Elektronische Bauelemente

SMG2318N

1.2 A, 30 V, $R_{DS(ON)}$ 160 mΩ
N-Channel Logic Level MOSFET

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

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.

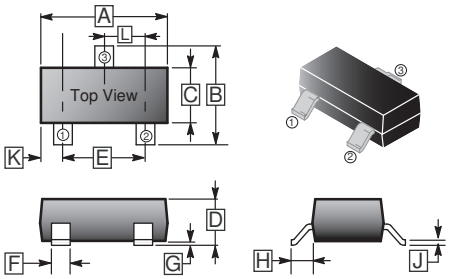
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SC-59 saves board Space.
- Fast switching speed.
- Low Gate Charge

APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printer , PCMCIA cards, cellular and cordless telephones.

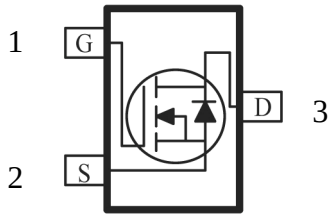
SC-59



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	Leader Size
SC-59	3K	7 inch



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ 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]	T_A=25℃	I_D	1.2	A
	T_A=70℃		1	
Pulsed Drain Current [2]		I_{DM}	10	A
Continuous Source Current (Diode Conduction) [1]		I_S	1.3	A
Power Dissipation [1]	T_A=25℃	P_D	1.3	W
	T_A=70℃		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Maximum Junction to Ambient [1]	t≦5 sec	$R_{\theta JA}$	250	℃ / W

Notes:
1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	0.8	1.7	2.1	V	V_{DS}=V_{GS}, I_D=250μA
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	30	-	-	V	V_{GS}=0, I_D=250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}= ±20V
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
On-State Drain Current [1]	$I_{D(on)}$	3.5	-	-	A	V_{DS} =5V, V_{GS}=4.5V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	125	160	mΩ	V_{GS}=10V, I_D=1.4A
		-	230	260		V_{GS}=4.5V, I_D=1.2A, T_J= 55°C
		-	190	250		V_{GS}=4.5V, I_D=1.2A
Forward Transconductance [1]	g_{fs}	-	1.8	-	S	V_{DS}=5V, I_D=1.2A
Diode Forward Voltage	V_{SD}	-	0.7	1.2	V	I_S=1.2A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	1.9	2.7	nC	V_{DS}=10V, V_{GS}=4.5V, I_D=1.2A, R_L=6Ω
Gate-Source Charge	Q_{gs}	-	0.5	-		
Gate-Drain Charge	Q_{gd}	-	0.9	-		
Turn-on Delay Time	$T_{d(on)}$	-	6	15	nS	V_{DS}= 10V, V_{GEN}=10V, R_L=50Ω, I_D=1A
Rise Time	T_r	-	15	31		
Turn-off Delay Time	$T_{d(off)}$	-	15	32		
Fall Time	T_f	-	18	42		

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

CHARACTERISTIC CURVES

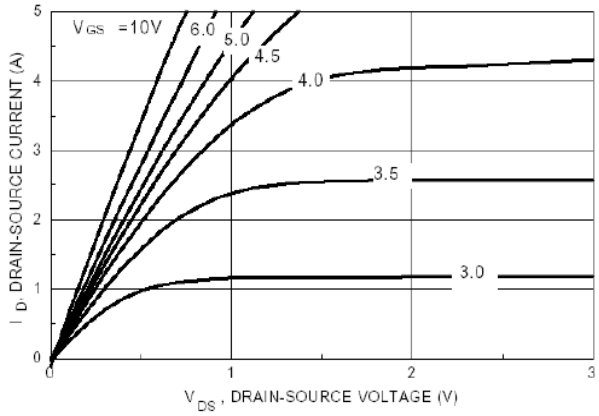


Figure 1. On-Region Characteristics

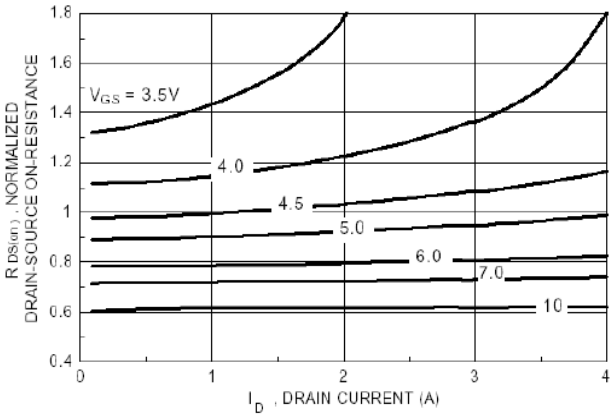


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

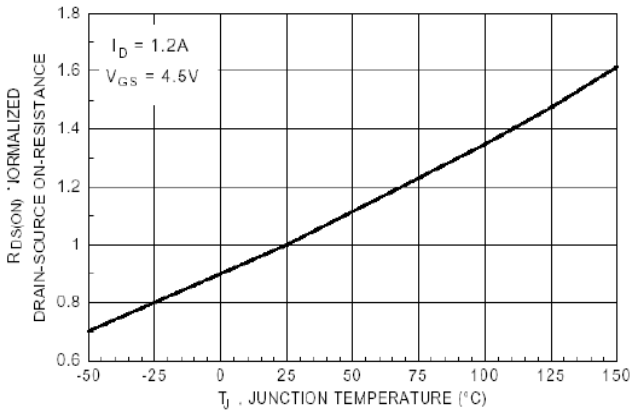


Figure 3. On-Resistance Variation with Temperature

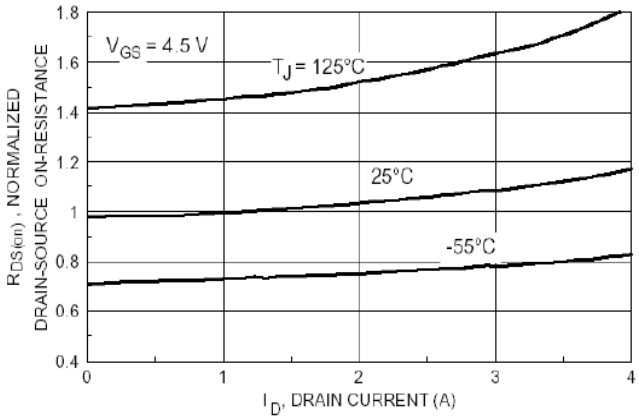


Figure 4. On-Resistance Variation with Gate to Source Voltage

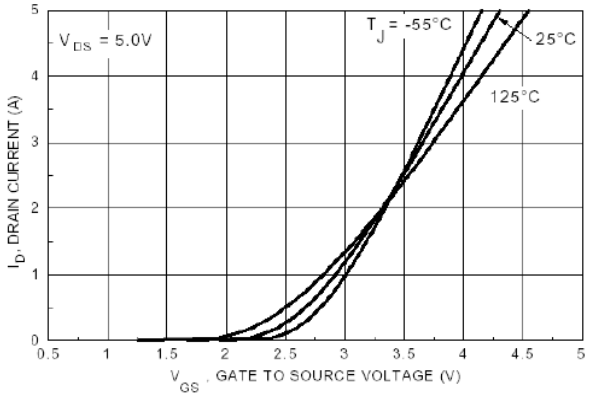


Figure 5. Transfer Characteristics

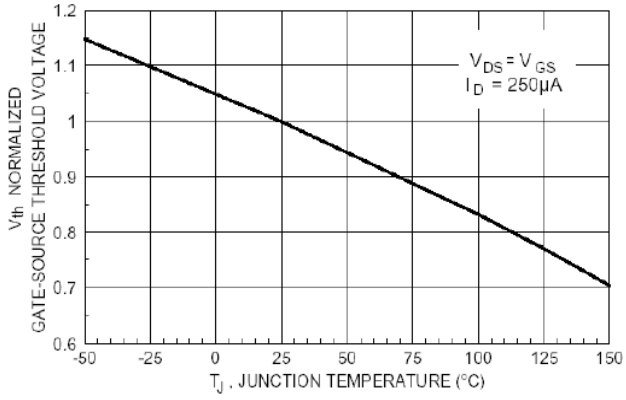


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

CHARACTERISTIC CURVES

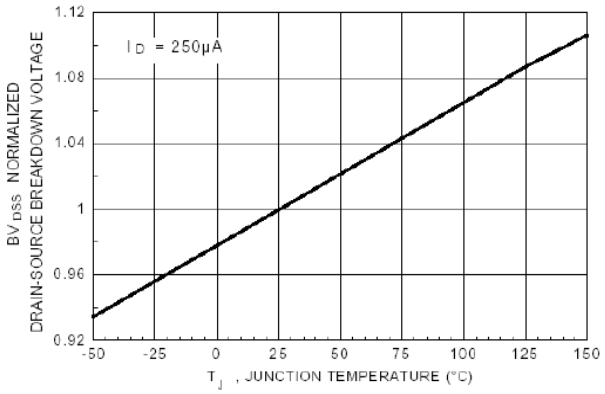


Figure 7. Breakdown Voltage Variation With Temperature

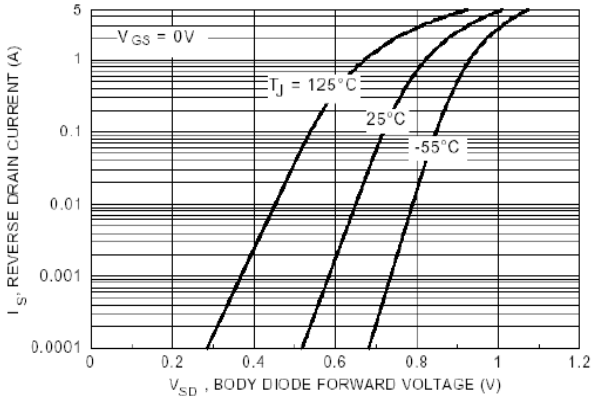


Figure 8. Body Diode Forward Voltage With Source Current Temperature

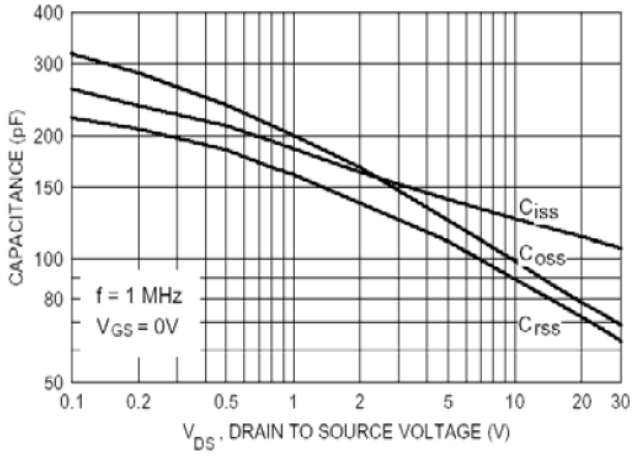


Figure 9. Capacitance Characteristic

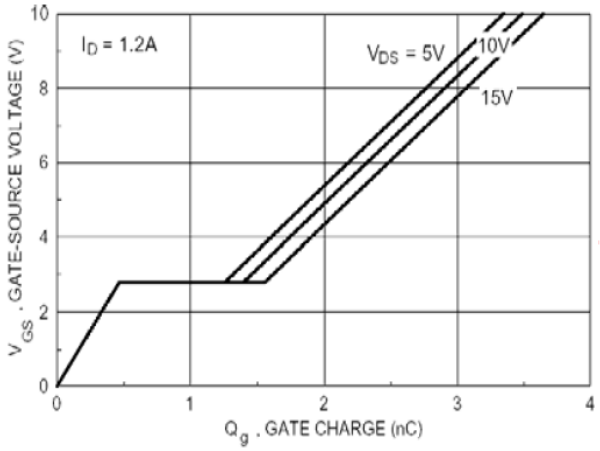


Figure 10. Gate Charge Characteristic

Normalized Thermal Transient Junction to Ambient

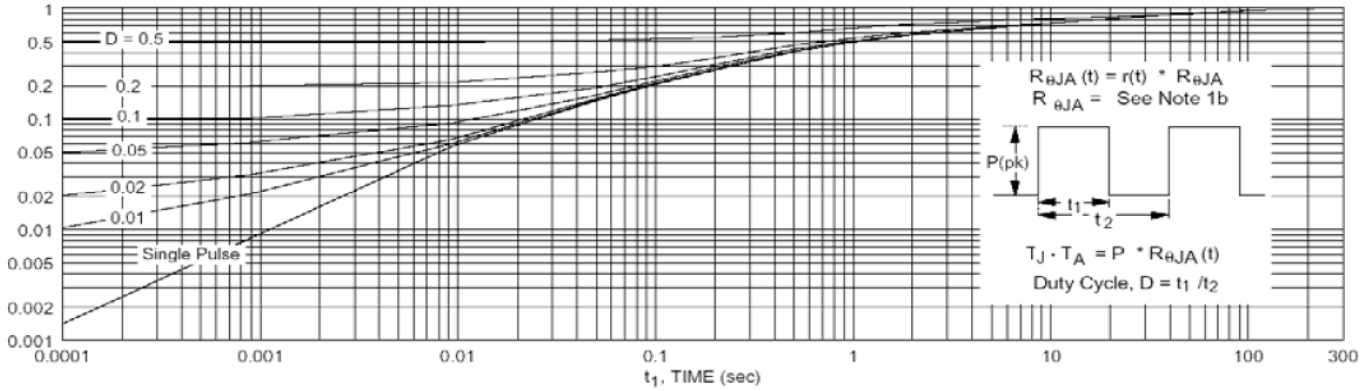


Figure 11. Transient Thermal Response Curve