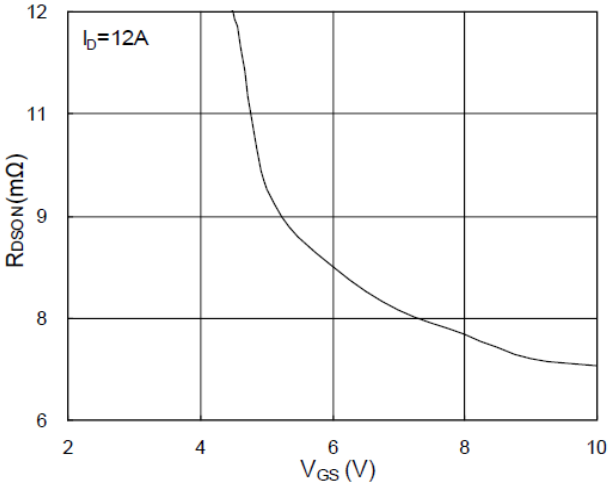


Fig.2 On-Resistance vs. Gate-Source

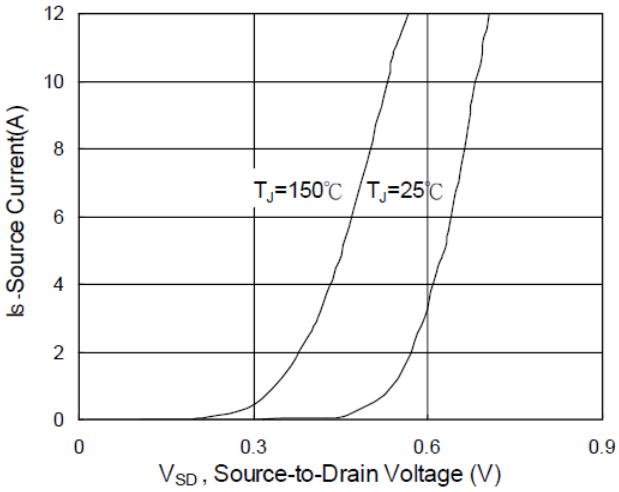


Fig.3 Forward Characteristics Of Reverse

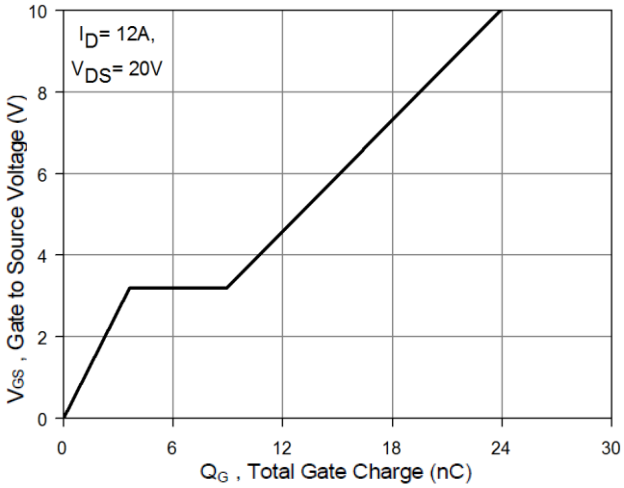


Fig.4 Gate-Charge Characteristics

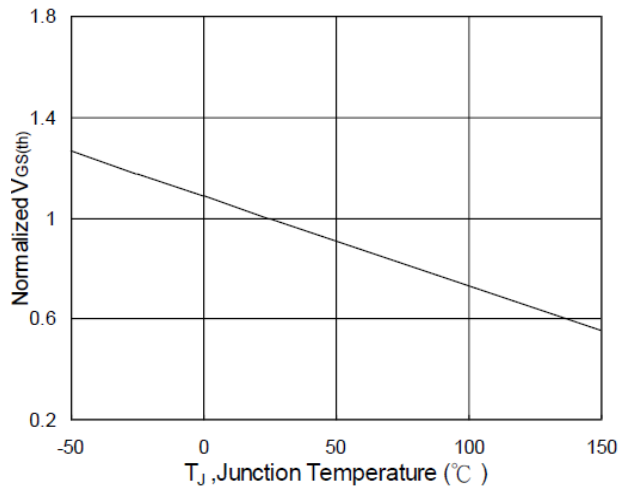


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

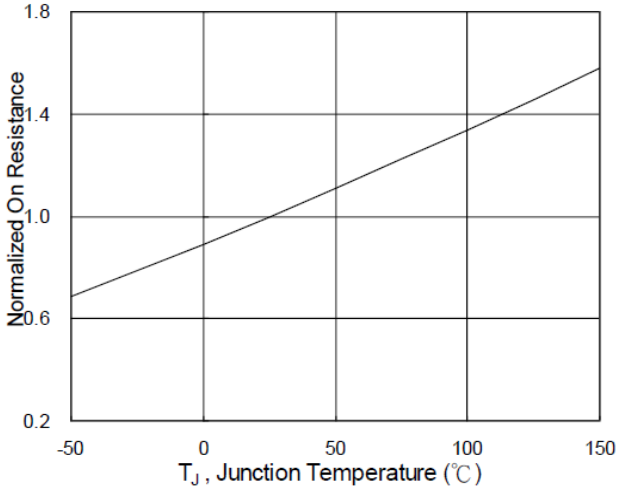


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

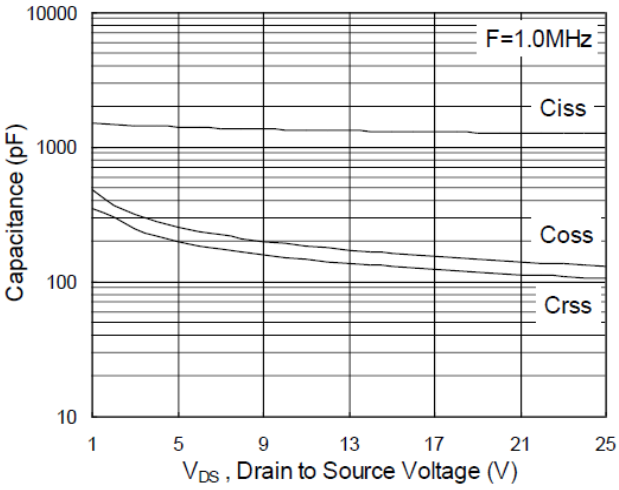


Fig.7 Capacitance

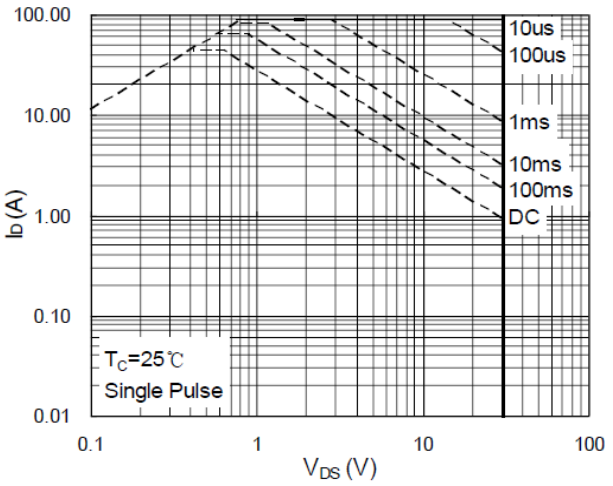


Fig.8 Safe Operating Area

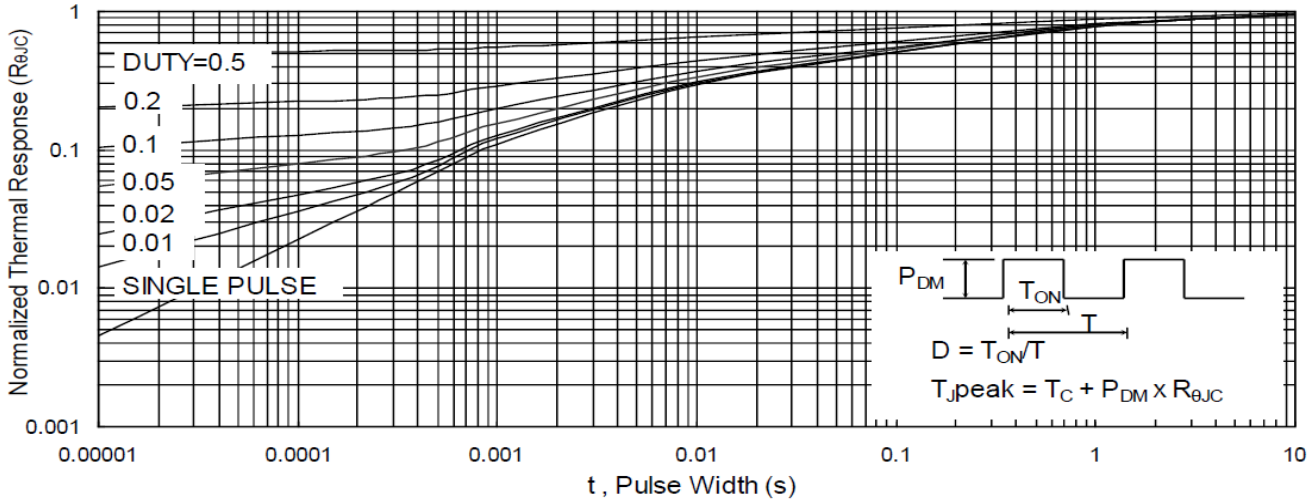


Fig.9 Normalized Maximum Transient Thermal Impedance

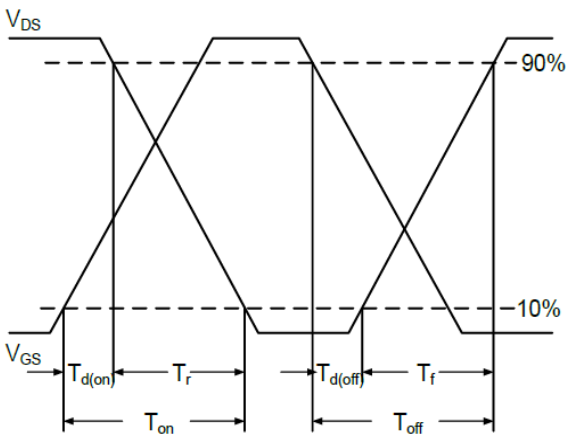


Fig.10 Switching Time Waveform

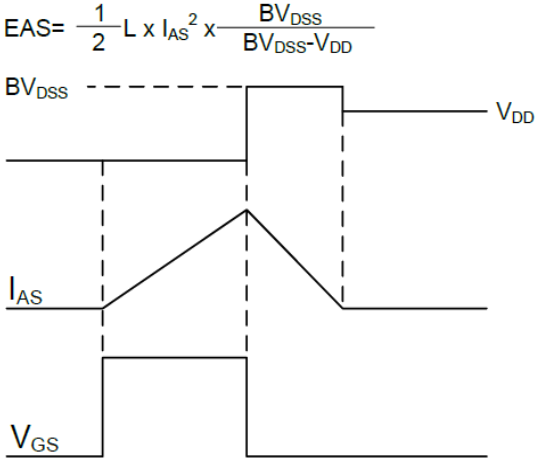


Fig.11 Unclamped Inductive Switching Waveform