Elektronische Bauelemente

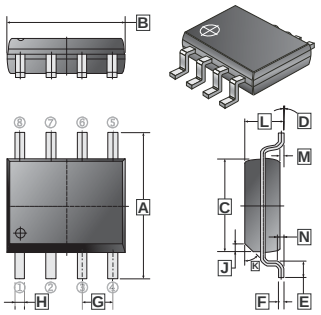
SSG4410N

13 A, 30 V, $R_{DS(ON)}$ 13.5 mΩ
N-Ch Enhancement Mode Power MOSFET

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

SOP-8



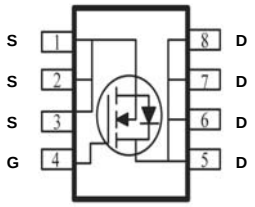
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				

FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8 saves board space.
- Fast switching speed.
- High performance trench technology.

PACKAGE INFORMATION

Package	MPQ	LeaderSize
SOP-8	2.5K	13’ inch



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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]		I_D @ T_A = 25°C	±13	A
		I_D @ T_A = 70°C	±11	A
Pulsed Drain Current [2]		I_{DM}	±50	A
Continuous Source Current (Diode Conduction) [1]		I_S	2.3	A
Total Power Dissipation [1]		P_D @ T_A = 25°C	3.1	W
		P_D @ T_A = 70°C	2.2	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Case (Max.) [1]	t ≦ 5 sec	$R_{\theta JC}$	25	°C / W
Thermal Resistance Junction-Ambient (Max.) [1]	t ≦ 5 sec	$R_{\theta JA}$	50	°C / W

Notes

1 Surface Mounted on 1” x 1” FR4 Board.

2 Pulse width limited by maximum junction temperature.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	-	V	V_{DS}= V_{GS}, I_D= 250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}= 0V, V_{GS}= 20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}= 24V, V_{GS}= 0V
		-	-	25	μA	V_{DS}= 24V, V_{GS}= 0V, T_J= 55°C
On-State Drain Current [1]	$I_{D(on)}$	20	-	-	A	V_{DS}= 5V, V_{GS}= 10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	13.5	mΩ	V_{GS}= 10V, I_D= 10A
		-	-	20		V_{GS}= 4.5V, I_D= 8A
Forward Transconductance [1]	g_{fs}	-	40	-	S	V_{DS}= 15V, I_D= 10A
Diode Forward Voltage	V_{SD}	-	0.7	-	V	I_S= 2.3A, V_{GS}= 0V
Dynamic [2]						
Total Gate Charge	Q_g	-	12.5	-	nC	I_D= 10A V_{DS}= 15V V_{GS}= 4.5V
Gate-Source Charge	Q_{gs}	-	2.6	-		
Gate-Drain Charge	Q_{gd}	-	4.6	-		
Input Capacitance	C_{ISS}		1191		pF	f = 1 MHz V_{DS}= 15V V_{GS}= 0V
Output Capacitance	C_{OSS}		412			
Reverse Transfer Capacitance	C_{RSS}		160			
Turn-On Delay Time	$T_{d(on)}$	-	20	-	nS	V_{DD}= 25V I_D= 1A V_{GEN}= 10V R_L= 25Ω
Rise Time	T_r	-	9	-		
Turn-Off Delay Time	$T_{d(off)}$	-	70	-		
Fall Time	T_f	-	20	-		

Notes

1 Pulse test：PW ≦ 300μs duty cycle ≦ 2%.

2 Guaranteed by design, not subject to production testing.

CHARACTERISTICS CURVE

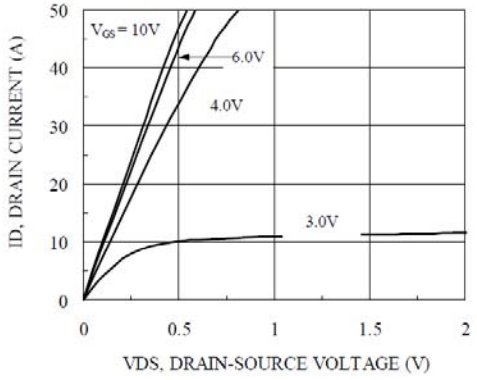


Figure 1. On-Region Characteristics

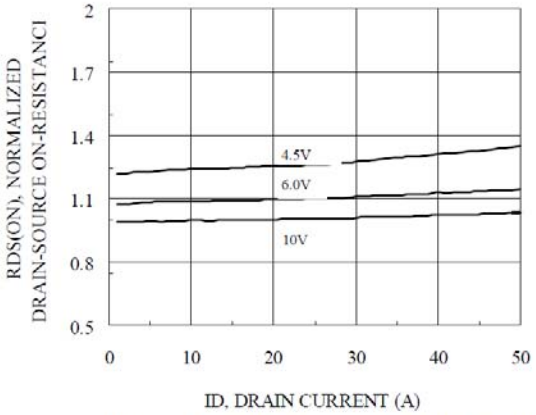


Figure 2. On-Resistance with Drain Current

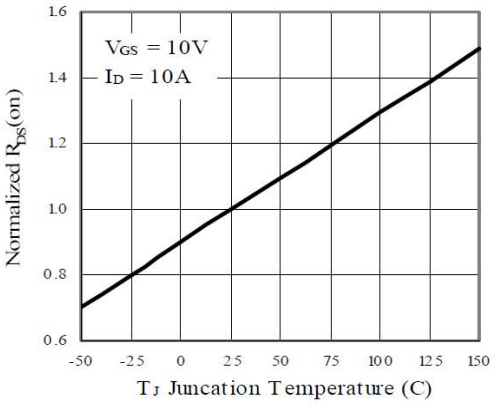


Figure 3. On-Resistance Variation with Temperature

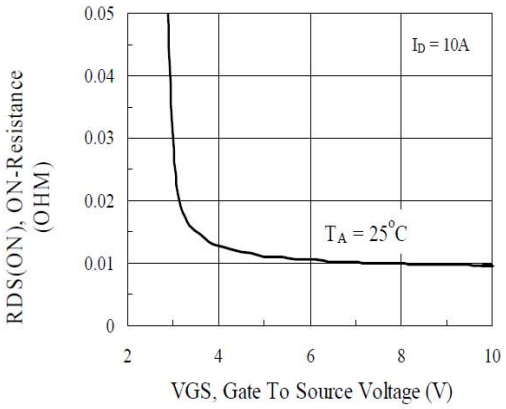


Figure 4. On-Resistance Variation with Gate to Source Voltage

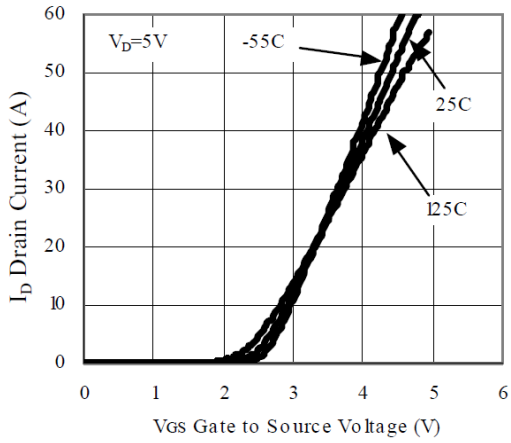


Figure 5. Transfer Characteristics

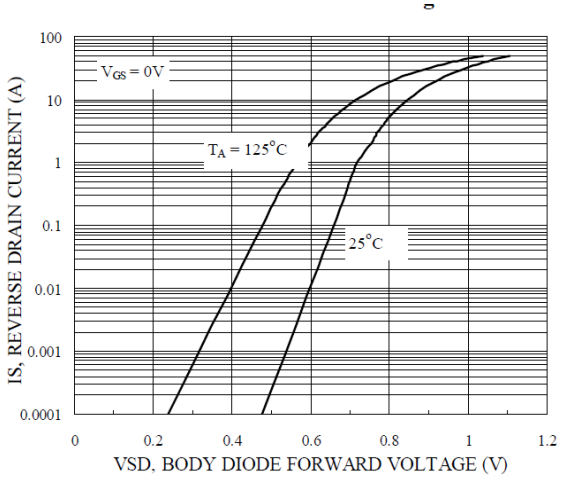


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

CHARACTERISTICS CURVE

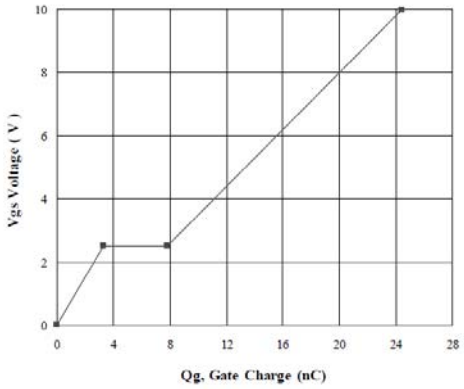


Figure 7. Gate Charge Characteristics

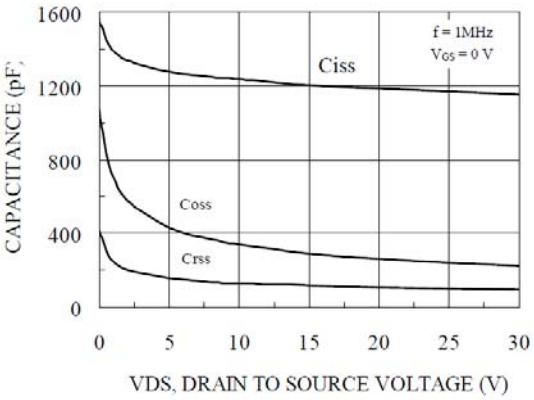


Figure 8. Capacitance Characteristics

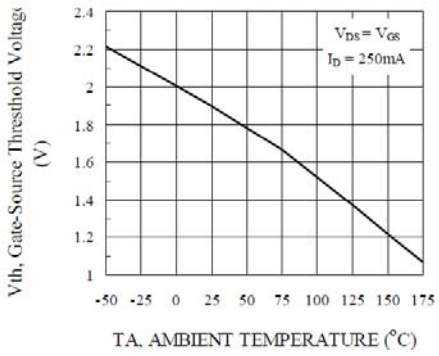


Figure 9. Threshold Vs Ambient Temperature

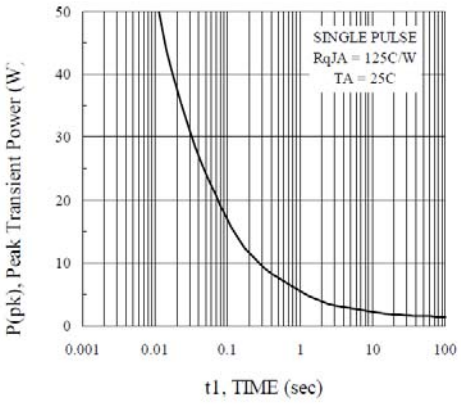


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

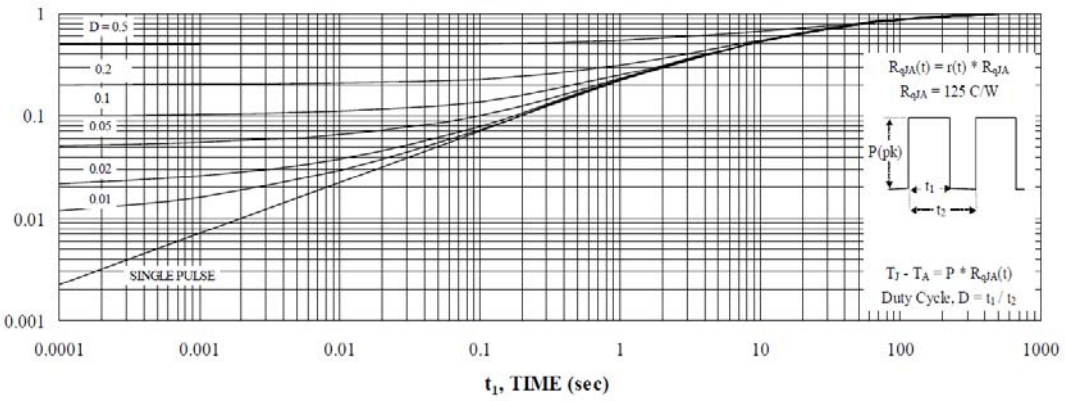


Figure 11. Transient Thermal Response Curve