Elektronische Bauelemente

SMG2358N

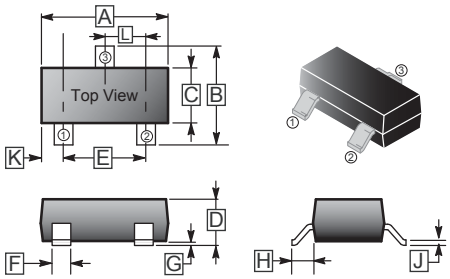
3.1 A, 60 V, $R_{DS(ON)}$ 92 mΩ
N-Channel Enhancement Mode Mos.FET

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. 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.

SC-59



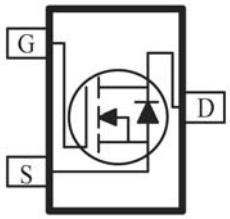
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SC-59 saves board space.
- Fast switching speed.
- High performance trench technology.

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°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_A= 25°C	I_D	3.1	A
	T_A= 70°C		2.5	
Pulsed Drain Current [2]		I_{DM}	15	A
Continuous Source Current (Diode Conduction) [1]		I_S	1.9	A
Power Dissipation [1]	T_A= 25°C	P_D	1.3	W
	T_A= 70°C		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	°C
Thermal Resistance Ratings				
Maximum Junction to Ambient [1]	t≦10 sec	$R_{\theta JA}$	100	°C / W
	Steady State		166	

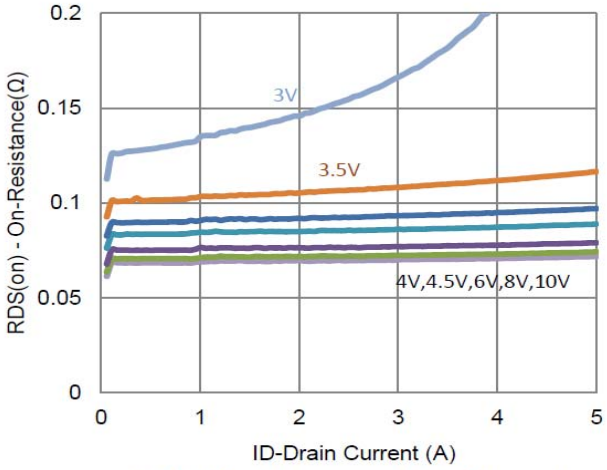
Notes
1 Surface Mounted on 1" x 1" FR4 Board.
2 Pulse width limited by maximum junction temperature.

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

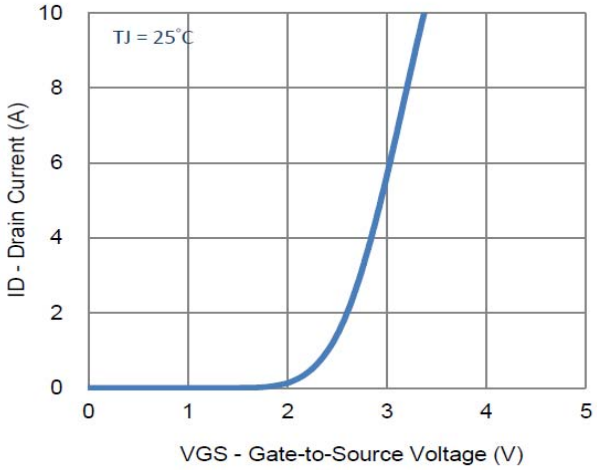
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	-	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}= ±20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0
		-	-	25		V_{DS}=48V, V_{GS}=0, T_J= 55°C
On-State Drain Current [1]	$I_{D(on)}$	5	-	-	A	V_{DS} =5V, V_{GS}=10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	92	mΩ	V_{GS}=10V, I_D=2.5A
		-	-	107		V_{GS}=4.5V, I_D=2A
Forward Transconductance [1]	g_{fs}	-	10	-	S	V_{DS}=15V, I_D=2.5A
Diode Forward Voltage	V_{SD}	-	0.74	-	V	I_S=1A, V_{GS}=0
Dynamic [2]						
Input Capacitance	C_{iss}	-	330	-	pF	V_{DS}=15V, V_{GS}=0, f=1MHz
Output Capacitance	C_{oss}	-	31	-		
Reverse Transfer Capacitance	C_{rss}	-	27	-		
Total Gate Charge	Q_g	-	4	-	nC	V_{DS}=30V, V_{GS}=4.5V, I_D=2.5A
Gate-Source Charge	Q_{gs}	-	1	-		
Gate-Drain Charge	Q_{gd}	-	1.7	-		
Turn-on Delay Time	$T_{d(on)}$	-	3	-	nS	V_{DS}=30V, V_{GEN}=10V, R_L=12Ω, I_D=2.5A, R_{GEN}=6Ω
Rise Time	T_r	-	6	-		
Turn-off Delay Time	$T_{d(off)}$	-	17	-		
Fall Time	T_f	-	5	-		

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

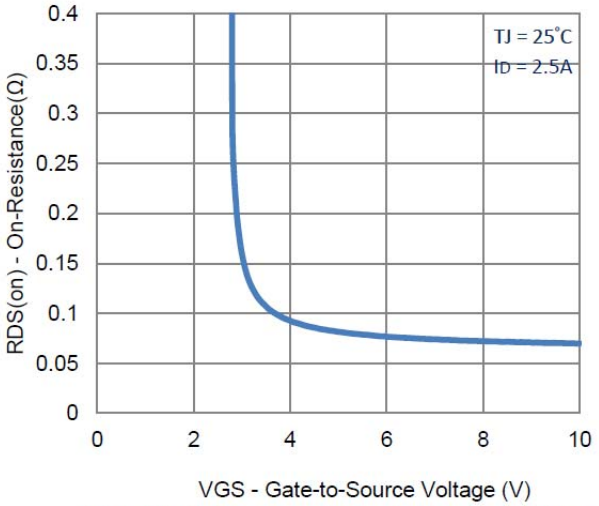
CHARACTERISTIC CURVES



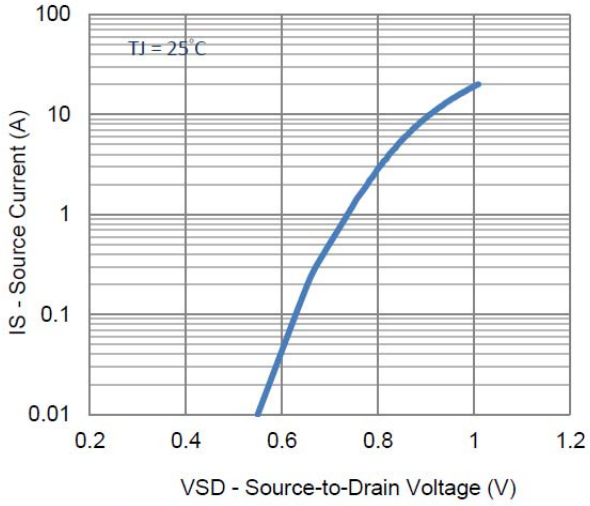
1. On-Resistance vs. Drain Current



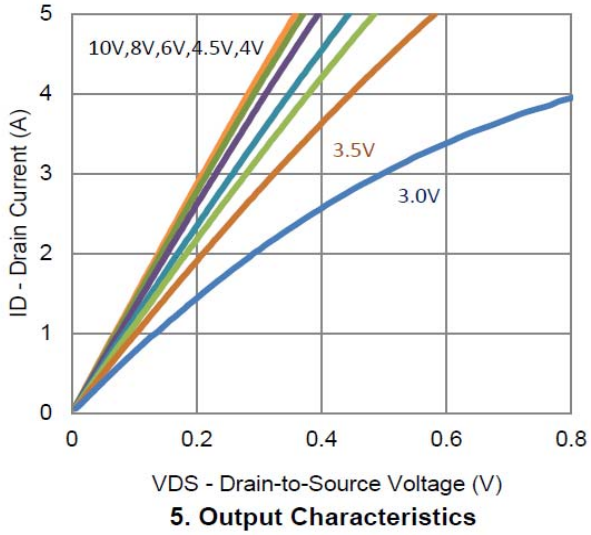
2. Transfer Characteristics



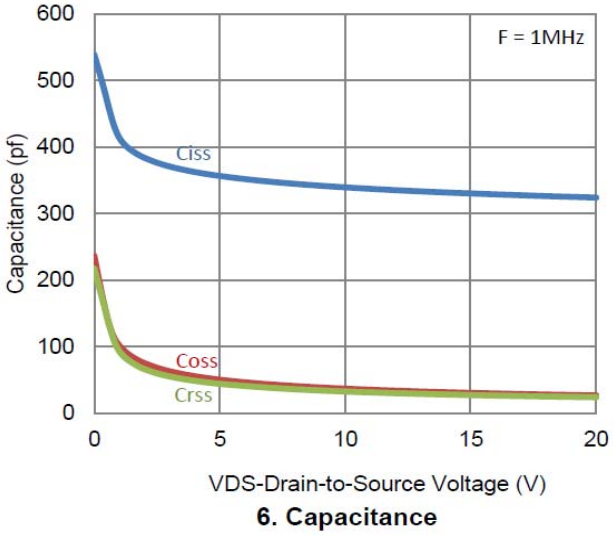
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

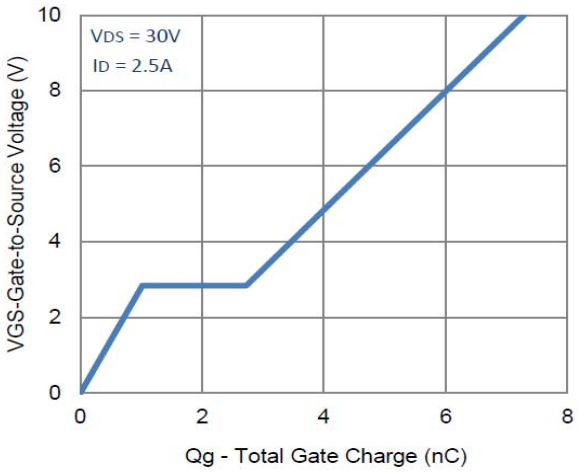


5. Output Characteristics

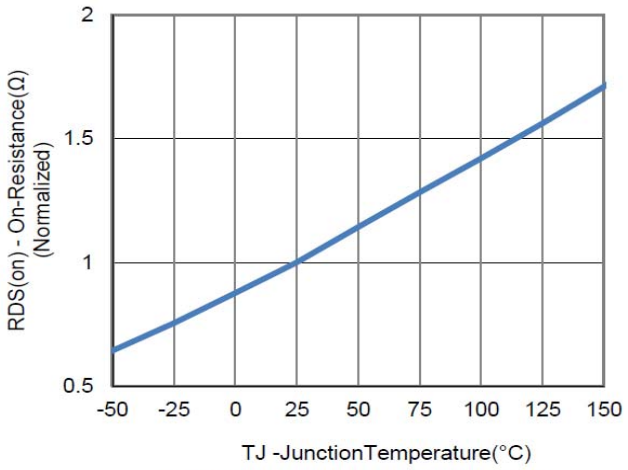


6. Capacitance

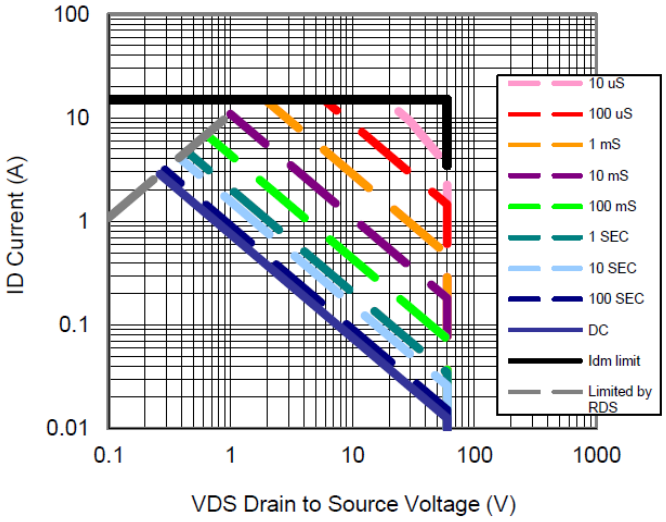
CHARACTERISTIC CURVES



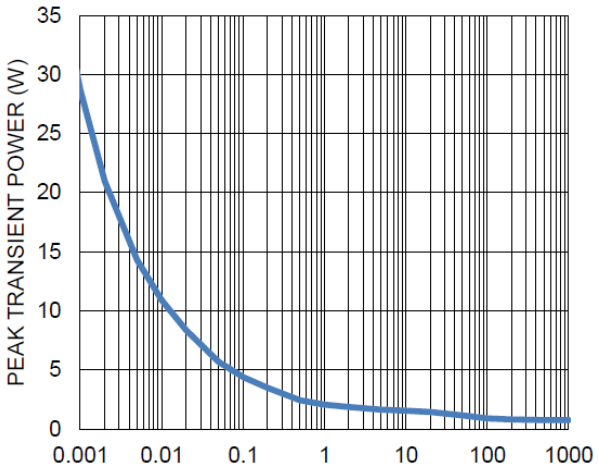
7. Gate Charge



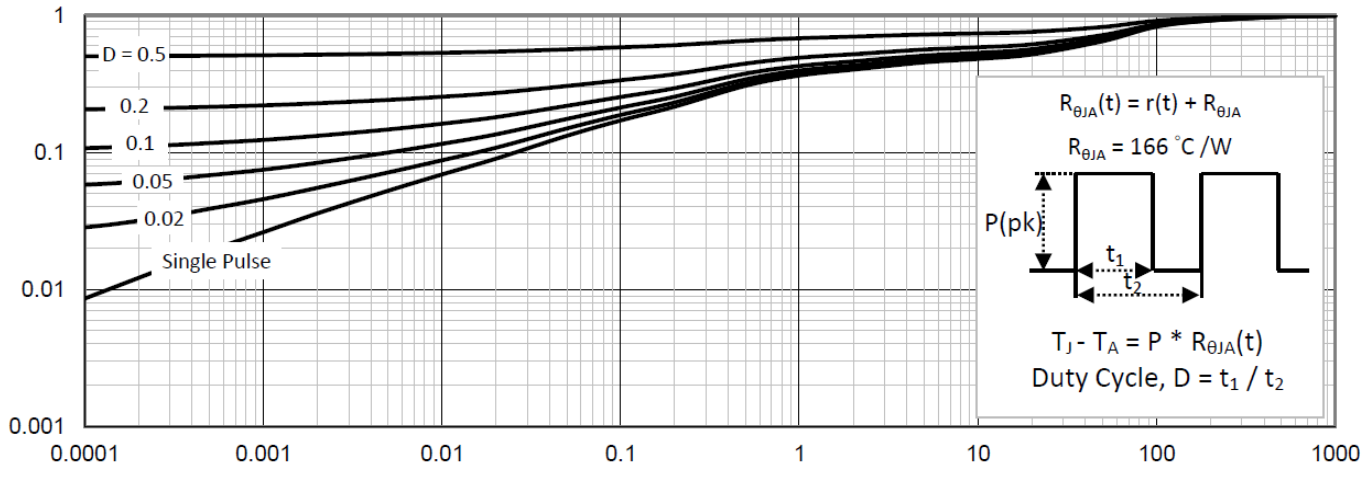
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient