Elektronische Bauelemente

SMS3009E-C

0.6A, 30V, $R_{DS(ON)}$ 700mΩ
N-Ch Enhancement Mode Power MOSFET

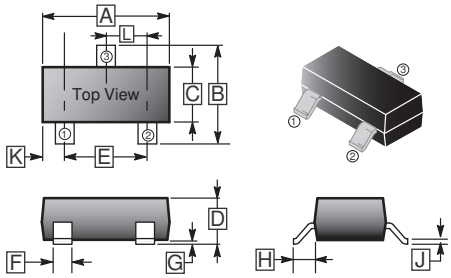
RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTIONS

The SMS3009E-C is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

This device is suitable for use in DC-DC conversion, load switch and level shift.

SOT-23



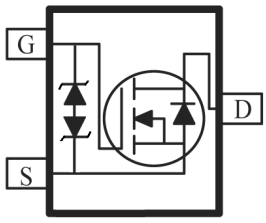
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.18
B	2.10	3.00	H	0.55 REF.	
C	1.20	1.80	J	0.08	0.26
D	0.89	1.3	K	0.6 REF.	
E	1.70	2.3	L	0.95 BSC.	
F	0.30	0.50			

FEATURES

- Reliable and Rugged
- Green Device Available
- ESD Protection

MARKING

3009E



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS3009E-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [1], V_{GS}=4.5V	T_A=25°C	I_D	0.6	A
	T_A=70°C		0.48	
Pulsed Drain Current [3]		I_{DM}	2.4	A
Power Dissipation	T_A=25°C	P_D	0.35	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Data				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	357	°C/W
Thermal Resistance Junction-Ambient [2]			500	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	250	

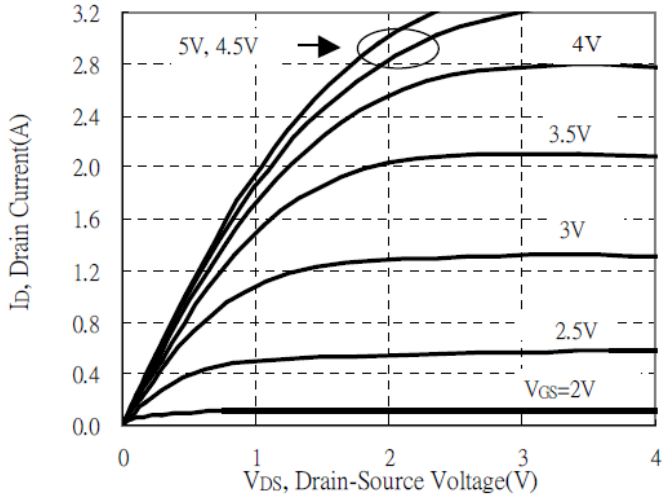
ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(TH)}$	0.6	-	1.3	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current		I_{GSS}	-	-	±10	μA	V_{GS}= ±12V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=24V, V_{GS}=0
	T_J=55°C		-	-	25		V_{DS}=24V, V_{GS}=0
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	700	mΩ	V_{GS}=4.5V, I_D=200mA
			-	-	1250		V_{GS}=2.5V, I_D=100mA
			-	-	2000		V_{GS}=1.8V, I_D=50mA
Total Gate Charge		Q_g	-	1.4	-	nC	I_{DS}=0.6A V_{DS}=15V V_{GS}=4.5v
Gate-Source Charge		Q_{gs}	-	0.32	-		
Gate-Drain Charge		Q_{gs}	-	0.46	-		
Turn-on Delay Time		$T_{d(on)}$	-	8.6	-	nS	V_{DD}=15V I_{DS}=0.25A V_{GS}=4V R_{GEN}=10Ω
Rise Time		T_r	-	17.4	-		
Turn-off Delay Time		$T_{d(off)}$	-	16.4	-		
Fall Time		T_f	-	16.4	-		
Input Capacitance		C_{iss}	-	41.93	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	7.37	-		
Reverse Transfer Capacitance		C_{rss}	-	5.33	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	0.6	A	
Pulsed Source Current [3]		I_{SM}	-	-	2.4	A	
Diode Forward Voltage [4]		V_{SD}	-	0.85	1.2	V	V_{GS}=0, I_S=0.3A, T_J=25°C
Reverse Recovery Time		t_{rr}	-	6.7	-	nS	I_F=0.5A, dI/dt=100A/μs T_J=25°C
Reverse Recovery Charge		Q_{rr}	-	2.1	-	nC	

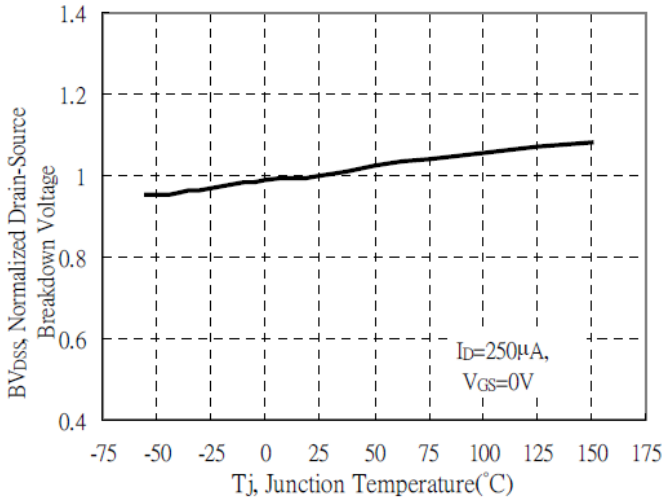
Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2. Surface mounted on FR4 Board using the minimum recommended pad size.
3. Pulse width limited by maximum junction temperature, Pulse Width≦300μs, Duty Cycle≦1%.
4. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.

CHARACTERISTIC CURVES

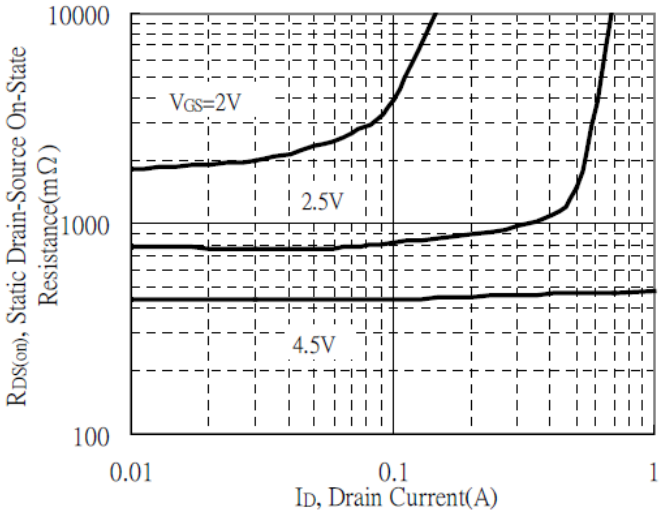
Typical Output Characteristics



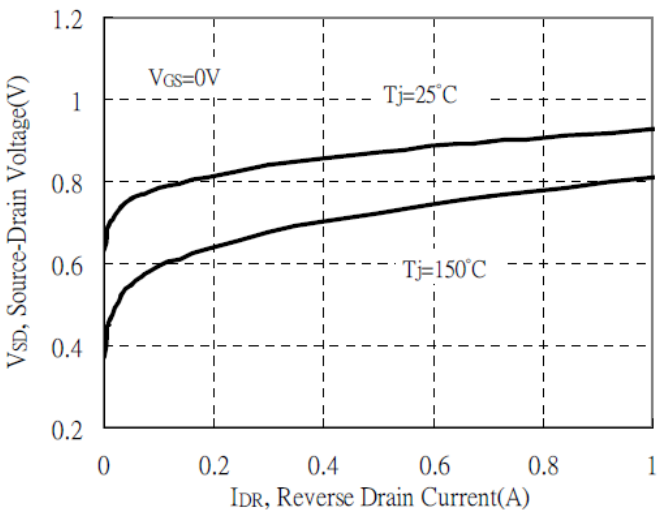
Brekdown Voltage vs Ambient Temperature



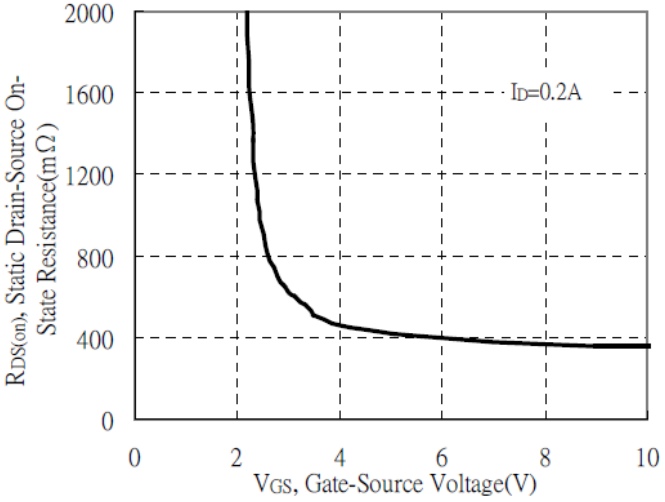
Static Drain-Source On-State resistance vs Drain Current



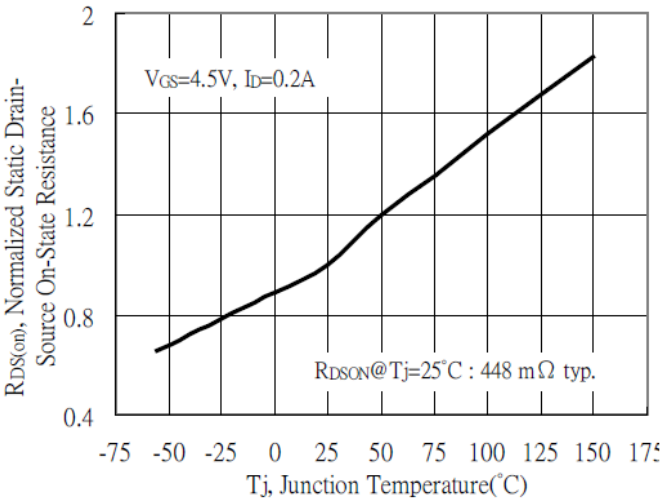
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

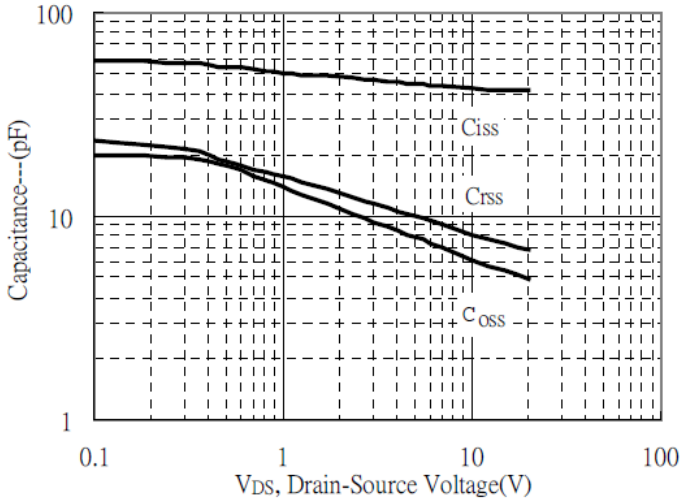


Drain-Source On-State Resistance vs Junction Tempearture

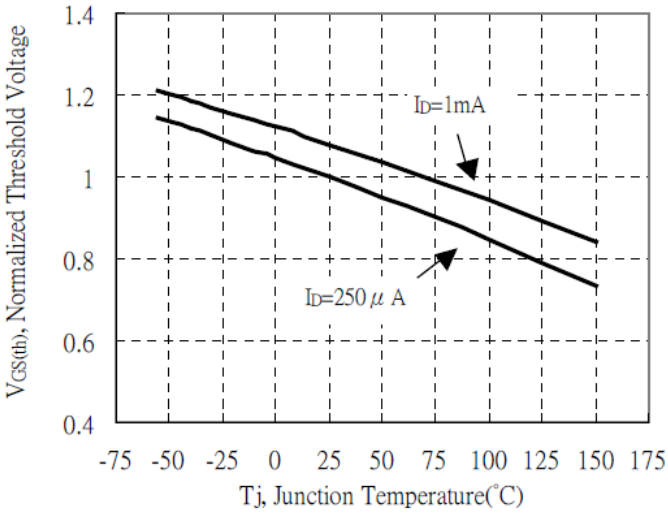


CHARACTERISTIC CURVES

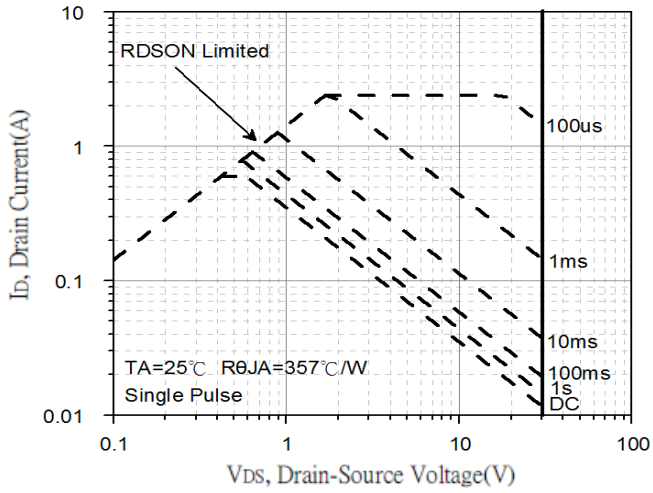
Capacitance vs Drain-to-Source Voltage



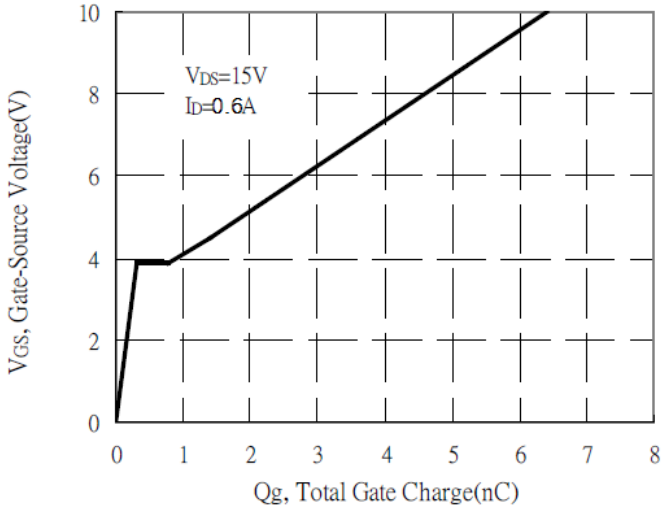
Threshold Voltage vs Junction Tempearture



Maximum Safe Operating Area



Gate Charge Characteristics



Transient Thermal Response Curves