Elektronische Bauelemente

SPR46N10

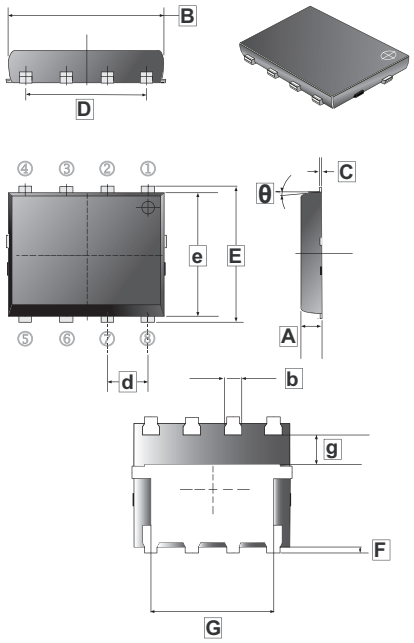
46A , 100V , $R_{DS(ON)}$ 10 mΩ
N-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

The SPR46N10 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.

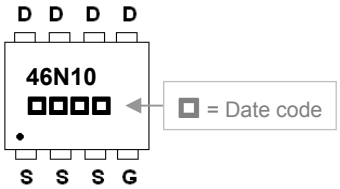
PR-8PP



FEATURES

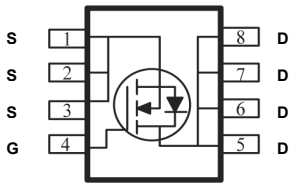
- Lower Gate Charge
- Simple Drive Requirement

MARKING



PACKAGE INFORMATION

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



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 (T_A=25°C unless otherwise specified)

Parameter		Symbol	Rating t ≦10s	Rating Steady State	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	46		A
	T_C=100°C		28		
	T_A=25°C		15	10	
	T_A=100°C		12	8	
Pulsed Drain Current [2]	T_C=25°C	I_{DM}	180		A
Total Power Dissipation [1]	T_C=25°C	P_D	50		W
	T_C=100°C		20		
	T_A=25°C		5.7	2.5	
	T_A=100°C		4	1.8	
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150		°C
Thermal Resistance Rating					
Thermal Resistance Junction-Ambient [1] (Max).	t ≦10s	$R_{\theta JA}$	22		°C / W
	Steady State		50		
Thermal Resistance Junction-Ambient (Max).			125		
Thermal Resistance Junction-Case [1] (Max).		$R_{\theta JC}$	2.5		°C / W

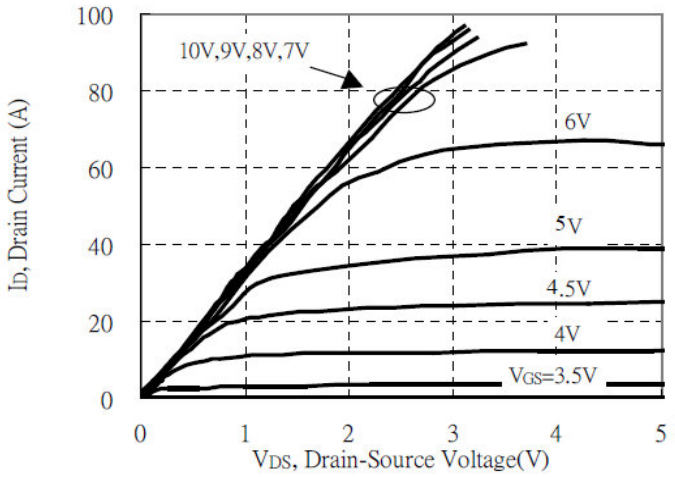
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
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	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0, T_J=25°C
		-	-	5		V_{DS}=80V, V_{GS}=0, T_J=55°C
Static Drain-Source On-Resistance [3]	$R_{DS(ON)}$	-	-	10	mΩ	V_{GS}=10V, I_D=11.5A
		-	-	14		V_{GS}=4.5V, I_D=9.5A
Total Gate Charge	Q_g	-	33	-	nC	V_{GS}=4.5V
		-	69.2	-		I_D=11.5A V_{DS}=80V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	11	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	12.2	-		
Turn-on Delay Time [2]	$T_{d(on)}$	-	22	-	nS	V_{DD}=50V I_D=11.5A V_{GS}=10V R_G=1Ω
Rise Time	T_r	-	20.6	-		
Turn-off Delay Time	$T_{d(off)}$	-	74.8	-		
Fall Time	T_f	-	9.8	-		
Input Capacitance	C_{iss}	-	3743	-	pF	V_{GS} =0 V_{DS}=50V f=1.0MHz
Output Capacitance	C_{oss}	-	229	-		
Reverse Transfer Capacitance	C_{rss}	-	14	-		
Source-Drain Diode						
Diode Forward Voltage [3]	V_{SD}	-	-	1.2	V	I_S=15A, V_{GS}=0V
Continuous Source Current [1]	I_S	-	-	46	A	V_G=V_D=0, Force Current
Pulsed Source Current [2]	I_{SM}	-	-	180	A	
Reverse Recovery Time	t_{rr}	-	39	-	nS	IF=22A, dI/dt=100A/μs, T_J=25°C
Reverse Recovery Charge	Q_{rr}	-	69	-	nC	

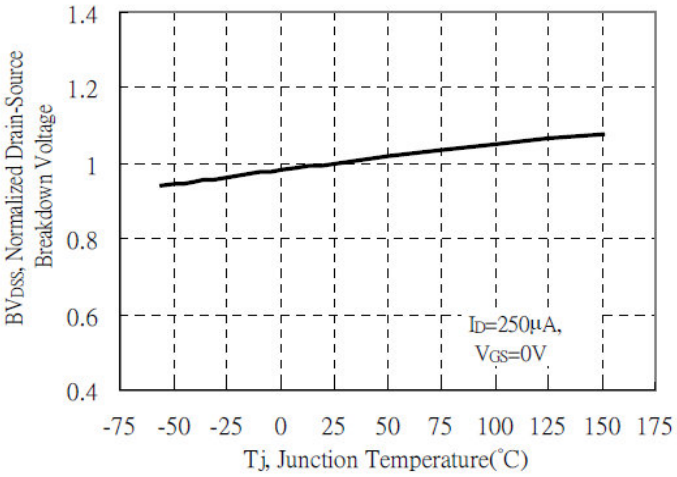
Notes:
1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper
2. The power dissipation is limited by 150°C junction temperature
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

CHARACTERISTIC CURVES

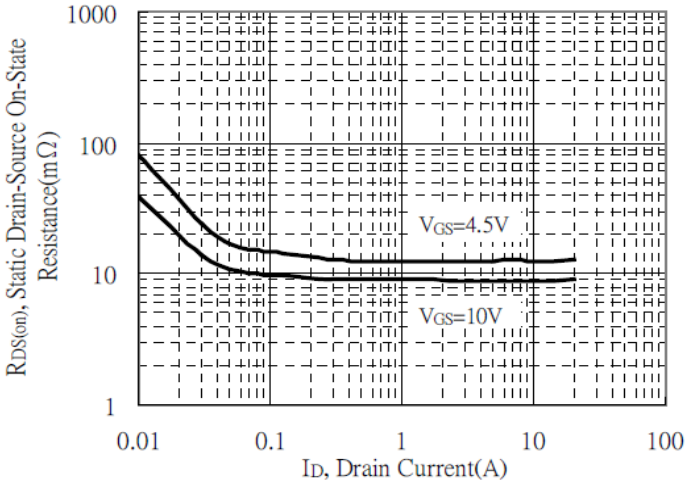
Typical Output Characteristics



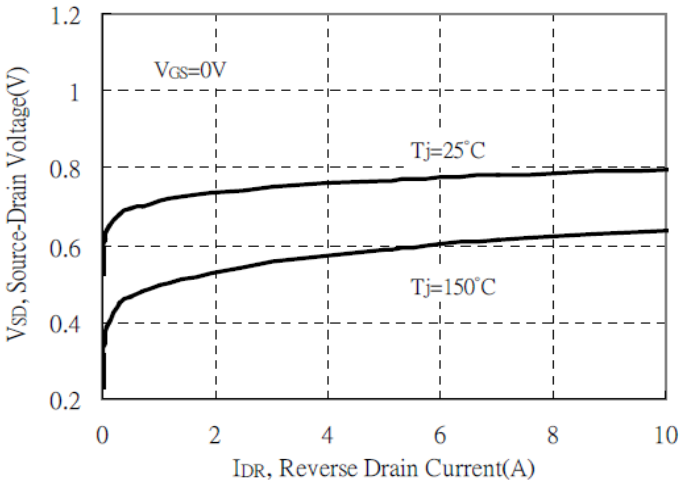
Brekdown Voltage vs Ambient Temperature



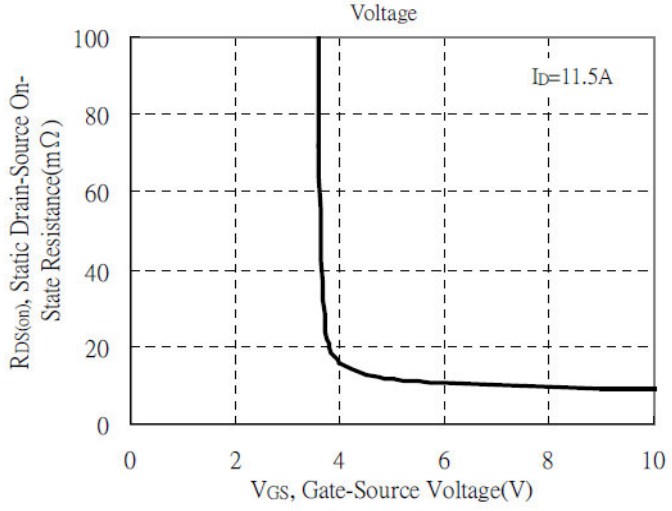
Static Drain-Source On-State resistance vs Drain Current



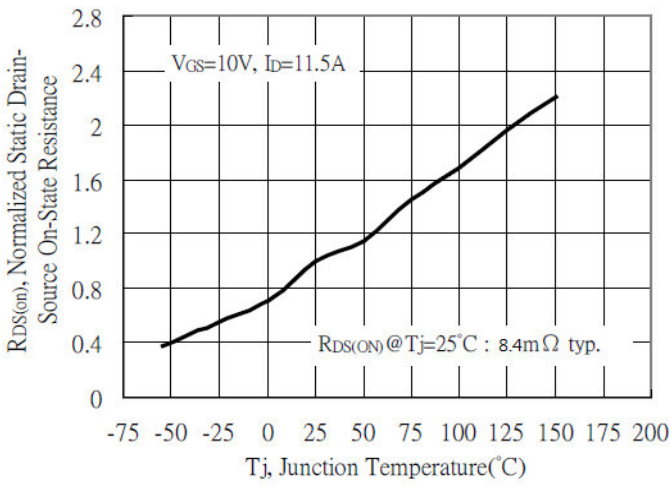
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

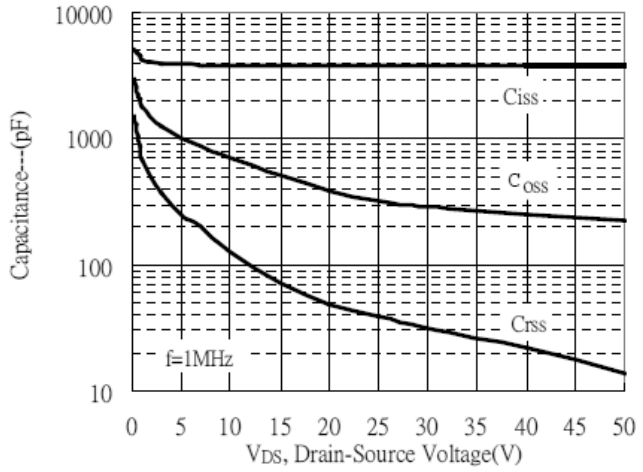


Drain-Source On-State Resistance vs Junction Tempearture

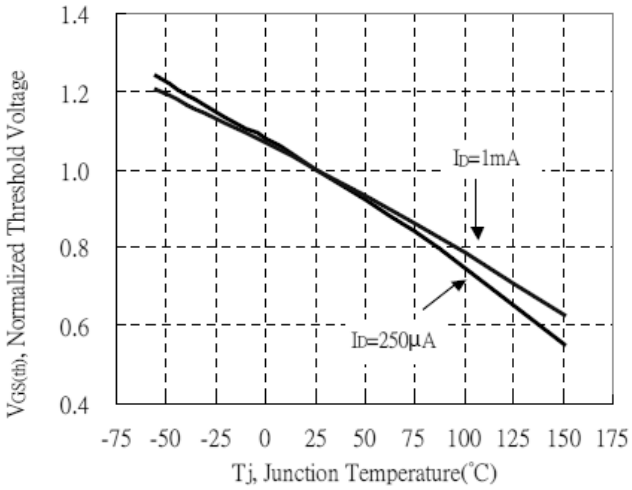


CHARACTERISTIC CURVES

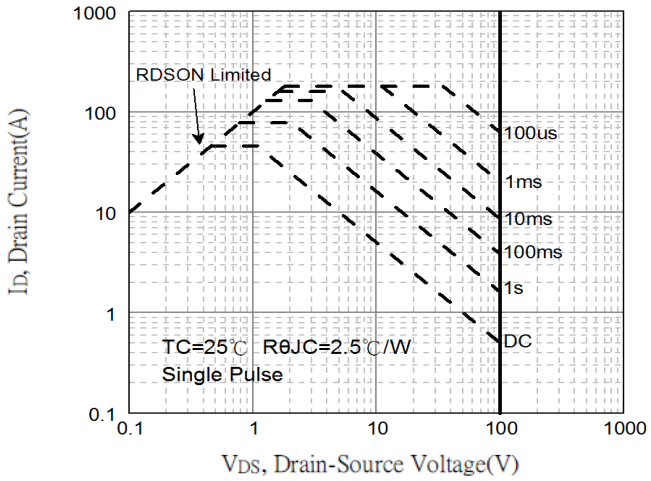
Capacitance vs Drain-to-Source Voltage



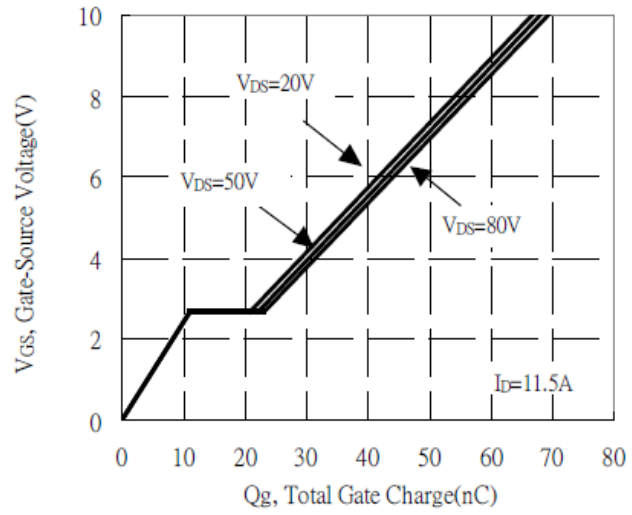
Threshold Voltage vs Junction Tempearture



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves