Elektronische Bauelemente

SMS3001-C

-4.3A, -30V, $R_{DS(ON)}$ 53mΩ

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

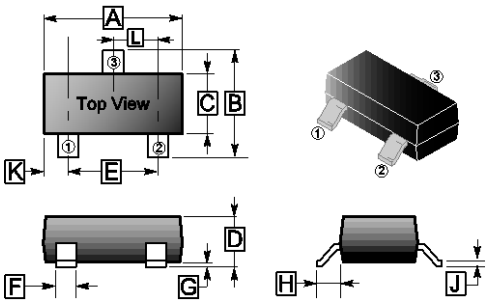
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS3001-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 SMS3001-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	0.08	0.26
D	0.89	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
- Green Device Available

MARKING

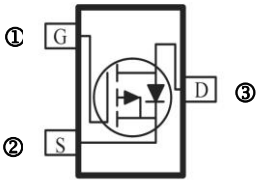
3001

PACKAGE INFORMATION

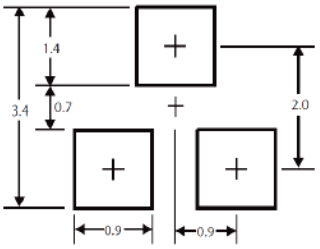
Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS3001-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}	-30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current @V_{GS}= -10V [1]	T_A=25°C	I_D	-4.3	A
	T_A=70°C		-3.5	
Pulsed Drain Current [3]		I_{DM}	-20	A
Power Dissipation	T_A=25°C	P_D	1	W
Operating Junction & Storage Temperature		T_J, T_{STG}	150, -55~150	°C
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦5s,125	°C/W
			Steady State, 250	
Thermal Resistance Junction- Ambient [2]		$R_{\theta JA}$	313	

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		$V_{GS(th)}$	-0.3	-	-1.2	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Tranconductance		g_{fs}	-	5.6	-	S	V_{DS}= -5V, I_D= -3A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	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		-	-	-5		
Static Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	53	mΩ	V_{GS}= -10V, I_D= -4A
			-	-	60		V_{GS}= -4.5V, I_D= -3.5A
			-	-	80		V_{GS}= -2.5V, I_D= -2.5A
Total Gate Charge		Q_g	-	11.9	-	nC	I_D= -3A V_{DS}= -15V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	1.8	-		
Gate-Drain Charge		Q_{gd}	-	3	-		
Turn-on Delay Time		$T_{d(on)}$	-	6.6	-	nS	I_D= -3A V_{GS}= -4.5V V_{DD}= -15V R_G=3.3Ω
Rise Time		T_r	-	27.8	-		
Turn-off Delay Time		$T_{d(off)}$	-	46.2	-		
Fall Time		T_f	-	20.6	-		
Input Capacitance		C_{iss}	-	920	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	73	-		
Reverse Transfer Capacitance		C_{rss}	-	71	-		
Source-Drain Diode							
Forward Voltage [4]		V_{SD}	-	-	-1.2	V	V_{GS}=0, I_S= -1A, T_J=25°C
Continuous Source Current [1]		I_S	-	-	-4.3	A	
Pulsed Source Current [3]		I_{SM}	-	-	-20	A	

Notes:
1. The data tested by surface mounted on 1inch^2 FR-4 Board with 2oz copper.
2. When mounted on Min. copper pad.
3. Pulse width limited by maximum junction temperature, Pulse Width≤300μs, Duty Cycle≤2%.
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

CHARACTERISTIC CURVES

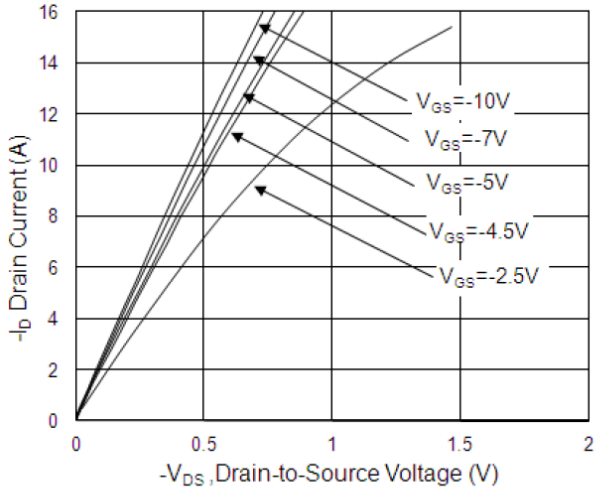


Fig.1 Typical Output Characteristics

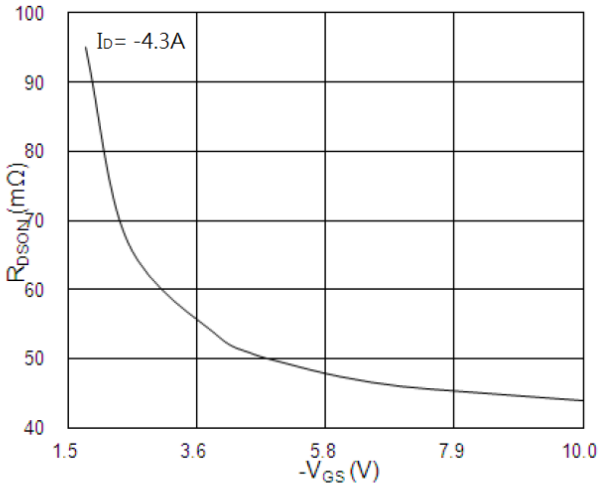


Fig.2 On-Resistance vs. G-S Voltage

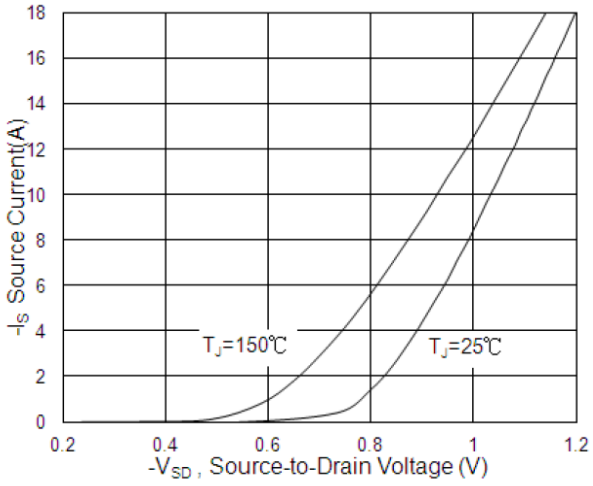


Fig.3 Forward Characteristics Of Reverse

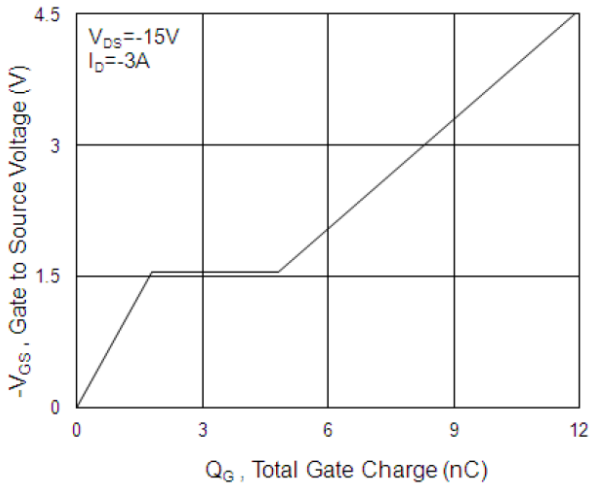


Fig.4 Gate-Charge Characteristics

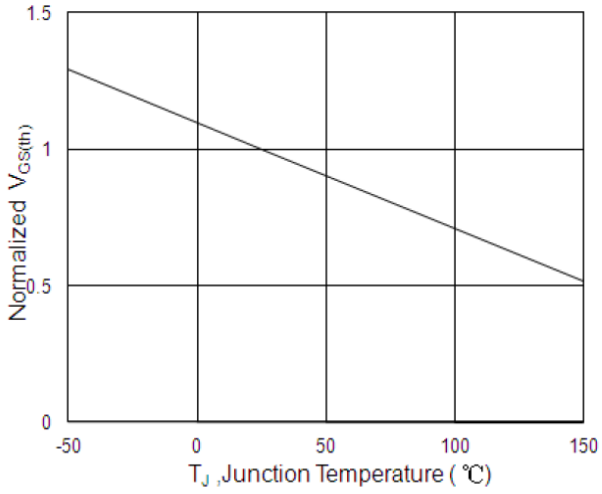


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

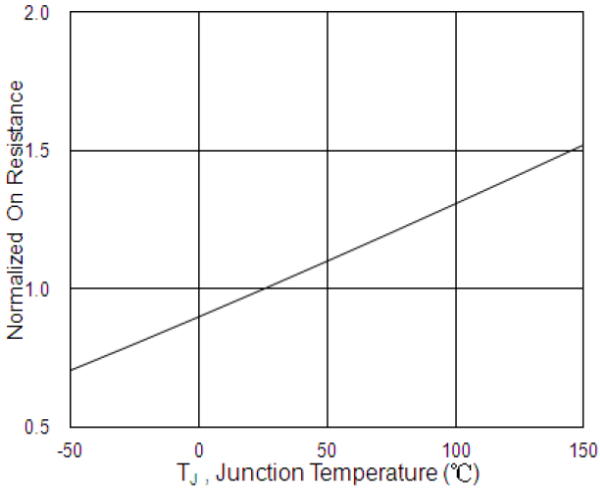


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTIC CURVES

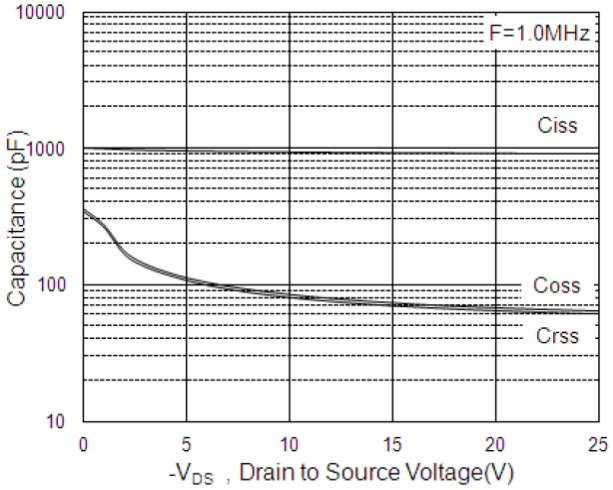


Fig.7 Capacitance

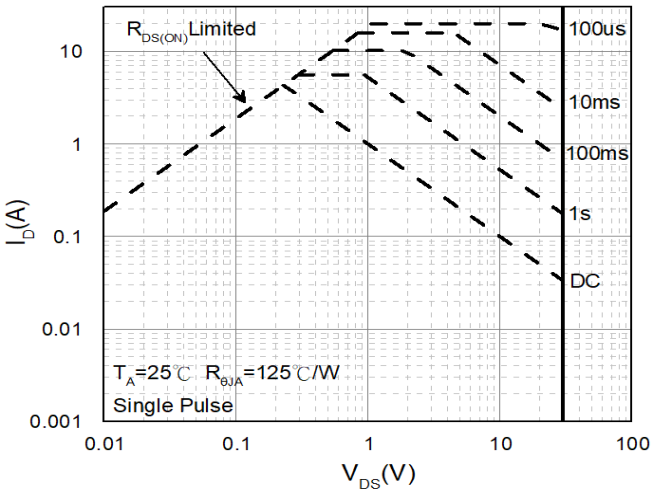


Fig.8 Safe Operating Area

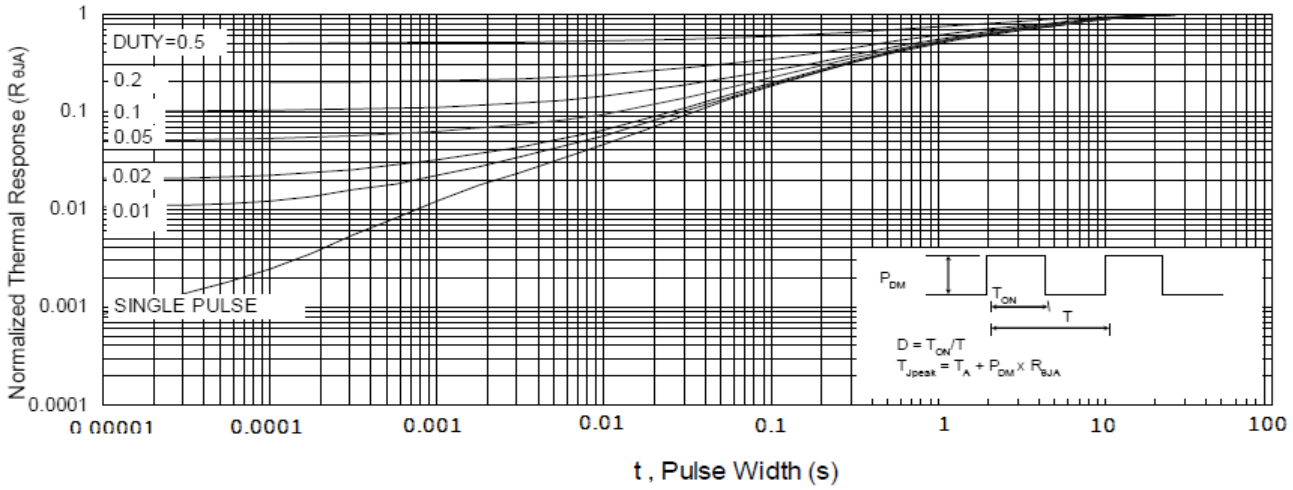


Fig.9 Normalized Maximum Transient Thermal Impedance

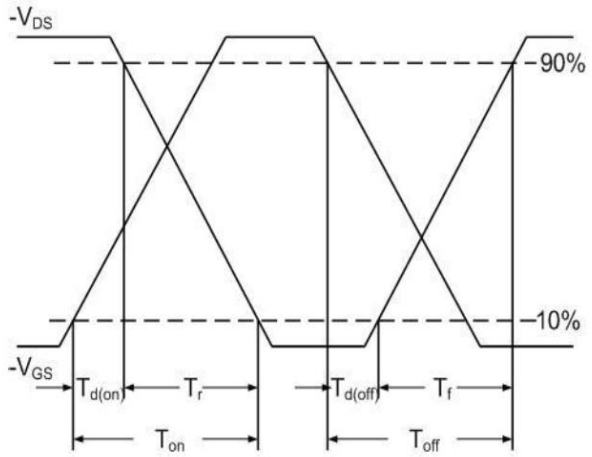


Fig.10 Switching Time Waveform

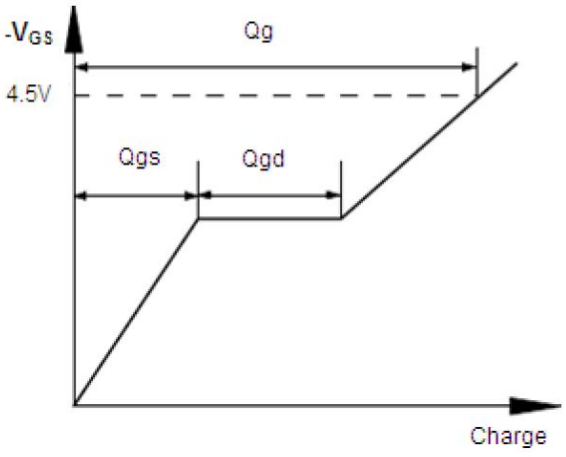


Fig.11 Gate Charge Waveform