Elektronische Bauelemente

SMG2307PE

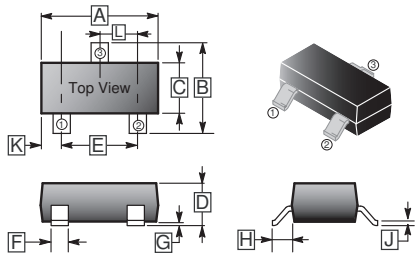
-5.2 A, -20 V, $R_{DS(ON)}$ 31 mΩ
P-Channel Enhancement MOSFET

RoHS Compliant Product
A suffix of "-C" specifies halogen & 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



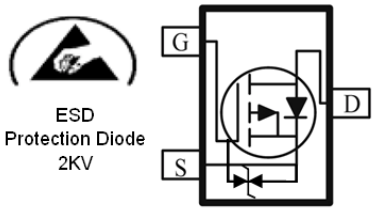
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.25	3.00	H	0.40 REF.	
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

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.

PACKAGE INFORMATION

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



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current [1]	T_A=25℃	I_D	-5.2	A
	T_A=70℃		-4.3	
Pulsed Drain Current [2]		I_{DM}	-20	A
Continuous Source Current (Diode Conduction) [1]		I_S	-1.9	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 Data				
Maximum Junction to Ambient [1]	t ≦ 10 sec	$R_{\theta JA}$	100	℃/W
	Steady-State		166	

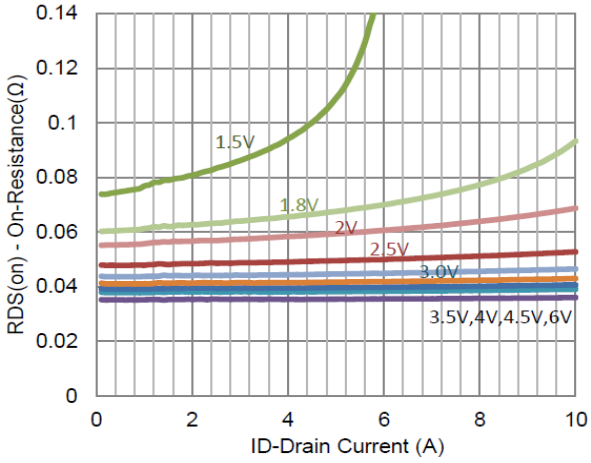
Notes:
1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

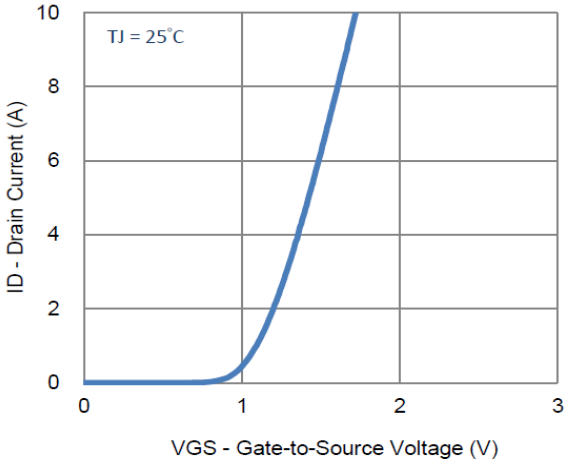
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-0.3	-0.55	-	V	V_{DS} = V_{GS}, I_D = -250μA
Gate-Body Leakage	I_{GSS}	-	-	±10	μA	V_{DS} = 0V, V_{GS}= ±10V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{DS} = -16V, V_{GS}= 0V
		-	-	-10		V_{DS} = -16V, V_{GS}= 0V, T_J=55℃
On-State Drain Current [1]	$I_{D(ON)}$	-10	-	-	A	V_{DS} = -5V, V_{GS}= -4.5V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	31	mΩ	V_{GS}= -4.5V, I_D = -4.2A
		-	-	44		V_{GS}= -2.5V, I_D = -3.5A
		-	-	56		V_{GS}= -1.8V, I_D = -3.1A
		-	-	83		V_{GS}= -1.5V, I_D = -2.6A
Forward Transconductance [1]	g_{FS}	-	20	-	S	V_{DS}= -10V, I_D = -4.2A
Diode Forward Voltage	V_{SD}	-	-0.7	-	V	I_S= -0.95A, V_{GS}=0
Dynamic [2]						
Input Capacitance	C_{iss}	-	826	-	pF	V_{DS}= -15V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	96	-		
Reverse Transfer Capacitance	C_{rss}	-	46	-		
Total Gate Charge	Q_g	-	18	-	nC	I_D= -4.2A V_{DS}= -10V V_{GS}= -4.5V
Gate-Source Charge	Q_{gs}	-	4.8	-		
Gate-Drain Charge	Q_{gd}	-	3.1	-		
Turn-On Delay Time	$Td_{(ON)}$	-	81	-	nS	I_D= -4.2A, R_L=2.4Ω V_{DS}= -10V V_{GEN}= -4.5V R_{GEN}= 6Ω
Rise Time	T_r	-	163	-		
Turn-Off Delay Time	$Td_{(OFF)}$	-	785	-		
Fall Time	T_f	-	397	-		

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

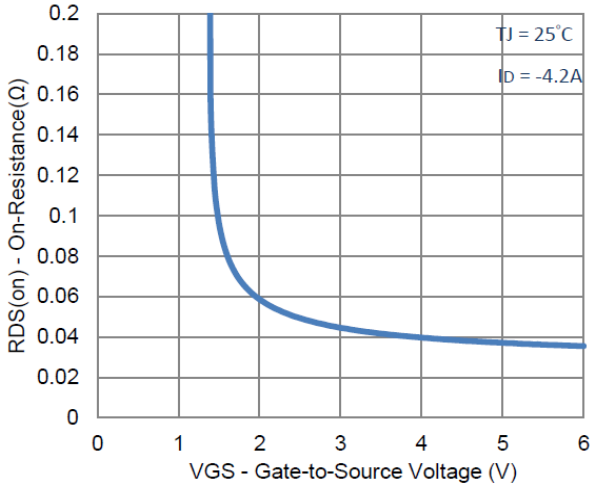
CHARACTERISTIC CURVE



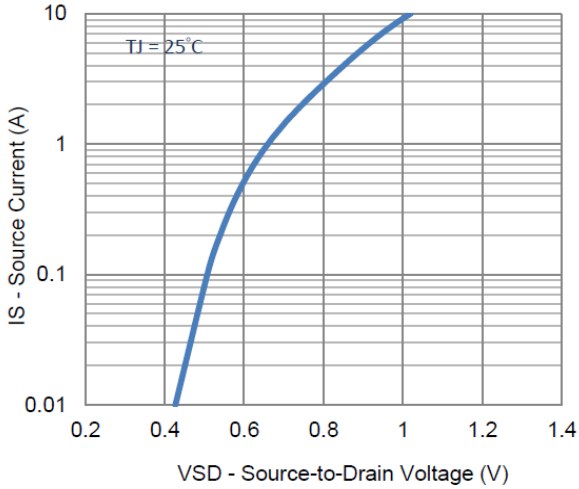
1. On-Resistance vs. Drain Current



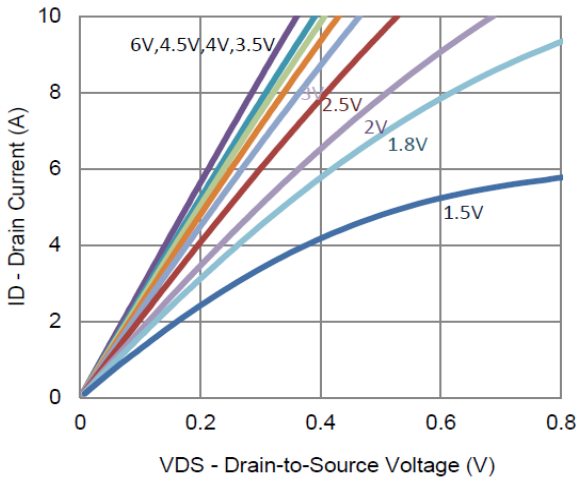
2. Transfer Characteristics



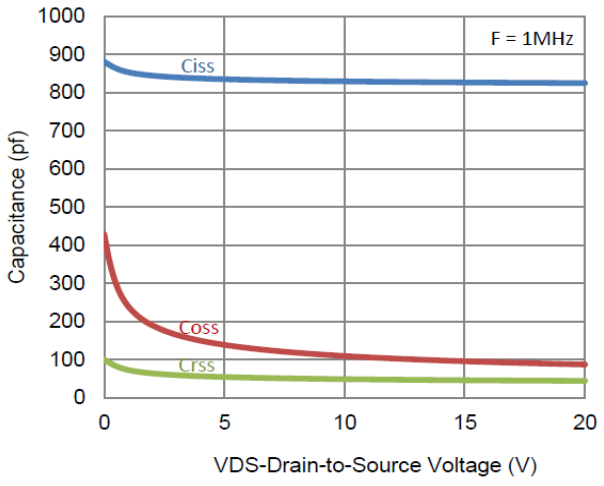
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

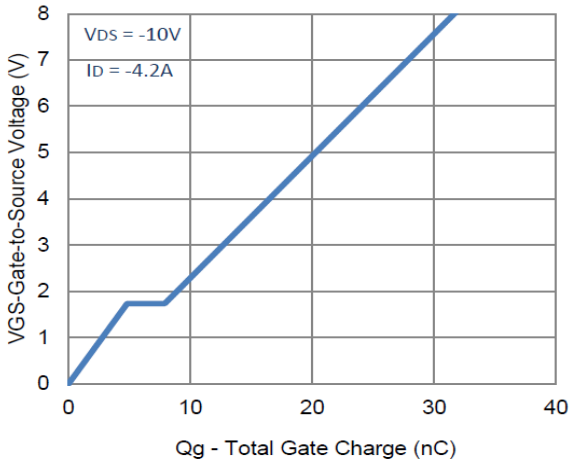


5. Output Characteristics

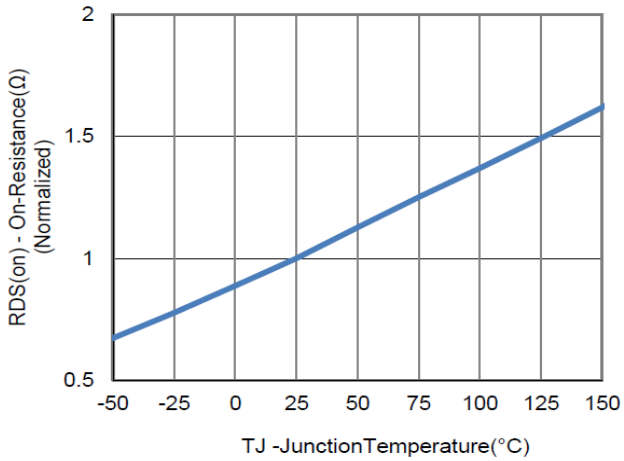


6. Capacitance

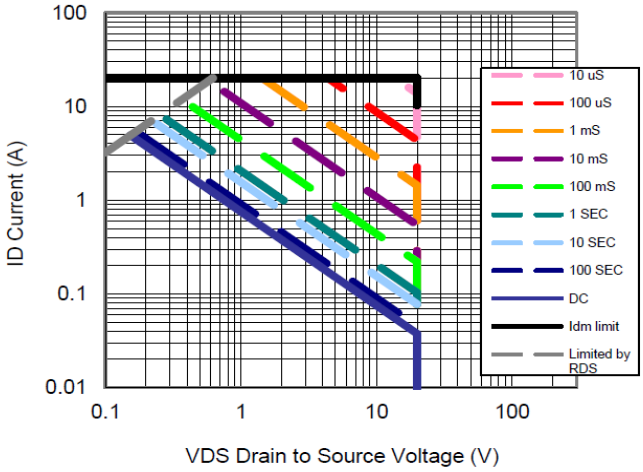
CHARACTERISTIC CURVE



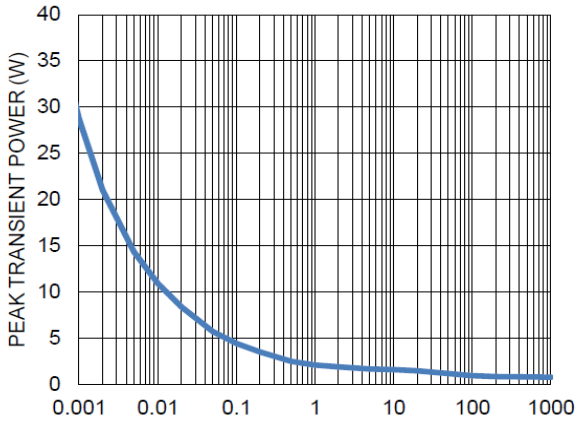
7. Gate Charge



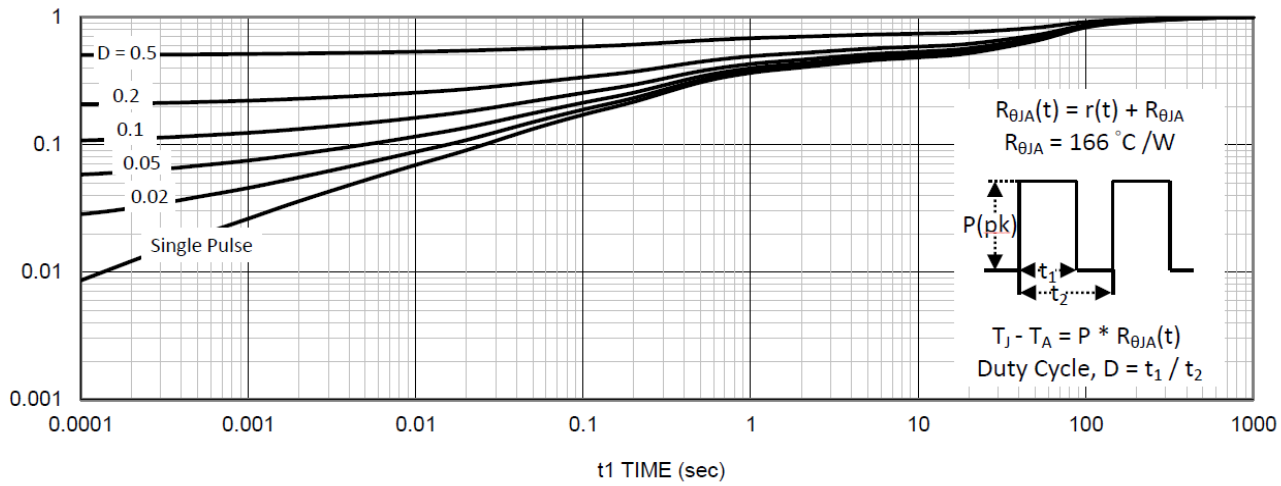
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient