Elektronische Bauelemente

SPR40N01

100A , 40V , $R_{DS(ON)}$ 2.3 mΩ

N-Channel Enhancement Mode Power MOSFET

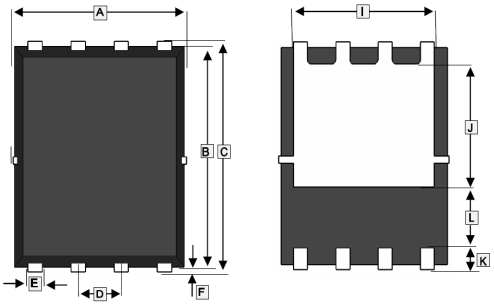
RoHS Compliant Product

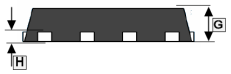
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SPR40N01 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness. The PR-8PP package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

PR-8PP



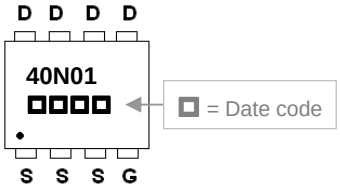


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.9	5.1	G	0.8	1.0
B	5.7	5.9	H	0.254 Ref.	
C	5.95	6.2	I	4.0 Ref.	
D	1.27 BSC.		J	3.4 Ref.	
E	0.35	0.49	K	0.6 Ref.	
F	0.1	0.2	L	1.4 Ref.	

FEATURES

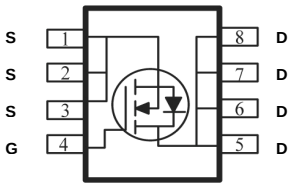
- Lower Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic

MARKING



PACKAGE INFORMATION

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



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]@V_{GS}=10V	T_C=25℃ [3]	I_D	100	A
	T_C=70℃ [3]		100	
	T_A=25℃		31	
	T_A=70℃		25	
Pulsed Drain Current [1]		I_{DM}	400	A
Single Pulse Avalanche Energy, L=15mH		EAS	201	mJ
Avalanche Current, L=15mH		I_{AS}	63.5	A
Total Power Dissipation	T_C=25℃	P_D	83	W
	T_A=25℃		3.6	
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient[2](Max).		$R_{\theta JA}$	35	℃ / W
Thermal Resistance Junction-Case[2](Max).		$R_{\theta JC}$	1.5	℃ / W

ELECTRICAL CHARACTERISTICS (T_J = 25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	40	-	-	V	V_{GS}=0, I_D= 250μA
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=32V, V_{GS}=0, T_J=25℃
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	1.8	2.3	mΩ	V_{GS}=10V, I_D=30A
Total Gate Charge	Q_g	-	78	-	nC	I_D=30A V_{DS}=20V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	22	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	4.7	-		
Turn-on Delay Time	$T_{d(on)}$	-	21	-	nS	V_{DS}=20V I_D=30A V_{GS}=10V R_G=3Ω
Rise Time	T_r	-	6	-		
Turn-off Delay Time	$T_{d(off)}$	-	98	-		
Fall Time	T_f	-	17	-		
Input Capacitance	C_{iss}	-	4222	-	pF	V_{GS} =0 V_{DS}=20V f =1.0MHz
Output Capacitance	C_{oss}	-	889	-		
Reverse Transfer Capacitance	C_{rss}	-	398	-		
Guaranteed Avalanche Characteristics						
Single Pulse Avalanche Energy [4]	EAS	110	-	-	mJ	V_{DD}=20V, L=0.1mH, I_{AS}=47A
Source-Drain Diode						
Diode Forward Voltage	V_{SD}	-	-	1.3	V	I_S=30A, V_{GS}=0V
Reverse Recovery Time	t_{rr}	-	32	-	nS	I_F=30A, dI/dt=100A/μs, T_J=25℃
Reverse Recovery Charge	Q_{rr}	-	120	-	nC	

Note:

1. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
2. RθJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. RθJC is guaranteed by design while RθCA is determined by the user's board design. RθJA shown below for single device operation on FR-4 in still air.
3. Package Limitation current is 100A.
4. The Min. value is 100% EAS tested guarantee.

CHARACTERISTIC CURVES

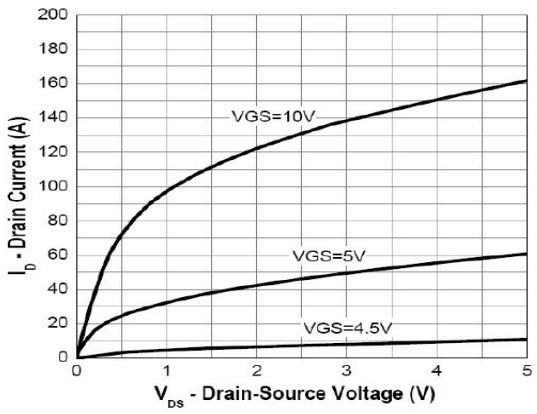


Fig.1 Typical Output Characteristics

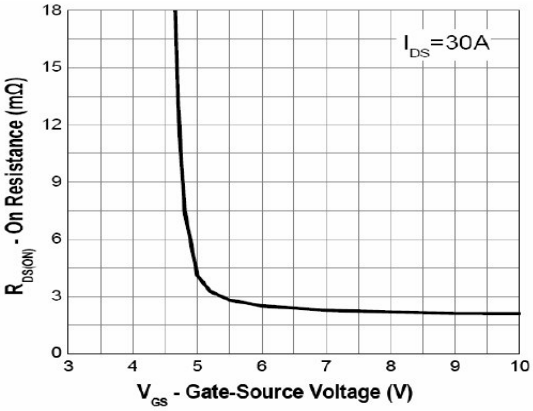


Fig.2 On-Resistance vs. G-S Voltage

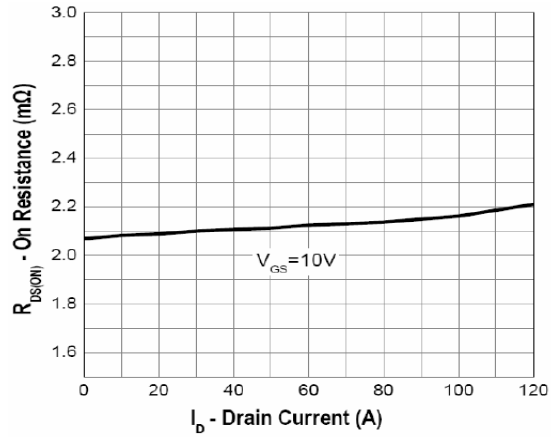


Fig.3 On-Resistance vs. Drain Current

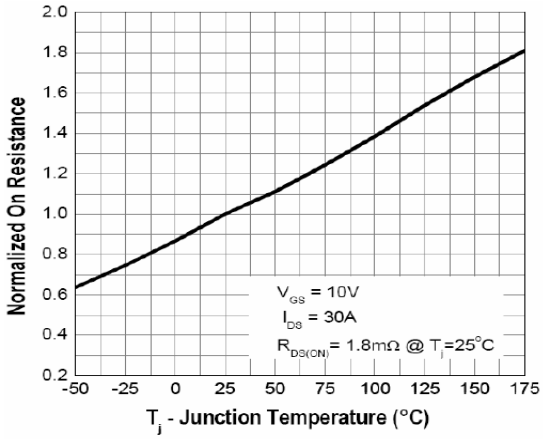


Fig.4 Normalized R_{DSON} vs. T_J

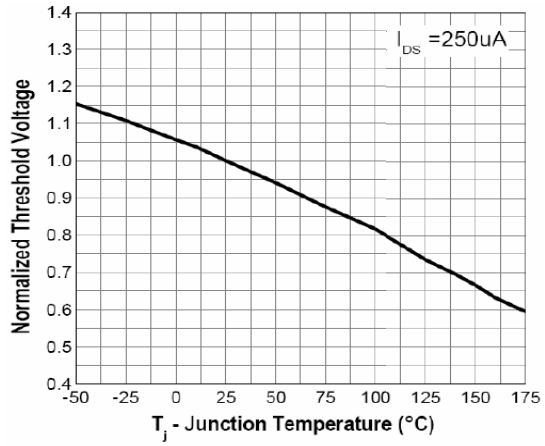


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

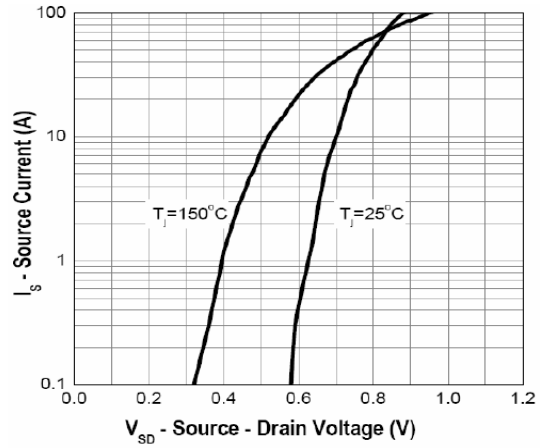


Fig.6 Forward Characteristics of Reverse

CHARACTERISTIC CURVES

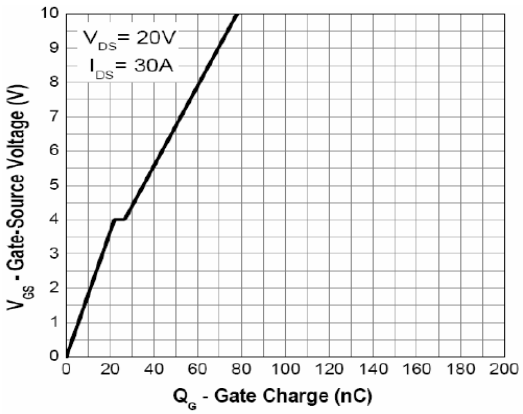


Fig.7 Gate Charge Characteristics

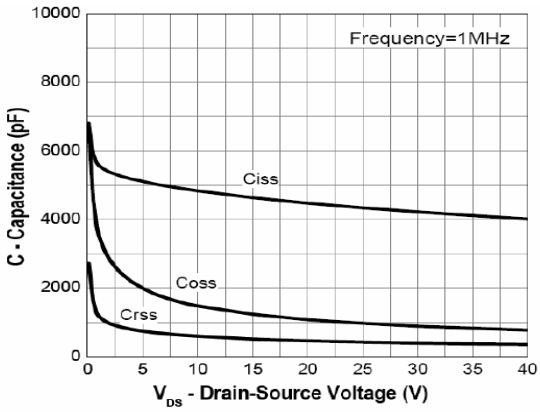


Fig.8 Capacitance Characteristic

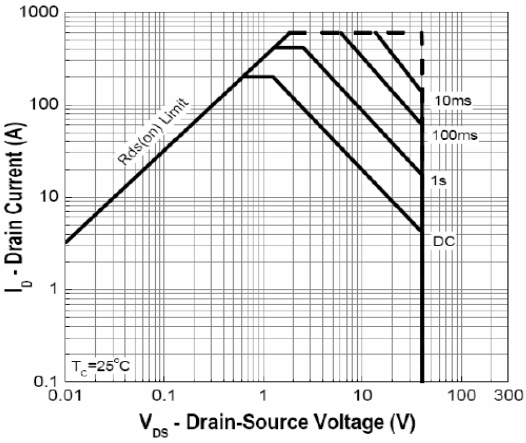


Fig.9 Safe Operating Area

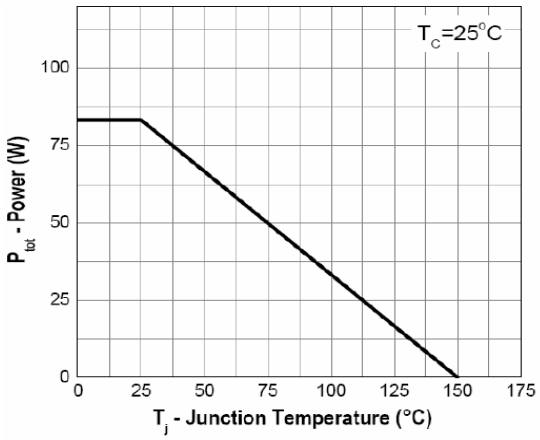


Fig.10 Power Dissipation

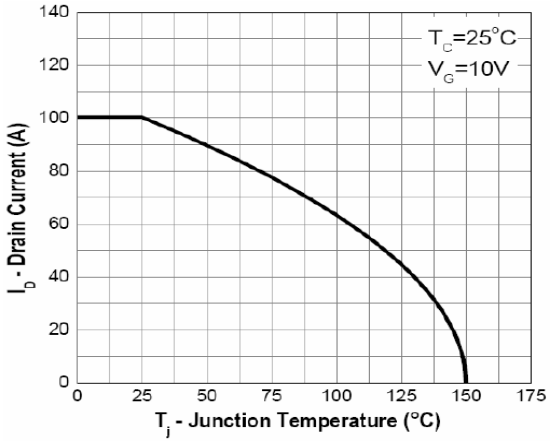


Fig.11 Drain Current vs. T_J

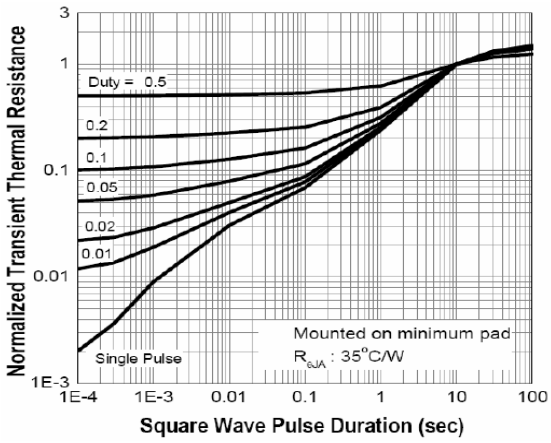


Fig.12 Transient Thermal Impedance