

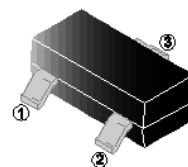
RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

### DESCRIPTION

The SMS2302J-C is the highest performance trench N-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 SMS2302J-C meet the RoHS and Green Product requirement with full function reliability approved.

### SOT-23



### FEATURES

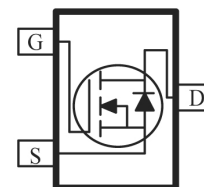
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

### MARKING

S2

### PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



### ORDER INFORMATION

Part Number	Type
SMS2302J-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	2.1	A
Total Power Dissipation	$P_D$	0.4	W
Operating Junction & Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^\circ\text{C}$
Thermal Resistance Rating			
Thermal Resistance Junction-ambient	$t \leq 5\text{sec}$	$R_{\theta JA}$	312.5
			$^\circ\text{C/W}$

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

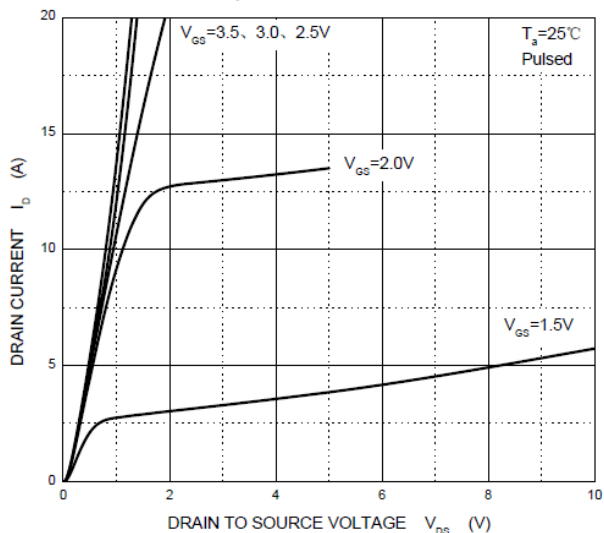
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	$BV_{DSS}$	20	-	-	V	$V_{GS}=0V, I_D=10\mu A$
Gate-Threshold Voltage	$V_{GS(th)}$	0.65	-	1.2	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Forward Transfer Conductance <sup>1</sup>	$g_{fs}$	-	8	-	S	$V_{DS}=5V, I_D=3.6A$
Drain-Source Leakage Current	$I_{DSS}$	-	-	1	$\mu A$	$V_{DS}=20V, V_{GS}=0$
Gate-Source Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{DS}=0V, V_{GS}=\pm 8V$
Static Drain-Source On-Resistance <sup>1</sup>	$R_{DS(ON)}$	-	35	60	m $\Omega$	$V_{GS}=4.5V, I_D=3.6A$
		-	45	115		$V_{GS}=2.5V, I_D=3.1A$
Total Gate Charge	$Q_g$	-	4	-	nC	$V_{DS}=10V$ $V_{GS}=4.5V$ $I_D=3.6A$
Gate-Source Charge	$Q_{gs}$	-	0.65	-		
Gate-Drain ("Miller") Charge	$Q_{gd}$	-	1.5	-		
Turn-on Delay Time	$T_{d(on)}$	-	7	-	nS	$V_{DD}=10V$ $V_{GS}=4.5V$ $R_G=6\Omega$ $I_D=3.6A$
Rise Time	$T_r$	-	55	-		
Turn-off Delay Time	$T_{d(off)}$	-	16	-		
Fall Time	$T_f$	-	10	-		
Input Capacitance	$C_{iss}$	-	300	-	pF	$V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$
Output Capacitance	$C_{oss}$	-	120	-		
Reverse Transfer Capacitance	$C_{rss}$	-	80	-		
<b>Source Drain Diode</b>						
Continuous Source Current	$I_S$	-	-	2.1	A	
Forward On Voltage	$V_{SD}$	-	0.76	1.2	V	$I_S=0.94A, V_{GS}=0V$

Note:

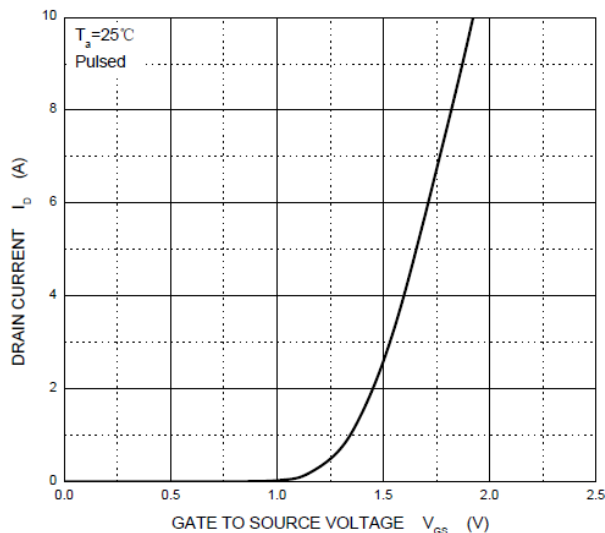
- The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$ .

**TYPICAL CHARACTERISTIC CURVES**

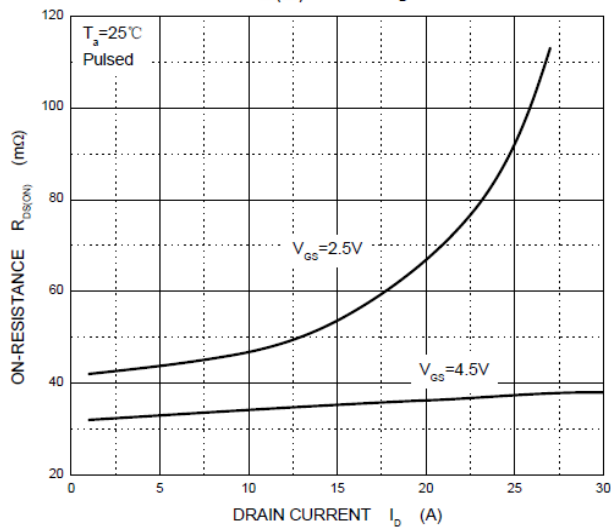
Output Characteristics



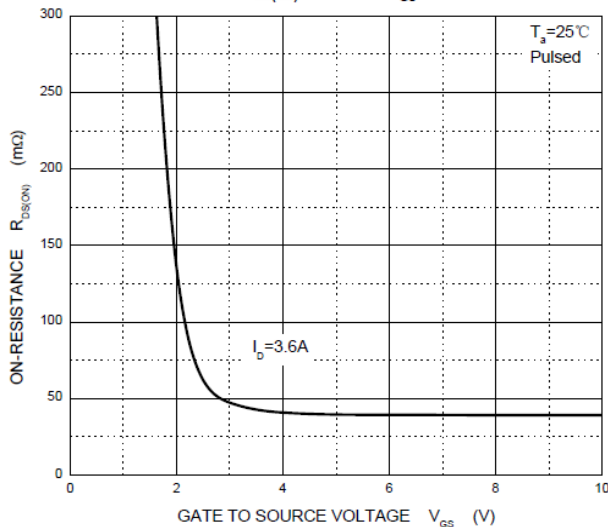
Transfer Characteristics



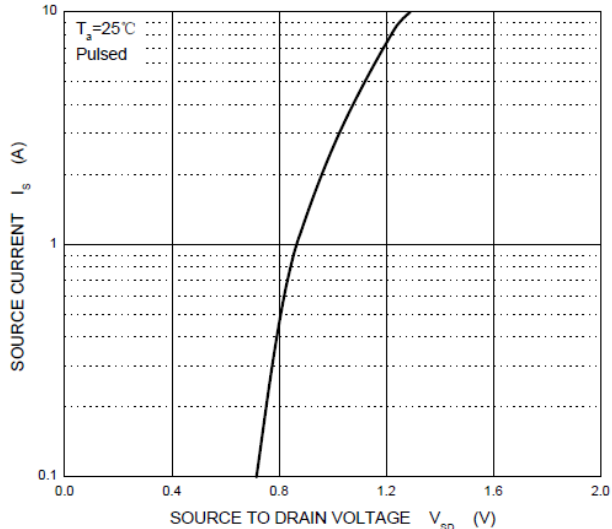
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$

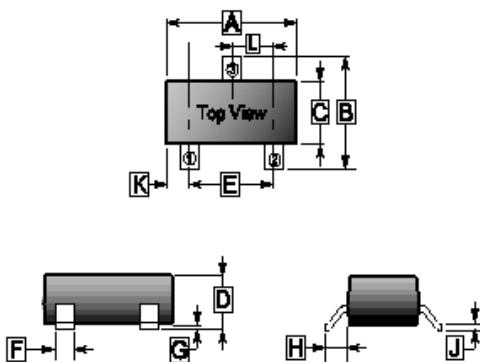


$I_S$  —  $V_{SD}$



**PACKAGE OUTLINE DIMENSIONS**

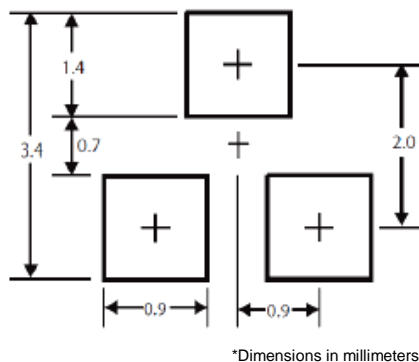
**SOT-23**



REF.	Millimeter	
	Min.	Max.
A	2.65	3.10
B	2.10	3.00
C	1.10	1.80
D	0.89	1.40
E	1.70	2.30
F	0.28	0.55
G	0	0.18
H	0.55 REF.	
J	0.05	0.26
K	0.60 REF.	
L	0.95 TYP.	

**MOUNTING PAD LAYOUT**

**SOT-23**



\*Dimensions in millimeters