

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

DESCRIPTION

The SMS2303-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 SMS2303-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

S3

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

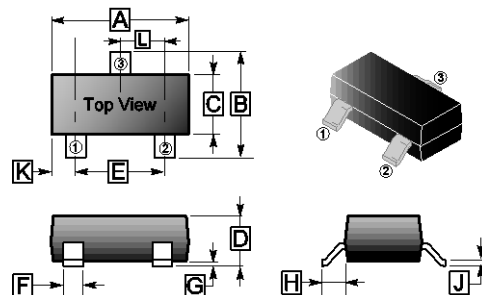
ORDER INFORMATION

Part Number	Type
SMS2303-C	Lead (Pb)-free and Halogen-free

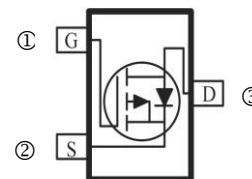
ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	-1.9	A
Pulsed Drain Current ³	I_{DM}	-10	A
Maximum Power Dissipation ¹	P_D	1.05	W
Maximum Power Dissipation ²		0.35	
Thermal Resistance Junction-ambient ¹	$R_{\theta JA}$	120	$^{\circ}\text{C/W}$
Thermal Resistance Junction-ambient ²		357	
Operating Junction & Storage Temperature	T_J, T_{STG}	150, -55~150	$^{\circ}\text{C}$

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	0.6	REF.
E	1.70	2.30	L	0.95	TYP.
F	0.30	0.55			



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

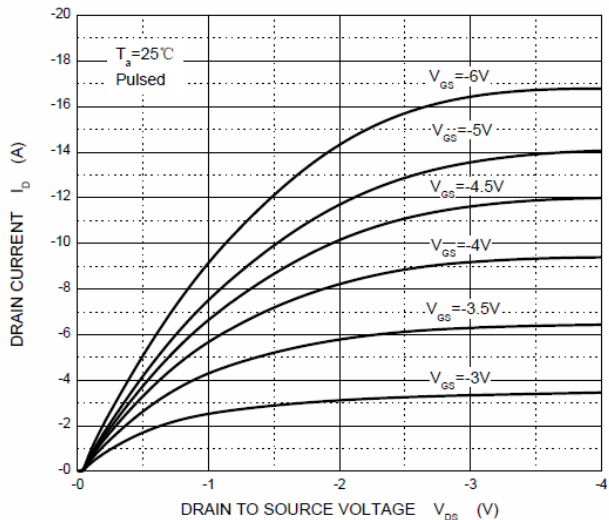
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-30	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$
Drain-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{DS}=0\text{V}, V_{GS} = \pm 20\text{V}$
Gate-Source Leakage Current	I_{DSS}	-	-	-1	μA	$V_{GS}=0\text{V}, V_{DS} = -30\text{V}$
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-3	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$
Forward Transconductance	g_{fs}	1	-	-	S	$V_{DS} = -5\text{V}, I_D = -1.9\text{A}$
Static Drain-Source On-Resistance ⁴	$R_{DS(ON)}$	-	75	190	m Ω	$V_{GS} = -10\text{V}, I_D = -1.9\text{A}$
		-	115	330		$V_{GS} = -4.5\text{V}, I_D = -1.4\text{A}$
Gate Resistance	R_g	-	8.5	-	Ω	$f=1\text{MHz}$
Total Gate Charge	Q_g	-	2	-	nC	$V_{GS} = -4.5\text{V}$ $V_{DS} = -15\text{V}$ $I_D = -1.9\text{A}$
Gate-Source Charge	Q_{gs}	-	0.6	-		
Gate-Drain Charge	Q_{gd}	-	1	-		
Turn-on Delay Time	$T_{d(on)}$	-	4	-	nS	$V_{DD} = -15\text{V}$ $R_L = 10\Omega$ $I_D = -1.5\text{A}$ $V_{GEN} = -10\text{V}$ $R_g = 1\Omega$
Rise Time	T_r	-	11	-		
Turn-off Delay Time	$T_{d(off)}$	-	11	-		
Fall Time	T_f	-	8	-		
Turn-on Delay Time	$T_{d(on)}$	-	36	-	nS	$V_{DD} = -15\text{V}$ $R_L = 10\Omega$ $I_D = -1.5\text{A}$ $V_{GEN} = -4.5\text{V}$ $R_g = 1\Omega$
Rise Time	T_r	-	37	-		
Turn-off Delay Time	$T_{d(off)}$	-	12	-		
Fall Time	T_f	-	9	-		
Input Capacitance	C_{iss}	-	155		pF	$V_{GS}=0\text{V}$ $V_{DS} = -15\text{V}$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	35			
Reverse Transfer Capacitance	C_{rss}	-	25			
Source-Drain Diode						
Continuous Current ¹	I_S	-	-	-1.9	A	$T_C=25^\circ\text{C}$
Pulsed Current ³	I_{SM}	-	-	-10	A	
Diode Forward Voltage ⁴	V_{SD}	-	-	-1.2	V	$I_S = -1.5\text{A}$

Notes:

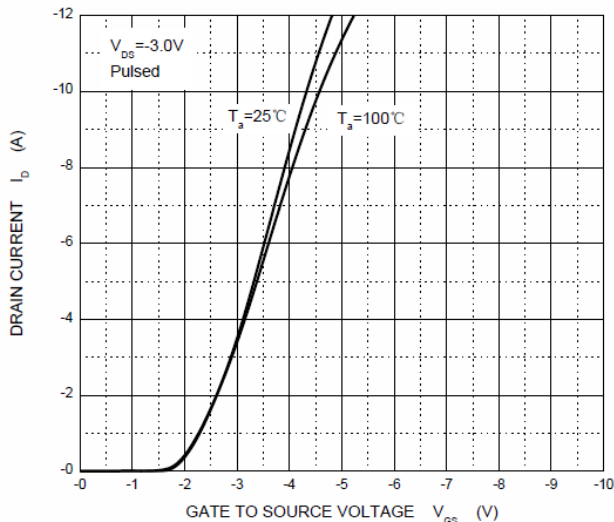
1. Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. Surface mounted on min. copper pad.
3. The power dissipation is limited by 150°C junction temperature.
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

CHARACTERISTIC CURVES

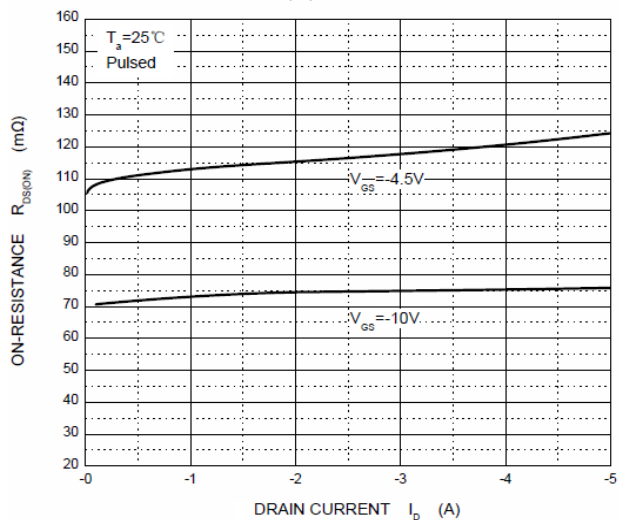
Output Characteristics



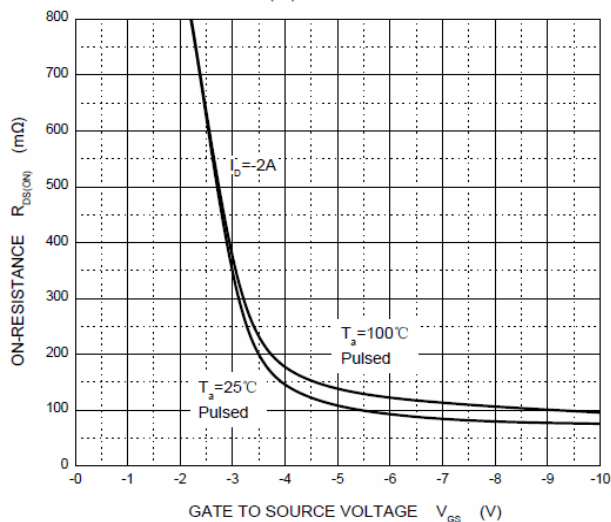
Transfer Characteristics



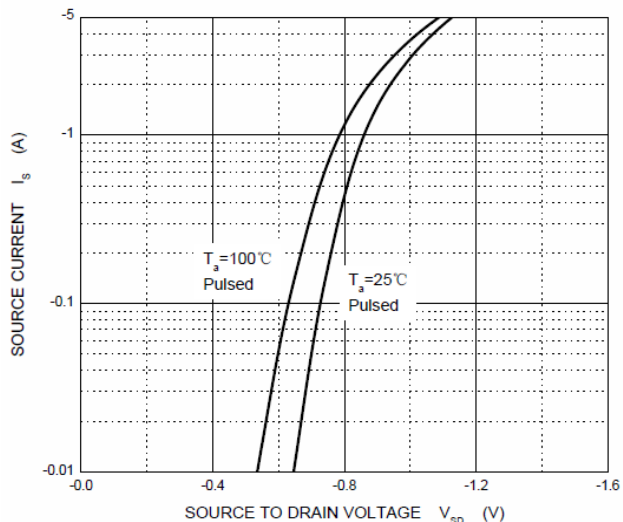
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

