Elektronische Bauelemente

SMS2001-C

-2A, -20V, $R_{DS(ON)}$ 200mΩ

P-Channel Enhancement Mode Power MOSFET

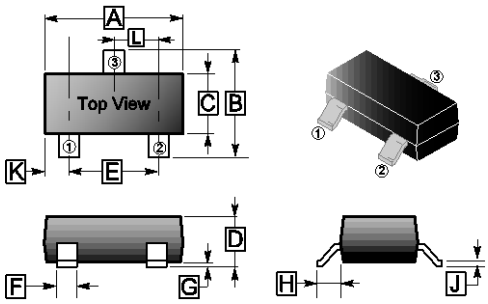
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS2001-C is the highest performance trench P-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications.

The SMS2001-C meet the RoHS and Green Product requirement with full function reliability approved.

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	0	0.18
B	2.10	3.00	H	0.55 REF.	
C	1.10	1.80	J	0.05	0.26
D	0	1.40	K	0.60 REF.	
E	1.70	2.30	L	0.95 TYP.	
F	0.28	0.55			

FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING

2001

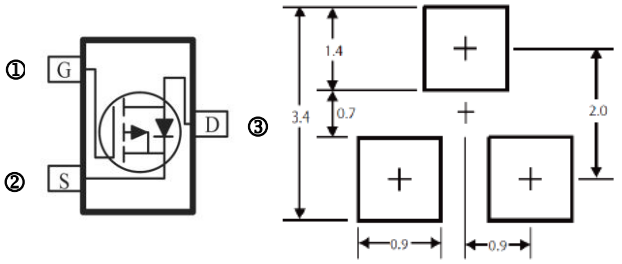
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS2001-C	Lead (Pb)-free and Halogen-free

Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current @V_{GS}= -4.5V [1]	T_A=25°C	I_D	-2	A
	T_A=70°C		-1.6	
Pulsed Drain Current [3]		I_{DM}	-8	A
Power Dissipation	T_A=25°C	P_D	1	W
Operating Junction & Storage Temperature		T_J, T_{STG}	-55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦5sec, 125	°C/W
			Steady State, 250	
Thermal Resistance Junction-Ambient [2]			415	

ELECTRICAL CHARACTERISTICS (T_J=25°C 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		$V_{GS(th)}$	-0.45	-	-1	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Tranconductance		g_{fs}	-	3.4	-	S	V_{DS}= -5V, I_D= -2A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±8V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	-1	μA	V_{DS}= -16V, V_{GS}=0
	T_J=55°C		-	-	-10		
Static Drain-Source On-Resistance [3]		$R_{DS(ON)}$	-	150	200	mΩ	V_{GS}= -4.5V, I_D= -2A
			-	200	280		V_{GS}= -2.5V, I_D= -1.5A
Total Gate Charge [3]		Q_g	-	4.6	-	nC	I_D= -2A V_{DS}= -20V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	0.27	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	2.34	-		
Turn-on Delay Time [3]		$T_{d(on)}$	-	11.6	-	nS	V_{DS}= -12V V_{GS}= -4.5V I_D= -1A R_G=3.3Ω
Rise Time		T_r	-	6.2	-		
Turn-off Delay Time		$T_{d(off)}$	-	31.8	-		
Fall Time		T_f	-	2.8	-		
Input Capacitance		C_{iss}	-	194	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	35.5	-		
Reverse Transfer Capacitance		C_{rss}	-	28.2	-		
Source-Drain Diode							
Forward on Voltage [4]		V_{SD}	-	-0.85	-1.2	V	I_S= -1A, V_{GS}=0
Continuous Source Current [1]		I_S	-	-	-2	A	
Pulsed Source Current [3]		I_{SM}	-	-	-8		

Notes:
1. Surface Mounted on 1”x1” FR-4 Board with 2oz copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, Pulse Width≤10μs, Duty Cycle≤1%.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

CHARACTERISTIC CURVES

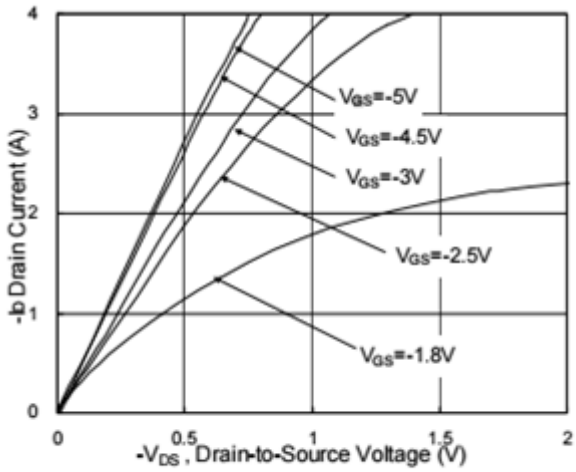


Fig.1 Typical Output Characteristics

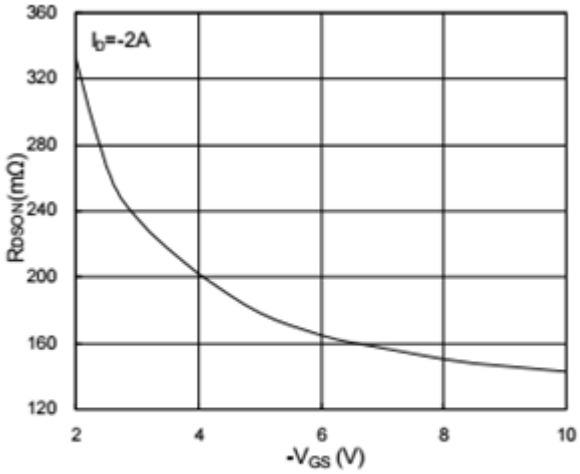


Fig.2 On-Resistance vs. Gate-Source

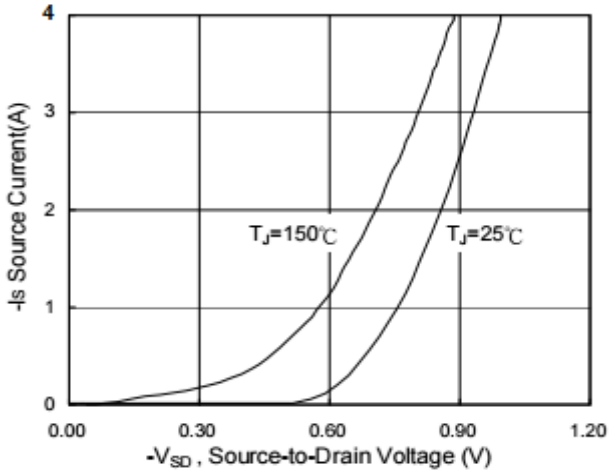


Fig.3 Forward Characteristics Of Reverse

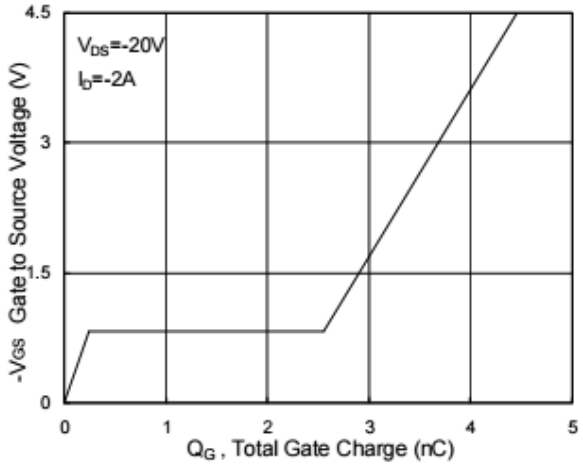


Fig.4 Gate-Charge Characteristics

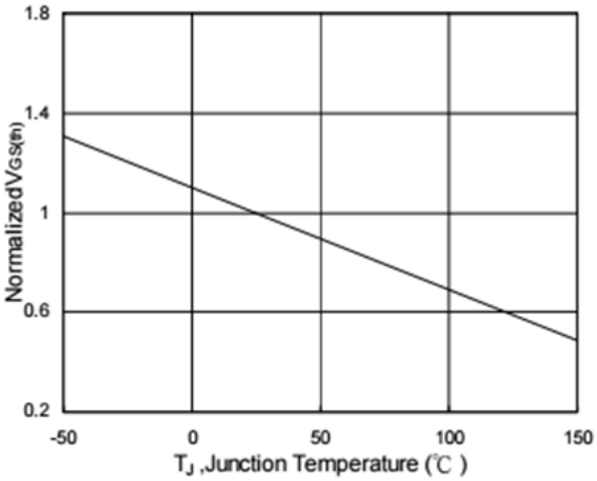


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

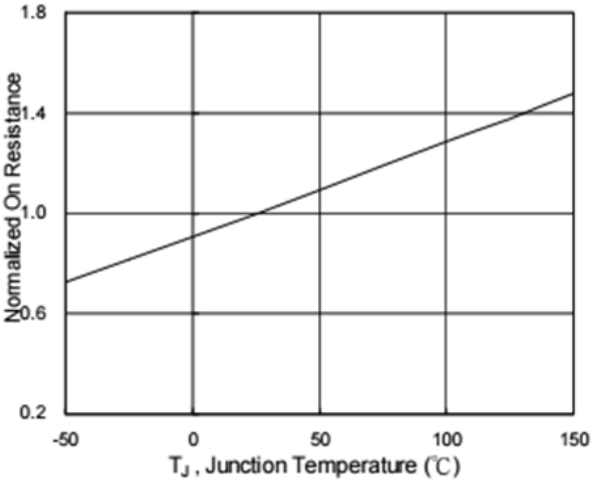


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

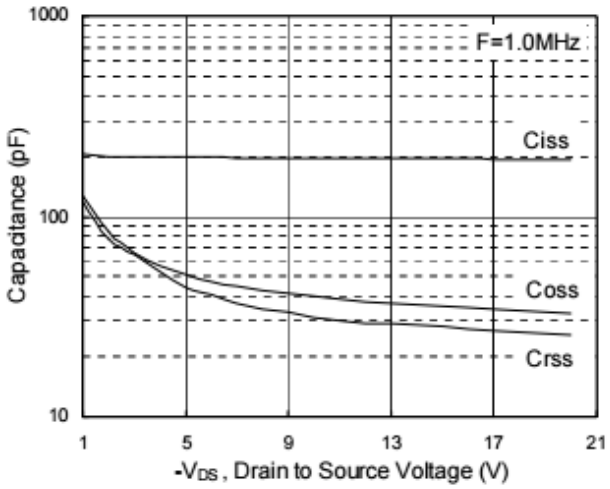


Fig.7 Capacitance

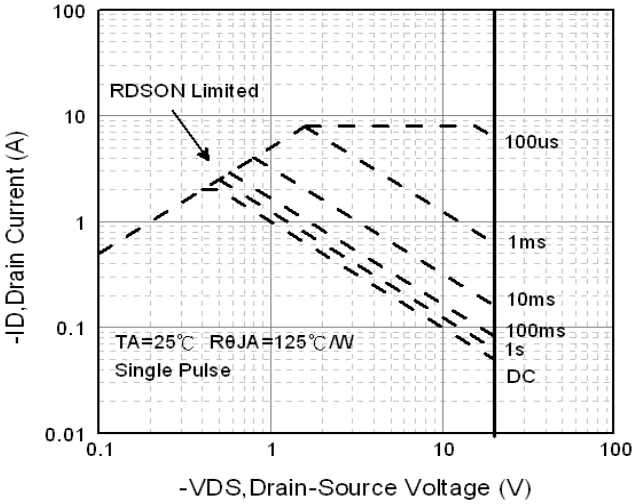


Fig.8 Safe Operating Area

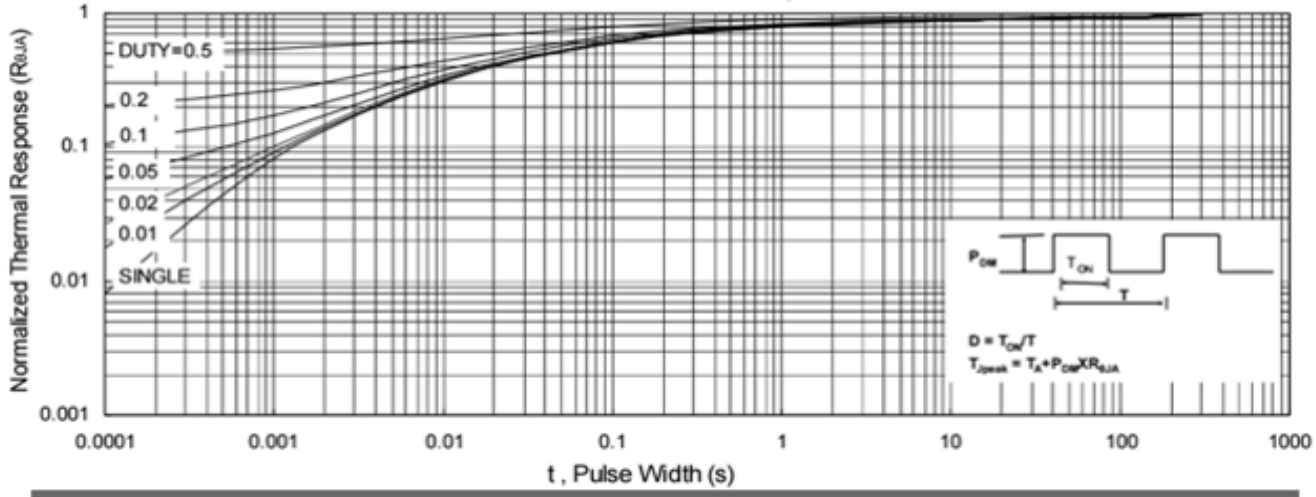


Fig.9 Normalized Maximum Transient Thermal Impedance

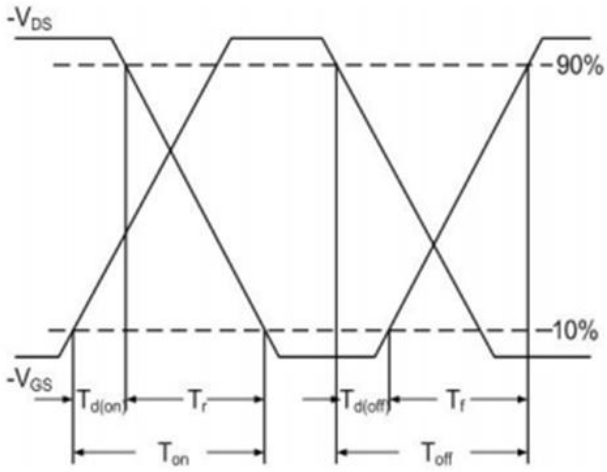


Fig.10 Switching Time Waveform

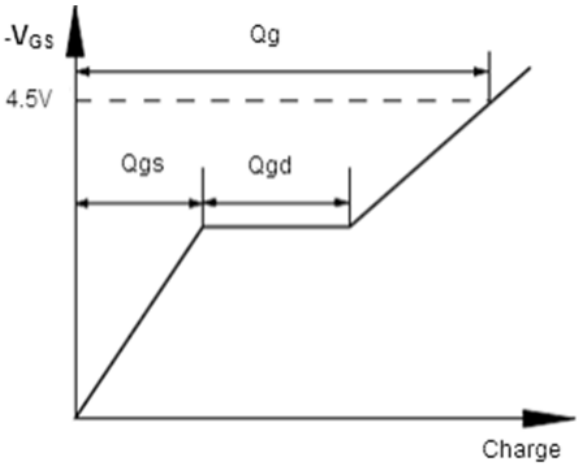


Fig.11 Gate Charge Waveform