Elektronische Bauelemente

SMG2305P

-4.5A , -20V , $R_{DS(ON)}$ 43 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.

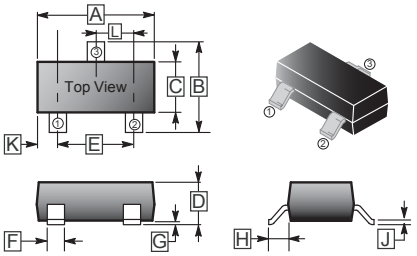
FEATURES

- 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.

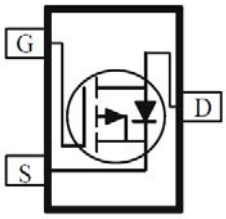
APPLICATION

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			



PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch

ABSOLUTE 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}	±8	V
Continuous Drain Current [1]	T_A=25°C	I_D	-4.5	A
	T_A=70°C		-3.6	
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°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 Data				
Maximum Junction to Ambient [1]	t ≦ 10 sec	$R_{\theta JA}$	100	°C / W
	Steady-State		166	

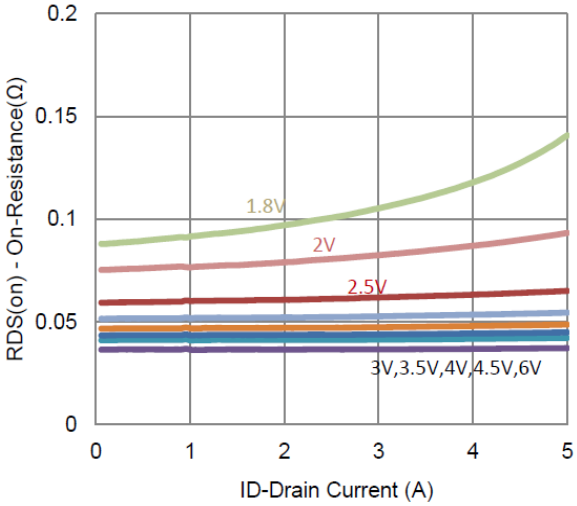
Notes:
1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

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

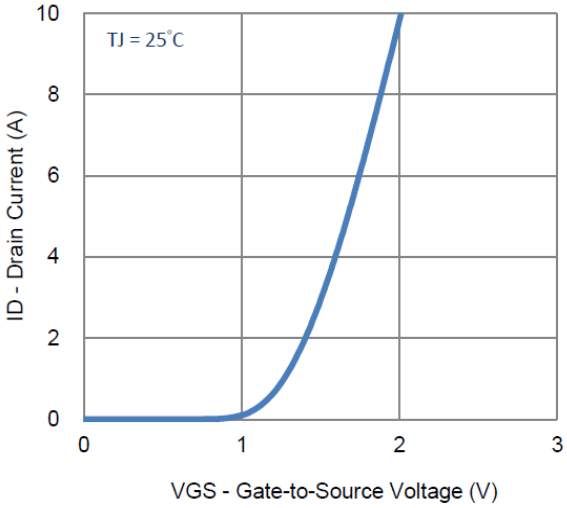
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	-0.4	-	-	V	V_{DS}=V_{GS}, I_D= -250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}= ±8V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{DS}= -16V, V_{GS}=0
		-	-	-25		V_{DS}= -16V, V_{GS}=0, 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]	$R_{DS(ON)}$	-	-	43	mΩ	V_{GS}= -4.5V, I_D= -3.6A
		-	-	54		V_{GS}= -2.5V, I_D= -2.9A
		-	-	120		V_{GS}= -1.8V, I_D= -2.1A
Forward Transconductance [1]	g_{FS}	-	12	-	S	V_{DS}= -10V,,I_D= -3.6A
Diode Forward Voltage	V_{SD}	-	-0.74	-	V	I_S= -1A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	10	-	nC	I_D= -3.6A V_{DS}= -10V V_{GS}= -4.5V
Gate-Source Charge	Q_{gs}	-	1.6	-		
Gate-Drain Charge	Q_{gd}	-	3.1	-		
Turn-On Delay Time	$Td_{(ON)}$	-	10	-	nS	I_D= -3.6A, V_{DS}= -10V, V_{GEN}= -4.5V, R_{GEN}=6Ω R_L=2.8Ω
Rise Time	T_r	-	14	-		
Turn-Off Delay Time	$Td_{(OFF)}$	-	38	-		
Fall Time	T_f	-	28	-		
Input Capacitance	C_{iss}	-	666	-	pF	V_{DS}= -15V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	88	-		
Reverse Transfer Capacitance	C_{rss}	-	80	-		

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

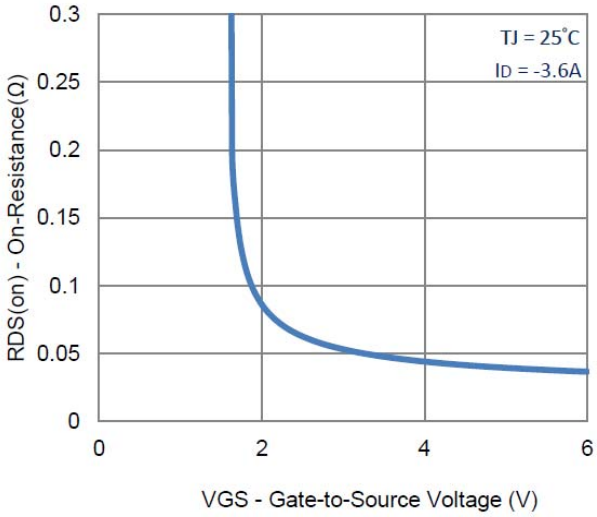
CHARACTERISTIC CURVE



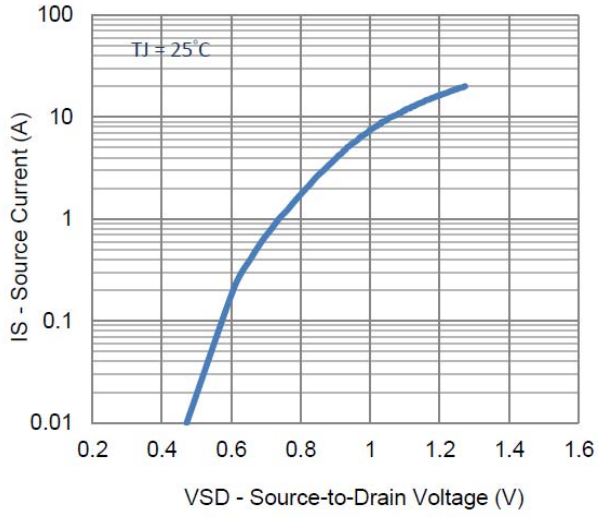
1. On-Resistance vs. Drain Current



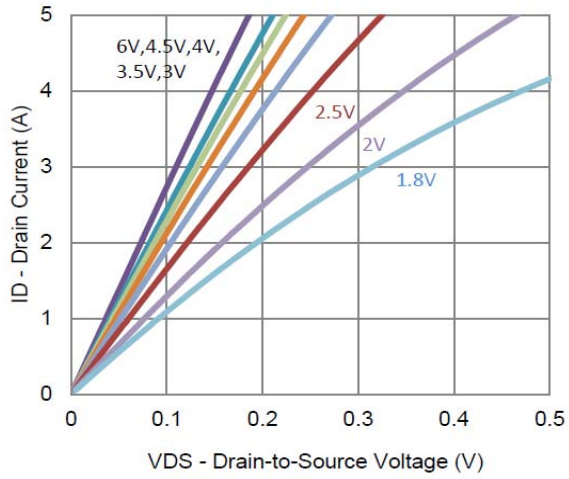
2. Transfer Characteristics



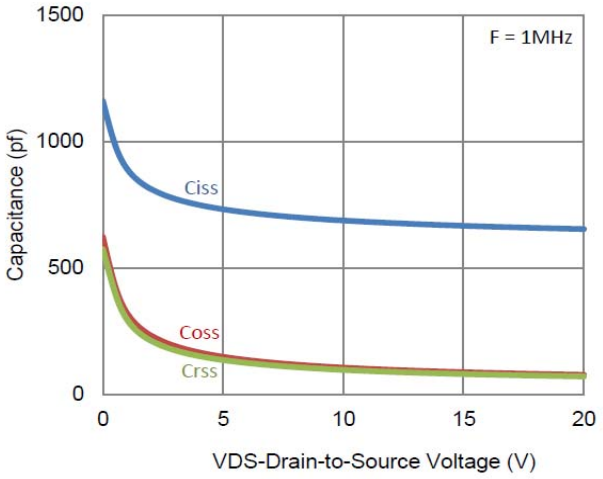
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

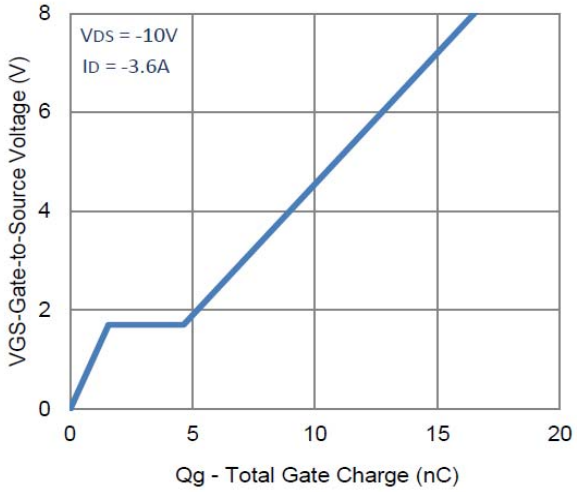


5. Output Characteristics

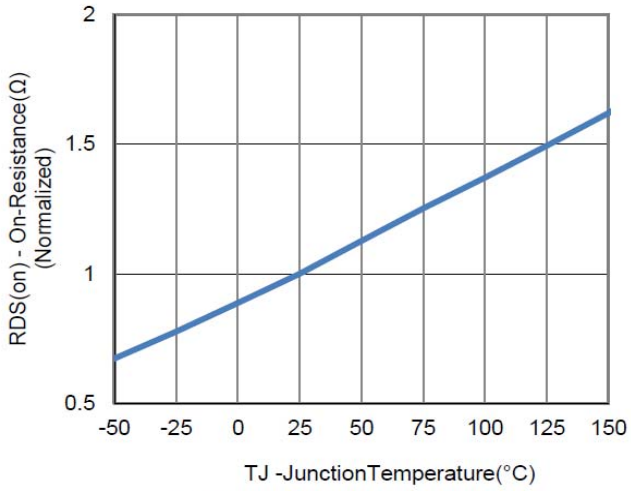


6. Capacitance

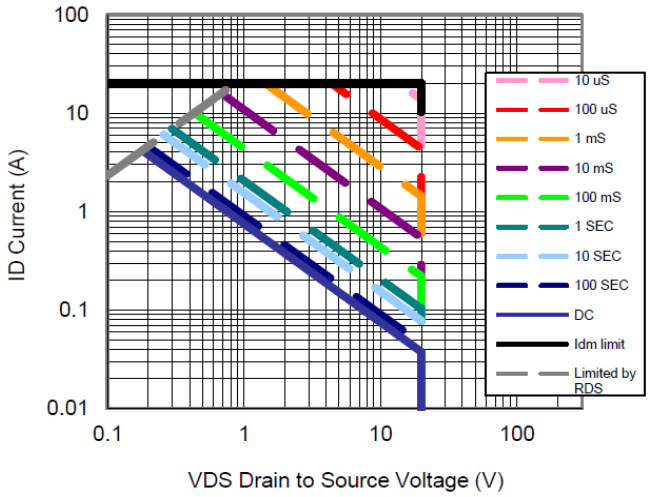
CHARACTERISTIC CURVE



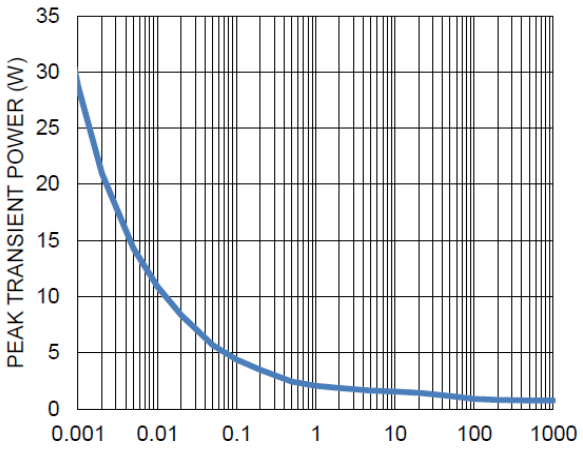
7. Gate Charge



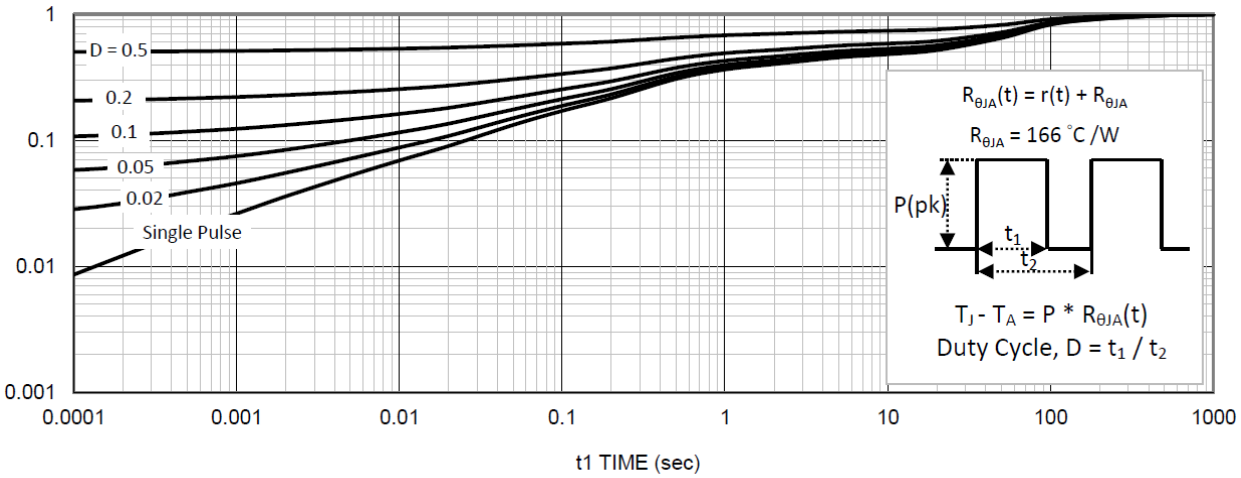
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient