

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

### DESCRIPTION

The SMS2301Y-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 SMS2301Y-C meet the RoHS and Green Product requirement with full function reliability approved.

### FEATURES

- Advanced High Cell Density Trench Technology
- Super low Gate Charge
- Green Device Available

### MARKING

**S1.**

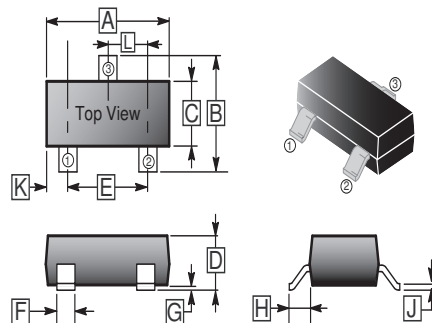
### PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

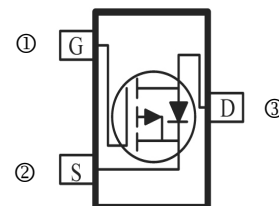
### ORDER INFORMATION

Part Number	Type
SMS2301Y-C	Lead (Pb)-free and Halogen-free

### SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.18
B	2.10	2.95	H	0.55	REF.
C	1.20	1.7	J	0.08	0.20
D	0.89	1.3	K	0.6	REF.
E	1.70	2.3	L	0.95	BSC.
F	0.30	0.50			



### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Continuous Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current <sup>1</sup> @ $V_{GS} = -4.5\text{V}$	$I_D$	$T_A=25^\circ\text{C}$	-3.4
		$T_A=70^\circ\text{C}$	-2.7
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-14	A
Total Power Dissipation	$P_D$	1	W
Thermal Resistance from Junction-Ambient <sup>1</sup>	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$BV_{DSS}$	-20	-	-	V	$V_{GS}=0, I_D=-250\mu\text{A}$
Drain-Source Leakage Current	$I_{DSS}$	-	-	-1	$\mu\text{A}$	$V_{GS}=0, V_{DS}=-16\text{V}$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 10\text{V}, V_{DS}=0$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-0.4	-	-1	V	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$
Static Drain-Source On Resistance <sup>2</sup>	$R_{DS(ON)}$	-	-	64	m $\Omega$	$V_{GS}=-4.5\text{V}, I_D=-3.4\text{A}$
		-	-	80		$V_{GS}=-2.5\text{V}, I_D=-3\text{A}$
		-	-	110		$V_{GS}=-1.8\text{V}, I_D=-2.5\text{A}$
Total Gate Charge	$Q_g$	-	4.3	-	nC	$V_{DS}=-10\text{V}$ $V_{GS}=-4.5\text{V}$ $I_D=-3.4\text{A}$
Gate-Source Charge	$Q_{gs}$	-	0.8	-		
Gate-Drain ("Miller") Charge	$Q_{gd}$	-	1.1	-		
Turn-On Delay Time	$T_{d(on)}$	-	12	-	nS	$I_D=-1\text{A}$ $V_{DD}=-10\text{V}$ $V_{GS}=-4.5\text{V}$
Rise Time	$T_r$	-	54	-		
Turn-Off Delay Time	$T_{d(off)}$	-	15	-		
Fall Time	$T_f$	-	9	-		
Input Capacitance	$C_{iss}$	-	550	-	pF	$V_{DS}=-10\text{V}$ $V_{GS}=0$ $f=1\text{MHz}$
Output Capacitance	$C_{oss}$	-	89	-		
Reverse Transfer Capacitance	$C_{rss}$	-	65	-		
<b>Source Drain Diode</b>						
Continuous Source Current <sup>1</sup>	$I_S$	-	-	-3.4	A	
Forward On Voltage <sup>2</sup>	$V_{SD}$	-	-0.8	-1.2	V	$I_S=-3.4\text{A}, V_{GS}=0$

Notes:

- Surface mounted on FR-4 board 1inch x 0.85inch x 0.062inch.
- The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .

**TYPICAL CHARACTERISTIC CURVE**

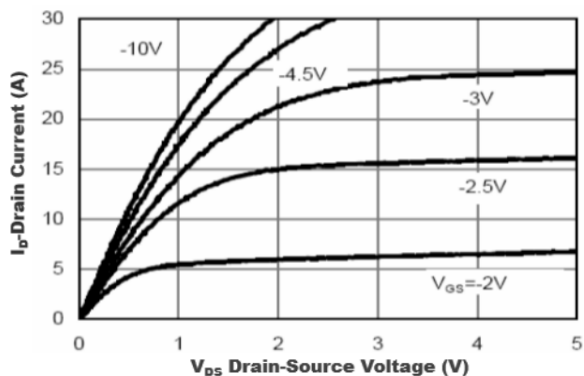


Figure1. Output Characteristics

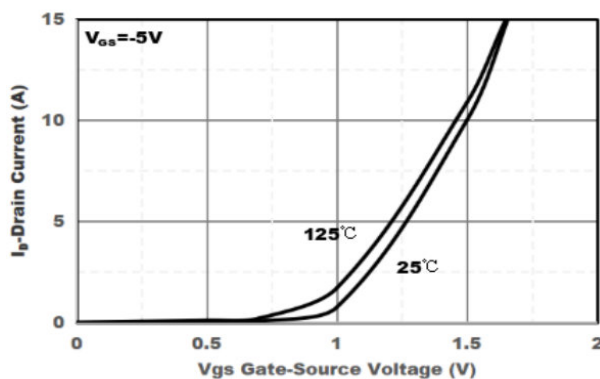


Figure2. Transfer Characteristics

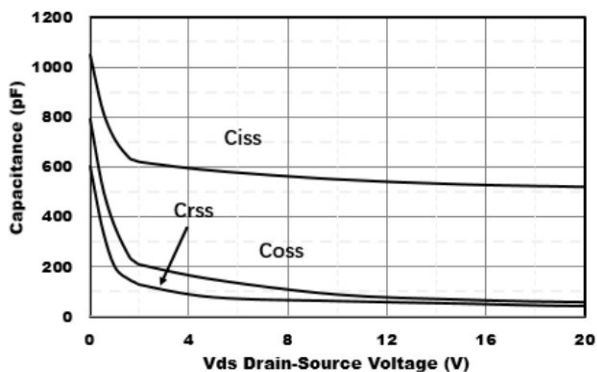


Figure3. Capacitance Characteristics

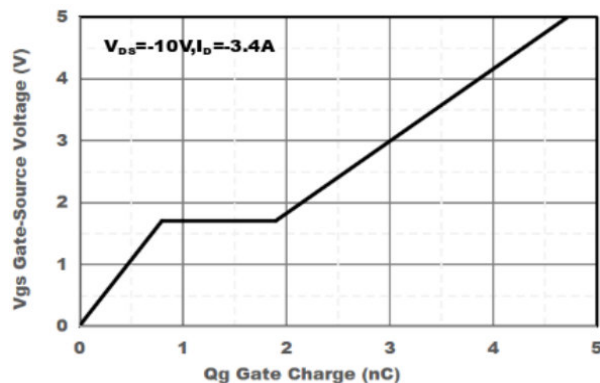


Figure4. Gate Charge

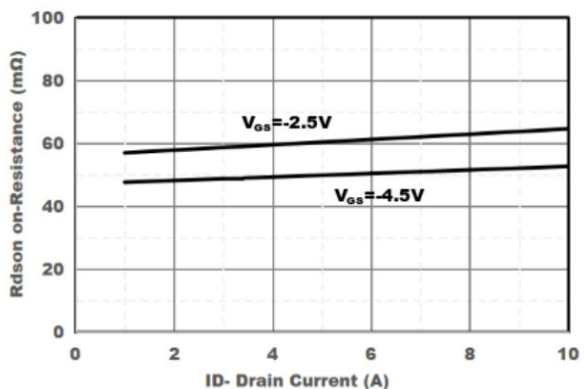


Figure5. Drain-Source on Resistance

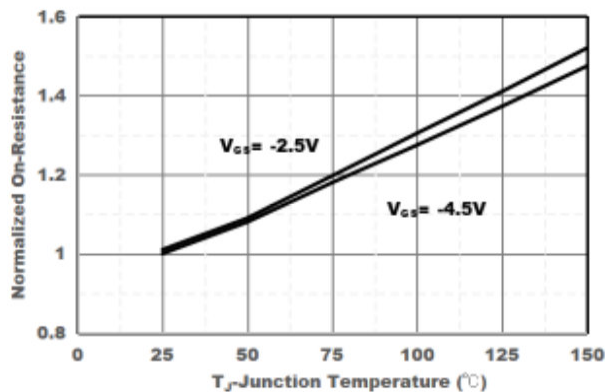


Figure6. Drain-Source on Resistance

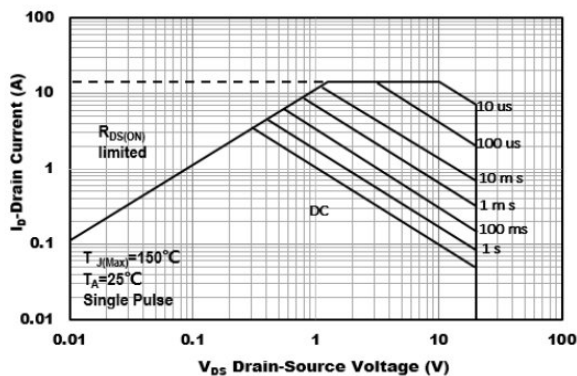


Figure7. Safe Operation Area