Elektronische Bauelemente

SMG2310N

2.2A, 30V, $R_{DS(ON)}$ 65 mΩ
N-Channel Enhancement Mode MOSFET

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

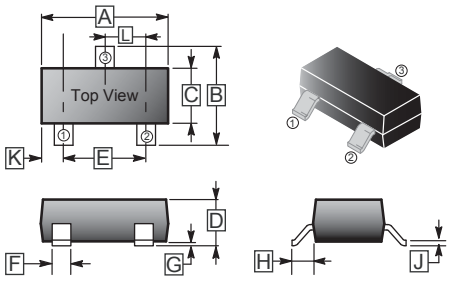
DESCRIPTION

These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are lower voltage application, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low gate charge
- Fast switch

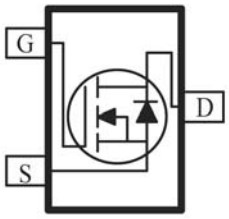
SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.25	3.00	H	0.40 REF.	
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

PACKAGE INFORMATION

Package	MPQ	LeaderSize
SC-59	3K	7' inch



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}	±8	V
Continuous Drain Current [1]	I_D @ T_A=25°C	I_D	2.2	A
	I_D @ T_A=70°C		1.7	A
Pulsed Drain Current [2]		I_{DM}	10	A
Continuous Source Current (Diode Conduction) [1]		I_S	0.45	A
Power Dissipation [1]	P_D @ T_A=25°C	P_D	0.5	W
	P_D @ T_A=70°C		0.42	W
Operating Junction and Storage Temperature Range		Tj, Tstg	-55 ~ 150	°C
Thermal Resistance Ratings				
Maximum Junction to Ambient [1]	t ≦ 5 sec	$R_{\theta JA}$	250	°C / W
	Steady State		285	

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	Test Conditions
Switch Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	-	-		V_{GS}=0, I_D=250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}= ±8V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0
		-	-	10		V_{DS}=24V, V_{GS}=0, T_J=55°C
Switch On Characteristics						
Gate-Threshold Voltage	$V_{GS(th)}$	0.43	0.7	1	V	V_{DS}=V_{GS}, I_D=250μA
On-State Drain Current [1]	$I_{D(on)}$	10	-	-	A	V_{DS}=5V, V_{GS}=4.5V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	54	65	mΩ	V_{GS}=4.5V, I_D=2.2A
		-	80	99		V_{GS}=4.5V, I_D=2.2A, T_J=55°C
		-	70	82		V_{GS}=2.5V, I_D=2A
Forward Transconductance [1]	g_{fs}	-	13	-	S	V_{DS}=5V, I_D=2.2A
Diode Forward Voltage	V_{SD}	-	0.65	1.2	V	I_S=0.45A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	7	9	nC	V_{DS}=10V, V_{GS}=4.5V, I_D= 2.2A
Gate-Source Charge	Q_{gs}	-	1.1	-		
Gate-Drain Charge	Q_{gd}	-	1.9	-		
Switching						
Turn-on Delay Time	$T_{d(on)}$	-	4	11	nS	V_{DS}=10V, V_{GEN}=4.5V, R_G=6Ω, I_D=1A
Rise Time	T_r	-	11	19		
Turn-off Delay Time	$T_{d(off)}$	-	18	30		
Fall Time	T_f	-	5	10		

Notes:
1 Pulse test：PW ≦ 300 us duty cycle ≦ 2%.
2 Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVE

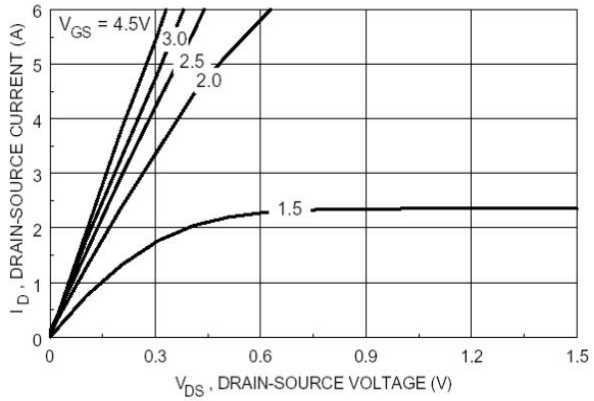


Figure 1. On-Region Characteristics

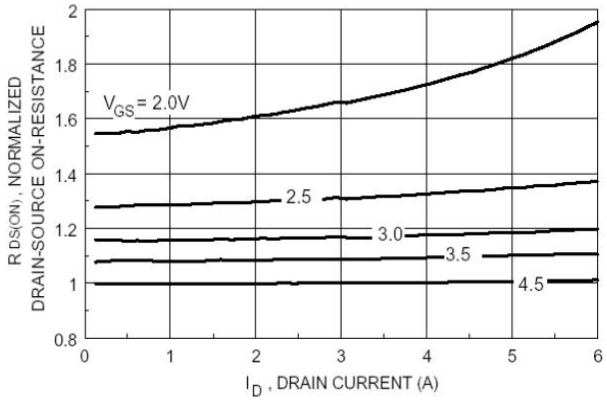


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

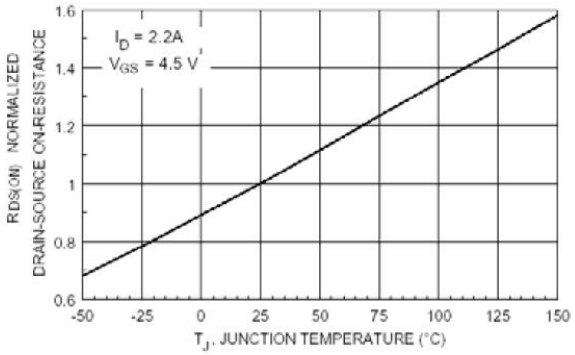


Figure 3. On-Resistance Variation with Temperature

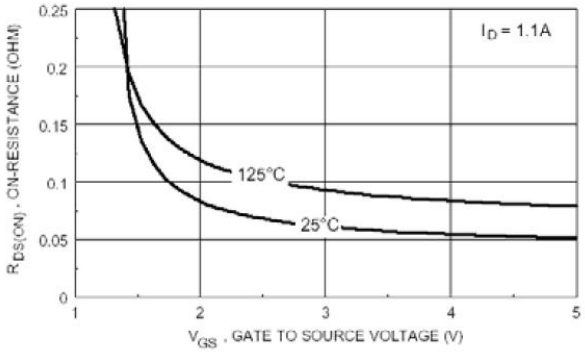


Figure 4. On-Resistance Variation with Gate to Source Voltage

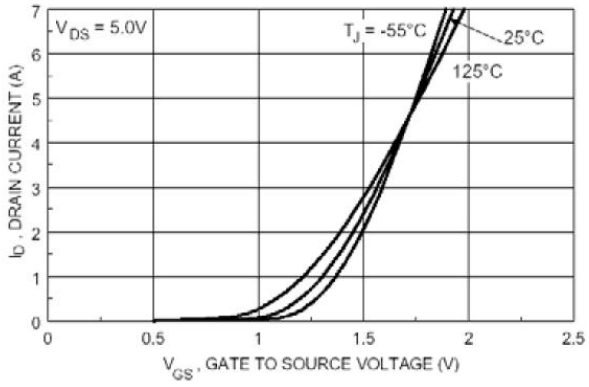


Figure 5. Transfer Characteristics

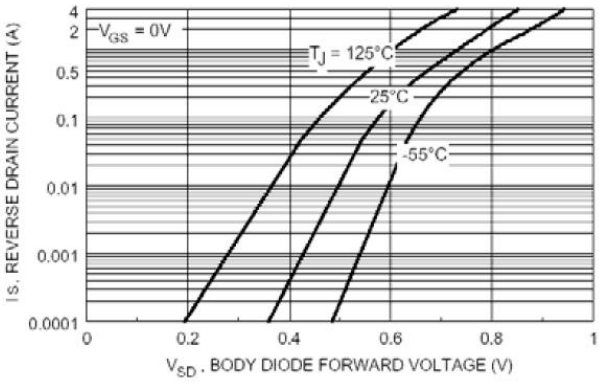


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

CHARACTERISTIC CURVE

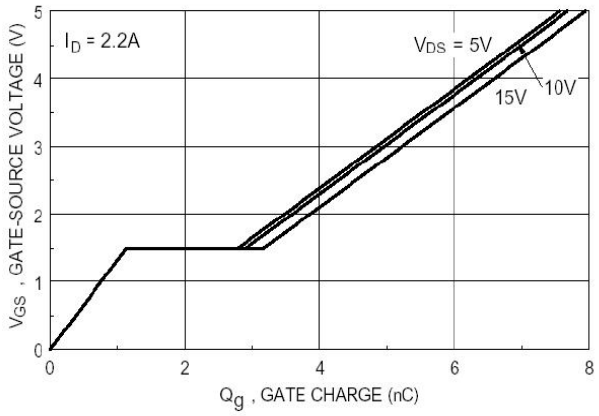


Figure 7. Gate Charge Characteristics.

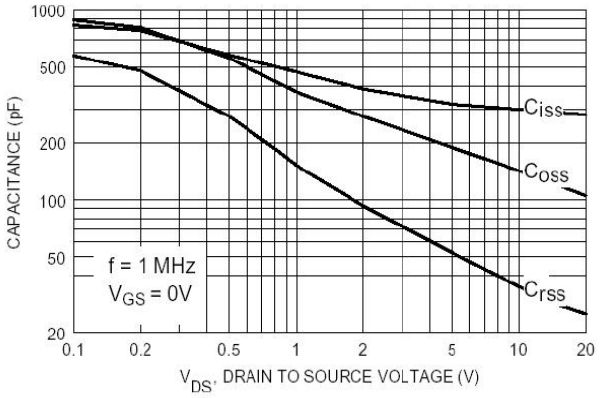


Figure 8. Capacitance Characteristics.

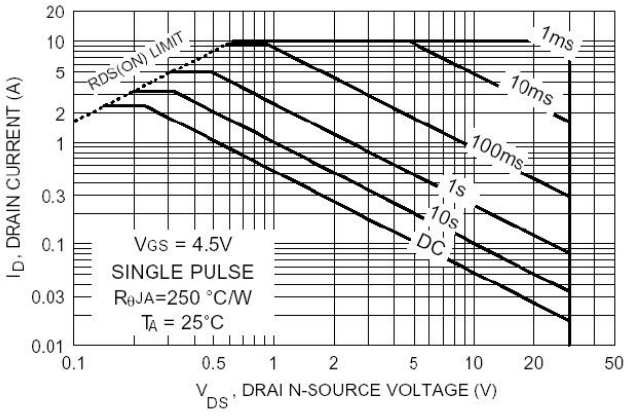


Figure 9. Maximum Safe Operating Area.

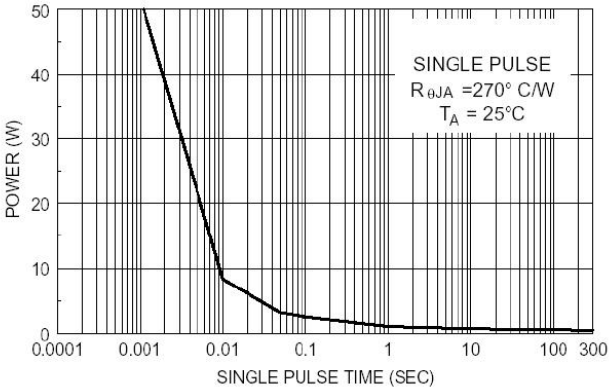


Figure 10. Single Pulse Maximum Power Dissipation.

Normalized Thermal Transient Impedance, Junction to Ambient

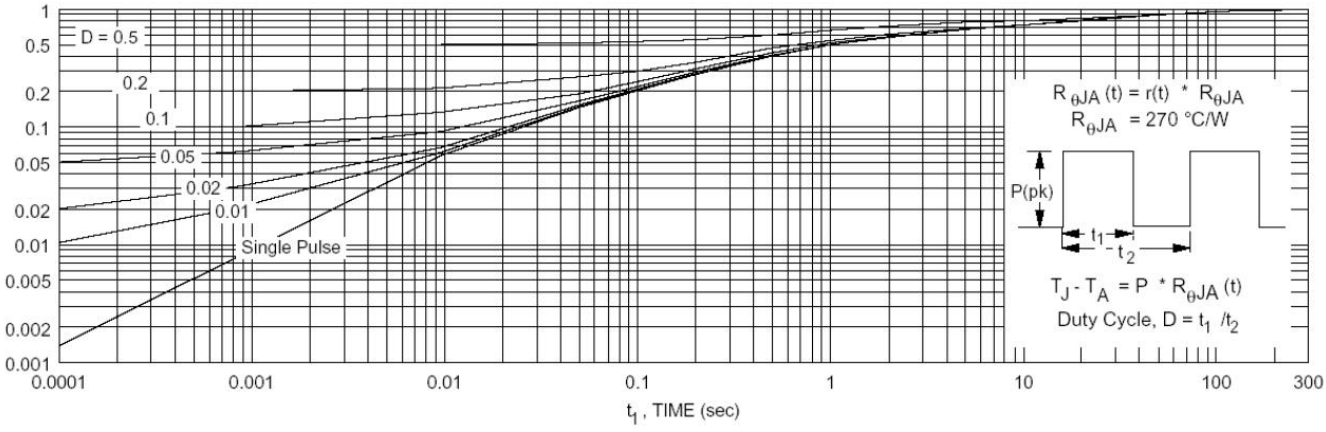


Figure 11. Transient Thermal Response Curve