Elektronische Bauelemente

SMG2314NE

5.3 A, 20 V, $R_{DS(ON)}$ 32 mΩ
N-Channel Enhancement Mode Mos.FET

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

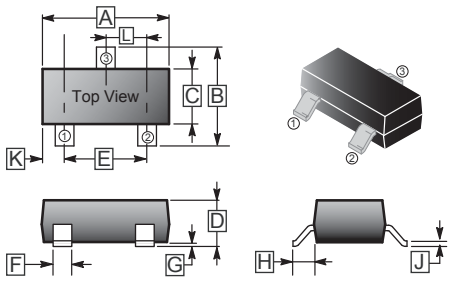
DESCRIPTION

These miniature surface mount MOSFETs utilize 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 PWMDC-DC converters, power management in portable and battery-powered products such as computers, printers, battery charger, telecommunication power system, and telephones power system.

FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Miniature SC-59 surface mount package saves board space.
- High power and current handling capability.
- MLow side high current DC-DC Converter applications

SC-59

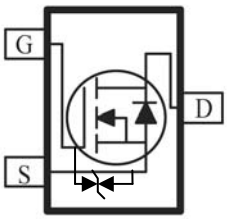


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.25	3.00	H	0.40 REF.	
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7' inch

ESD
Protection Diode
2KV



ABSOLUTE MAXIMUM RATINGS(T_A=25°C UNLESS OTHERWISE NOTED)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [1]	T_A=25°C	I_D	5.3	A
	T_A=70°C		4.1	A
Pulsed Drain Current [2]		I_{DM}	20	A
Continuous Source Current (Diode Conduction) [1]		I_S	1.8	A
Power Dissipation [1]	T_A=25°C	P_D	1.3	W
	T_A=70°C		0.8	W
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	

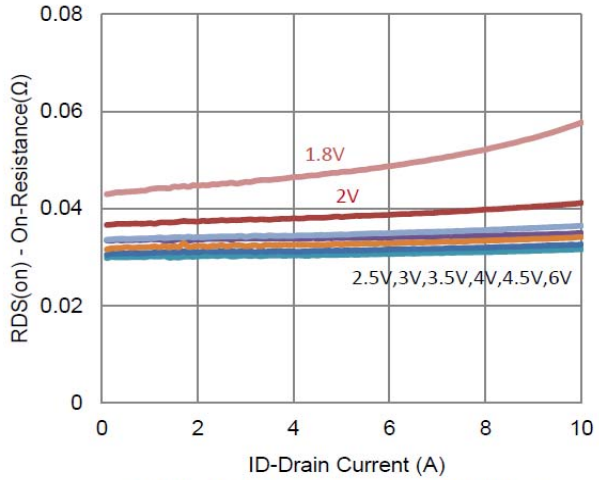
Notes
1 Surface Mounted on 1" x 1" FR4 Board.
2 Pulse width limited by maximum junction temperature.

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

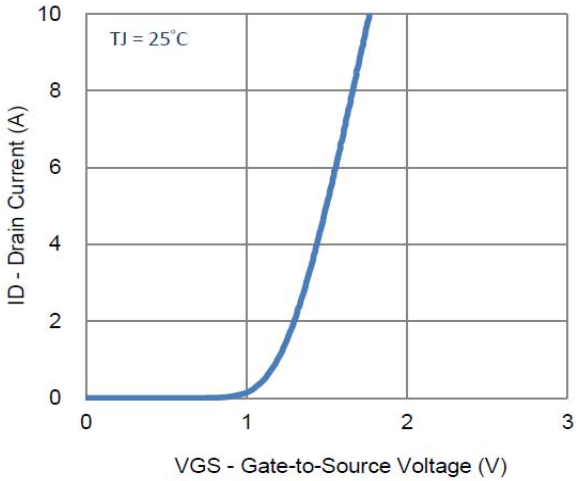
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	0.4	-	-	V	V_{DS}=V_{GS}, I_D= 250uA
Gate-Body Leakage	I_{GSS}	-	-	±10	nA	V_{DS}=0, V_{GS}= ±12V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	uA	V_{DS}=16V, V_{GS}=0
		-	-	25		V_{DS}=16V, V_{GS}=0, T_J= 55°C
On-State Drain Current [1]	$I_{D(on)}$	10	-	-	A	V_{DS} =5V, V_{GS}=4.5V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	32	mΩ	V_{GS}=4.5V, I_D=4.2A
		-	-	44		V_{GS}=2.5V, I_D=3.8A
Forward Transconductance [1]	g_{fs}	-	11	-	S	V_{DS}=15V, I_D= 4.2A
Diode Forward Voltage	V_{SD}	-	0.7	-	V	I_S=0.9A, V_{GS}=0
Dynamic [2]						
Input Capacitance	C_{iss}	-	413	-	pF	V_{DS}= 10V, V_{GS}= 4.5V, f=1MHz.
Output Capacitance	C_{oss}	-	76	-		
Reverse Transfer Capacitance	C_{rss}	-	67	-		
Total Gate Charge	Q_g	-	6.2	-	nC	V_{DS}= 10V, V_{GS}= 4.5V, I_D= 4.2A.
Gate-Source Charge	Q_{gs}	-	1	-		
Gate-Drain Charge	Q_{gd}	-	2	-		
Turn-on Delay Time	$T_{d(on)}$	-	6	-	nS	V_{DS}= 10V, V_{GEN}= 4.5V, R_{GEN}=6Ω, R_L=2.4Ω, I_D=4.2A.
Rise Time	T_r	-	19	-		
Turn-off Delay Time	$T_{d(off)}$	-	47	-		
Fall Time	T_f	-	67	-		

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

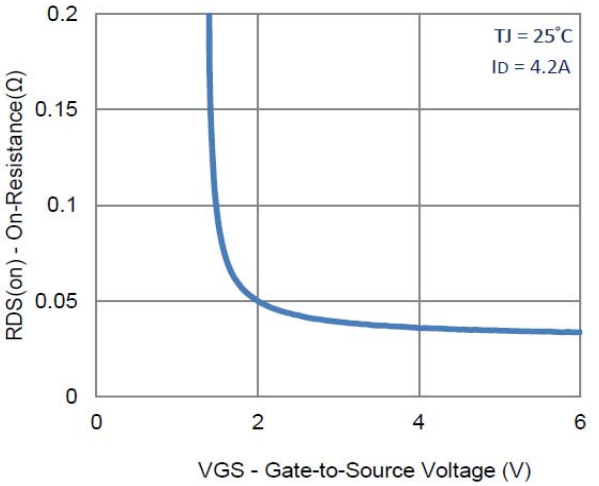
CHARACTERISTIC CURVE



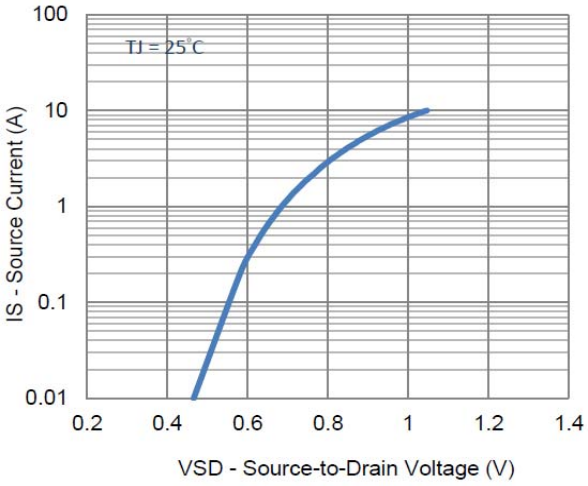
1. On-Resistance vs. Drain Current



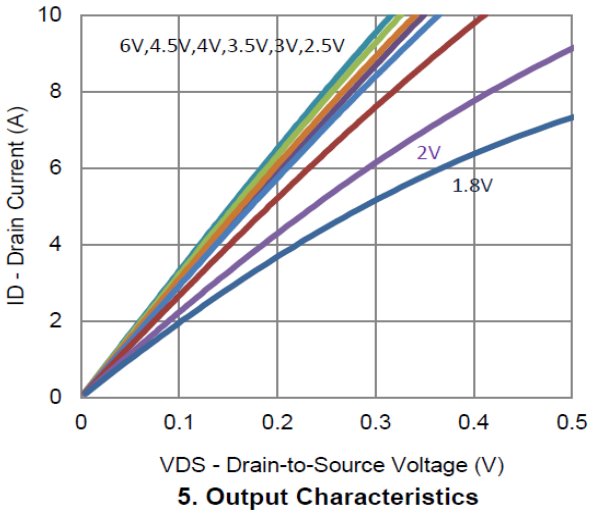
2. Transfer Characteristics



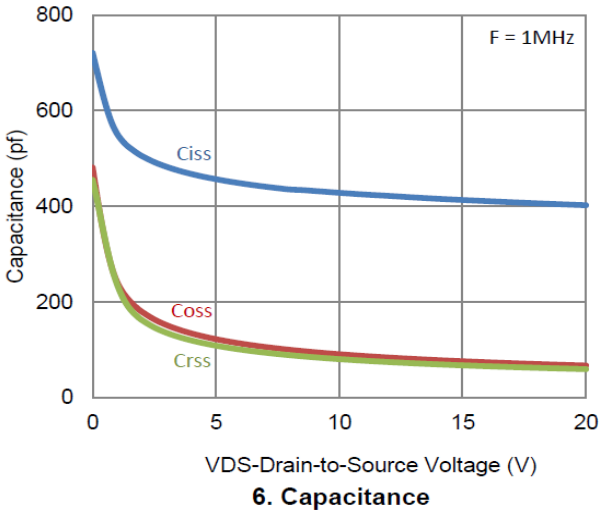
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

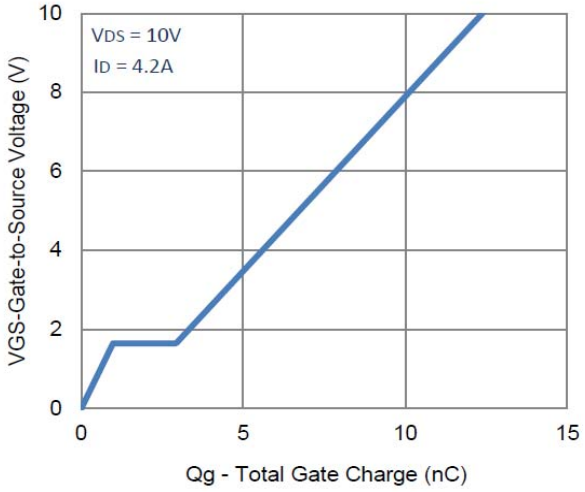


5. Output Characteristics

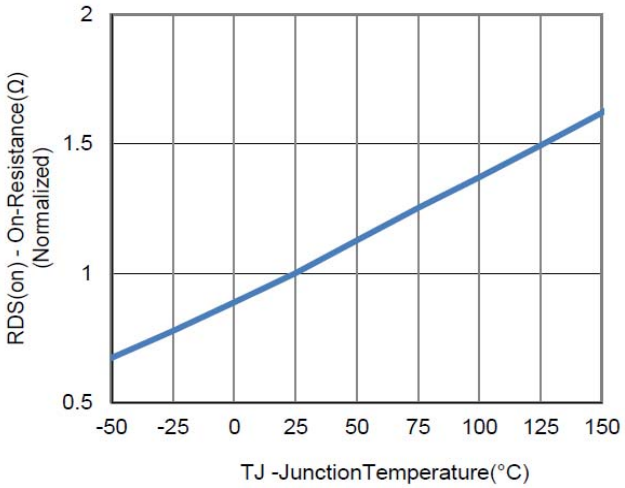


6. Capacitance

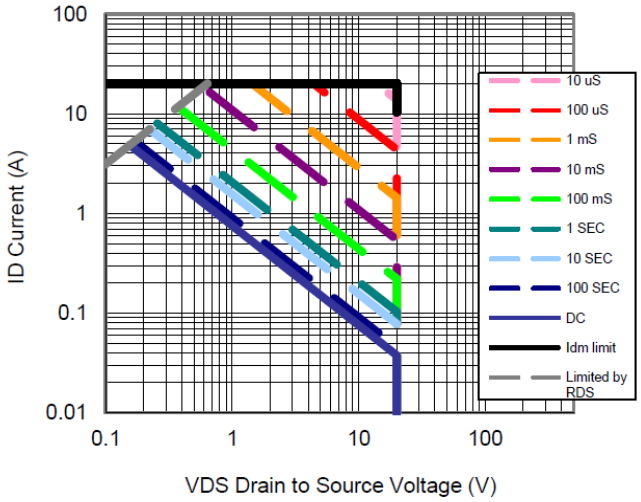
CHARACTERISTIC CURVE



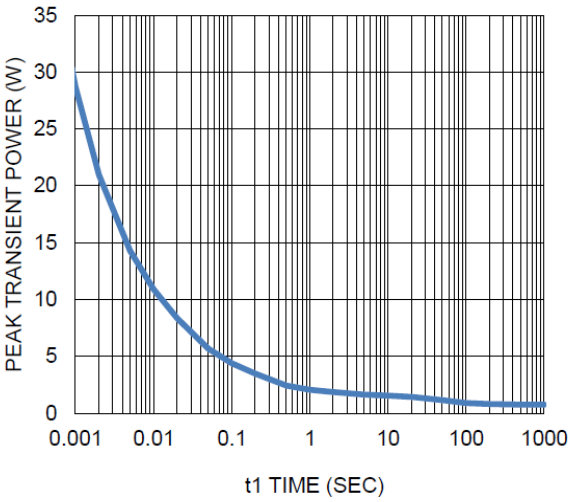
7. Gate Charge



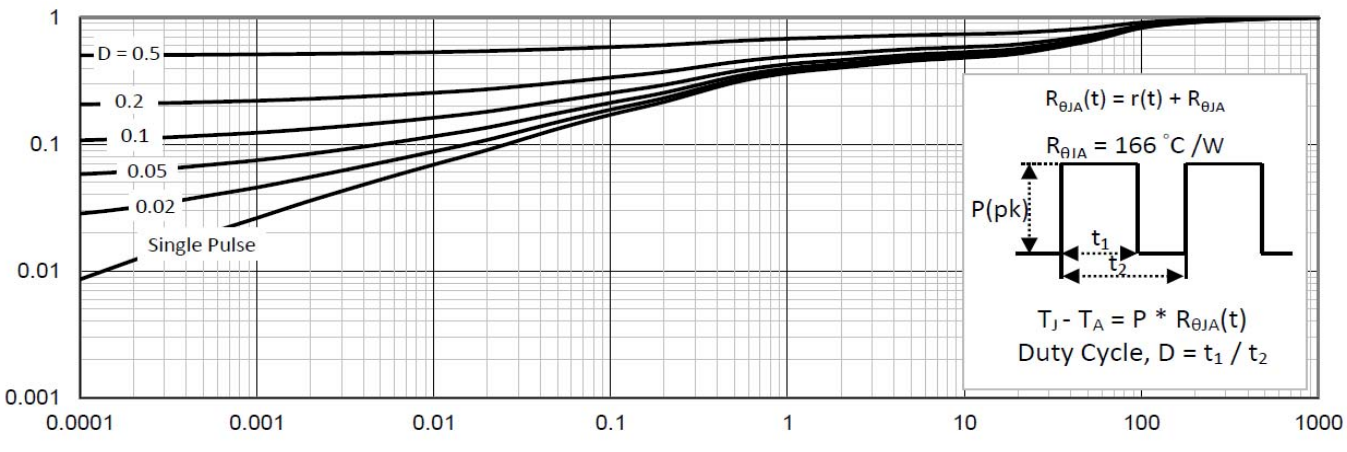
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient