Elektronische Bauelemente

SMG2305PE-C

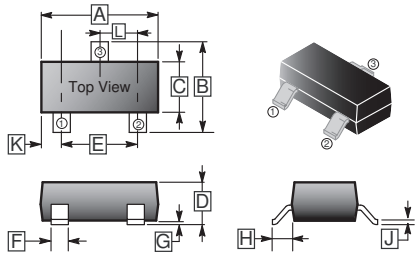
-4.5 A, -20 V, $R_{DS(ON)}$ 43 mΩ
P-Channel Enhancement MOSFET

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. 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			

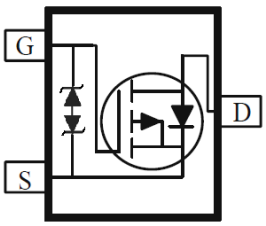
FEATURES

- 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	LeaderSize
SC-59	3K	7' inch

ESD Protection



ORDER INFORMATION

Part Number	Type
SMG2305PE-C	Lead (Pb)-free and Halogen-free

MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

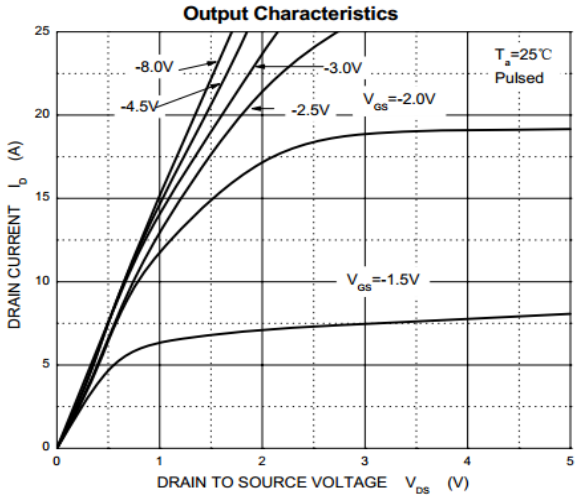
Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current [1]	T_A=25℃	I_D	-4.5	A
	T_A=70℃		-3.6	
Pulsed Drain Current [2]		I_{DM}	-20	A
Power Dissipation [1]	T_A=25℃	P_D	1.25	W
	T_A=70℃		0.8	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	℃
Thermal Resistance Data				
Maximum Junction to Ambient [1]	t≦5 sec	$R_{\theta JA}$	100	℃/W
	Steady-State		150	

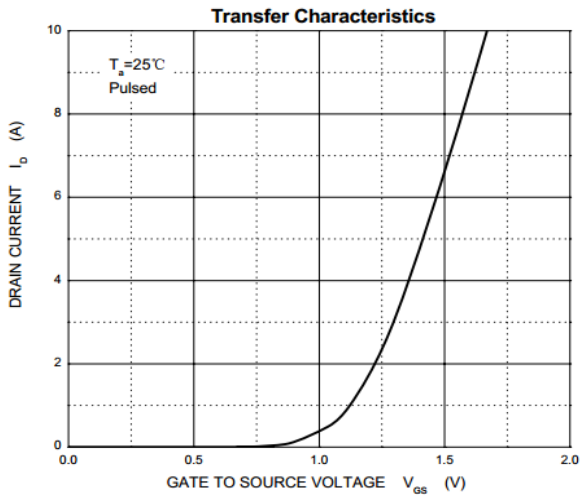
ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

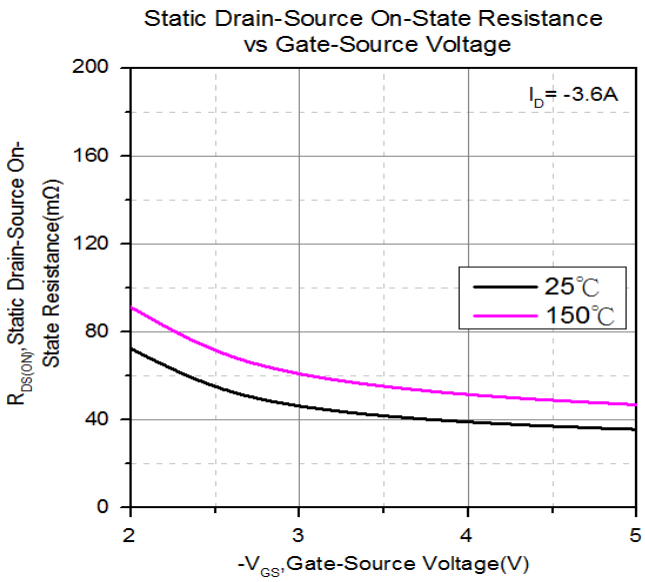
Parameter		Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-20	-	-	V	V_{GS}=0, I_D= -250μA
Gate-Threshold Voltage		$V_{GS(th)}$	-0.4	-	-0.9	V	V_{DS} = V_{GS}, I_D = -250μA
Gate-Body Leakage		I_{GSS}	-	-	±10	uA	V_{DS} = 0V, V_{GS}= ±8V
Zero Gate Voltage Drain Current	T_J=25℃	I_{DSS}	-	-	-1	μA	V_{DS} = -16V, V_{GS}= 0V
	T_J=55℃		-	-	-10		V_{DS} = -16V, V_{GS}= 0V, T_J=55℃
Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	-	43	mΩ	V_{GS}= -4.5V, I_D = -3.6A
			-	-	60		V_{GS}= -2.5V, I_D = -3.1A
			-	-	120		V_{GS}= -1.8V, I_D = -2.7A
Total Gate Charge		Q_g	-	12.0	-	nC	I_D= -2.4A V_{DS}= -5V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	2.0	-		
Gate-Drain Charge		Q_{gd}	-	2.0	-		
Turn-On Delay Time		$T_{d(on)}$	-	9.5	-	nS	V_{DD}= -10V V_{GEN}= -4V R_G=3Ω R_L=2.5Ω
Rise Time		T_r	-	17	-		
Turn-Off Delay Time		$T_{d(off)}$	-	94	-		
Fall Time		T_f	-	135	-		
Input Capacitance		C_{iss}	-	880	-	pF	V_{GS}=0, V_{DS}= -10V, f=1MHz
Output Capacitance		C_{oss}	-	131	-		
Reverse Transfer Capacitance		C_{rss}	-	116	-		
Source-Drain Diode							
Diode Forward Voltage		V_{SD}	-	-0.60	-	V	I_S= -0.46A, V_{GS}= 0V

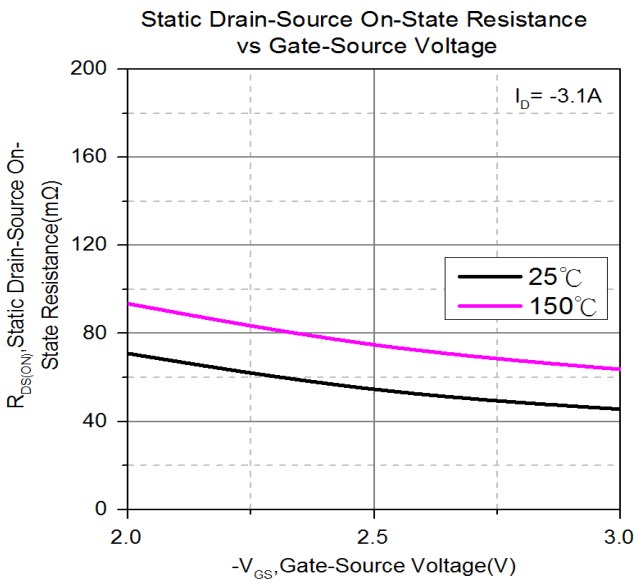
Notes:
1. Surface Mounted on 1inch^2 FR4 Board.
2. Pulse width limited by maximum junction temperature, pulse width≦300μs, duty cycle≦2%.
3. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

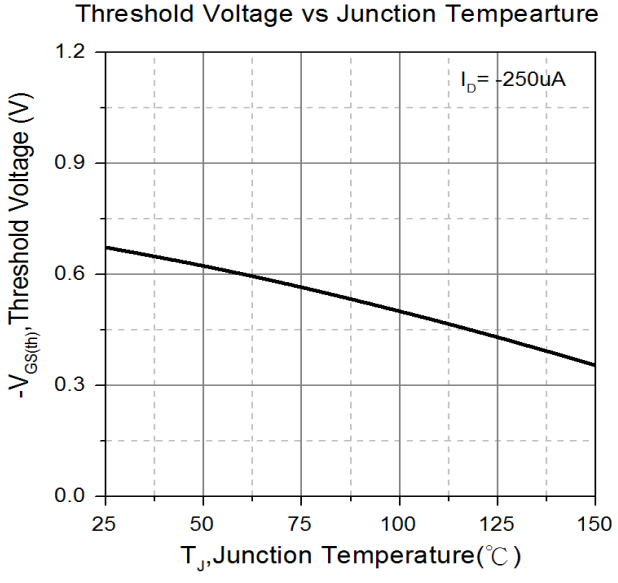
CHARACTERISTIC CURVE

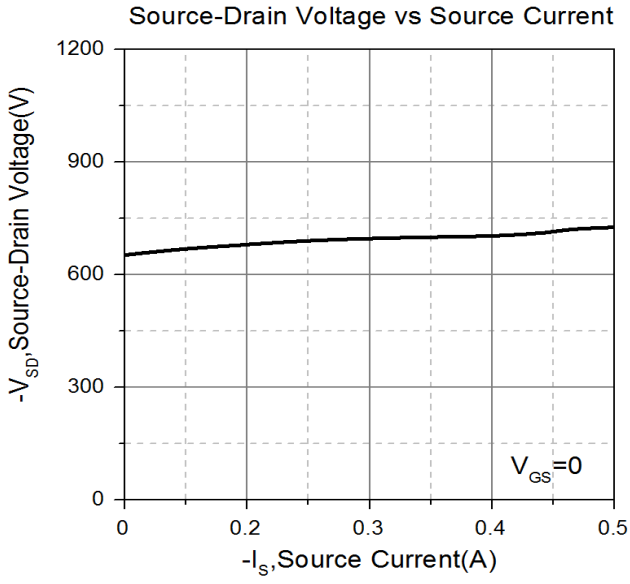






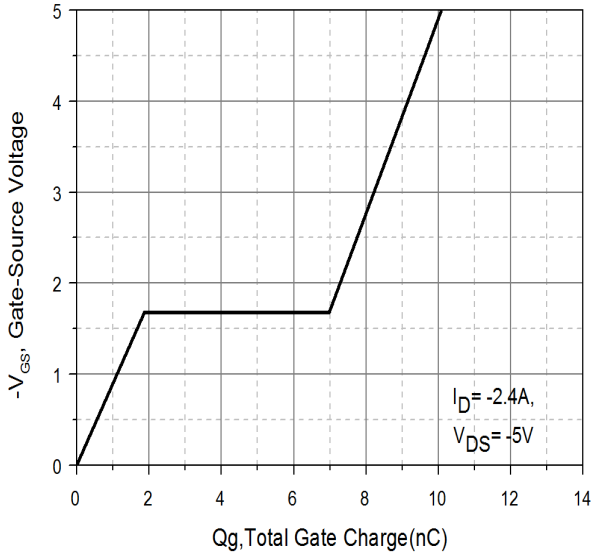




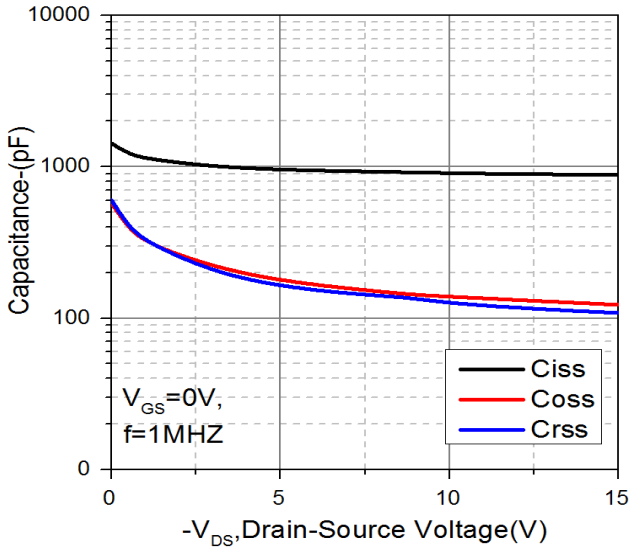


CHARACTERISTIC CURVE

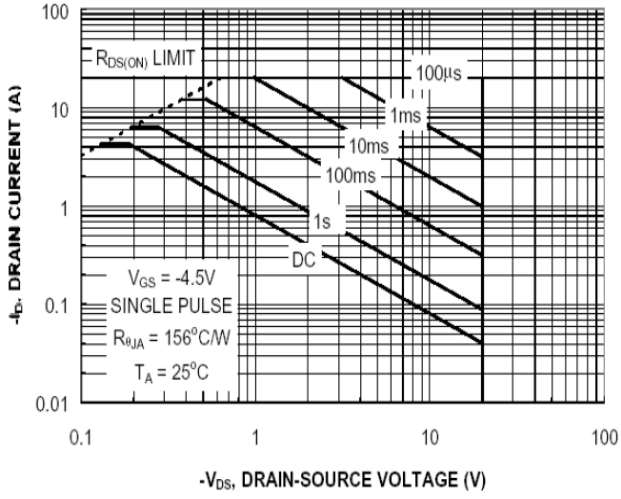
Gate Charge Characteristics



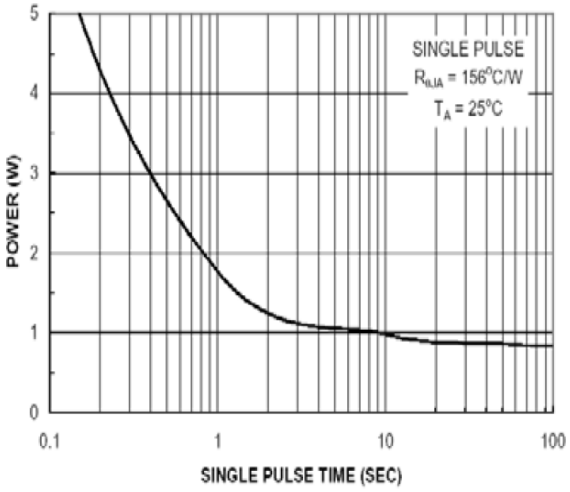
Capacitance vs Drain-to-Source Voltage



Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Normalized Thermal Transient Junction to Ambient