Elektronische Bauelemente

SMS123-C

0.17A, 100V, $R_{DS(ON)}$ 6Ω
N-Ch Enhancement Mode Power MOSFET

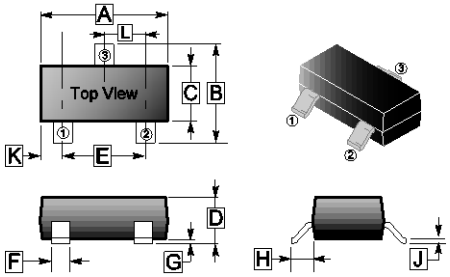
RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTIONS

The SMS123-C is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

This device is suitable for use in DC-DC conversion, load switch and level shift.

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	-	0.18
B	2.10	3.00	H	0.55 REF.	
C	1.10	1.80	J	0.05	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			

MECHANICAL DATA

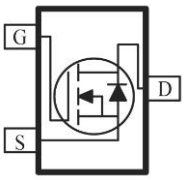
- Trench Technology
- Supper High Density Cell Design
- Excellent On Resistance
- Extremely Low Threshold Voltage

APPLICATION

- DC-DC Converter Circuit
- Load Switch

MARKING

B123



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS123-C	Lead (Pb)-free and Halogen-free

MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current [1]	I_D	0.17	A
Pulsed Drain Current @tp=10μs	I_{DM}	0.68	A
Continuous Source-Drain Diode Current	I_S	0.17	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction-Ambient [1]	$R_{\theta JA}$	357	°C/W
Lead Temperature for Soldering Purposes (1/8" from case for 10s)	T_L	260	°C
Operating Junction & Storage Temperature Range	T_J, T_{STG}	150, -55~150	°C

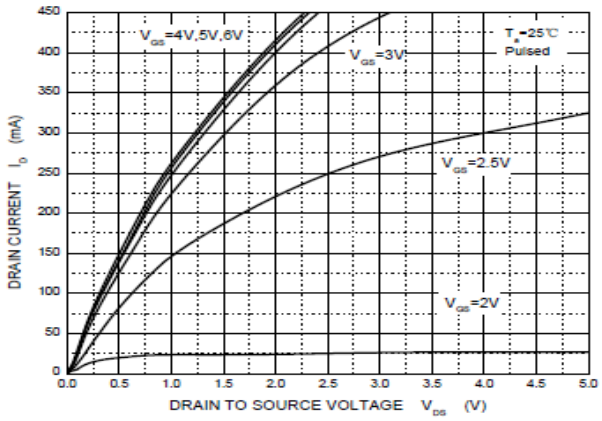
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	100	-	-	V	V_{GS}=0V, I_D=250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=100V, V_{GS}=0V
		-	-	10	nA	V_{DS}=20V, V_{GS}=0V
Gate-Source Leakage	I_{GSS}	-	-	10	μA	V_{DS}=0V, V_{GS}= ±20V
Gate-Threshold Voltage [2]	$V_{GS(th)}$	1	1.6	2.8	V	V_{DS}=V_{GS}, I_D=250μA
Drain-Source On Resistance [2]	$R_{DS(ON)}$	-	-	6	Ω	V_{GS}=10V, I_D=0.17A
		-	-	10		V_{GS}=4.5V, I_D=0.17A
Forward Transfer conductance [2]	g_{fs}	80	-	-	mS	V_{DS}=10V, I_D= 0.17A
Body-Drain Diode Ratings						
Diode Forward On-Voltage	V_{SD}	-	-	1.3	V	I_S=340mA, V_{GS}=0V
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	45	80	pF	V_{DS}=25V V_{GS}=0V f=1MHz
Output Capacitance	C_{oss}	-	11	25		
Reverse Transfer Capacitance	C_{rss}	-	1	6		
Switching Characteristics [3]						
Total Gate Charge	Q_g	-	1.75	-	nC	V_{DS}=10V V_{GS}=10V I_D=0.22A
Gate-Source Charge	Q_{gs}	-	0.48	-		
Gate-Drain Charge	Q_{gd}	-	0.16	-		
Turn-on Delay Time	$T_{d(on)}$	-	3.3	-	nS	V_{DD}=30V I_D=0.28A V_{GS}=10V R_{GEN}=50Ω
Rise Time	T_r	-	3.3	-		
Turn-off Delay Time	$T_{d(off)}$	-	12.9	-		
Fall Time	T_f	-	39.4	-		

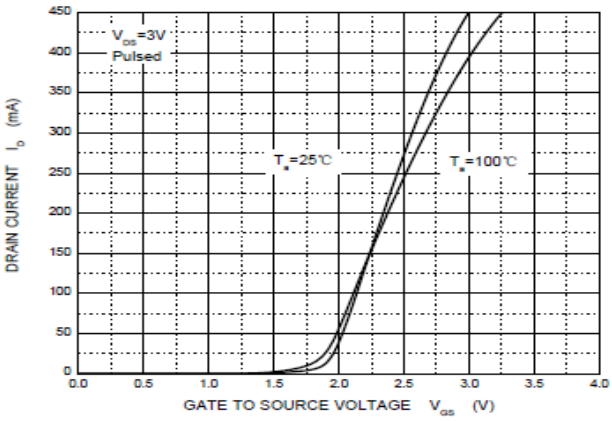
Notes:
1. Surface mounted on FR-4 Board using the minimum recommended pad size.
2. Pulse Test: Pulse width=300μs, duty cycle≦2%.
3. Switching characteristics are independent of operating junction temperature.

CHARACTERISTIC CURVES

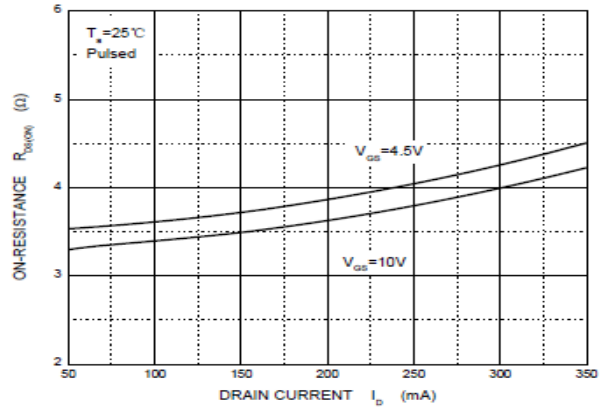
Output Characteristics



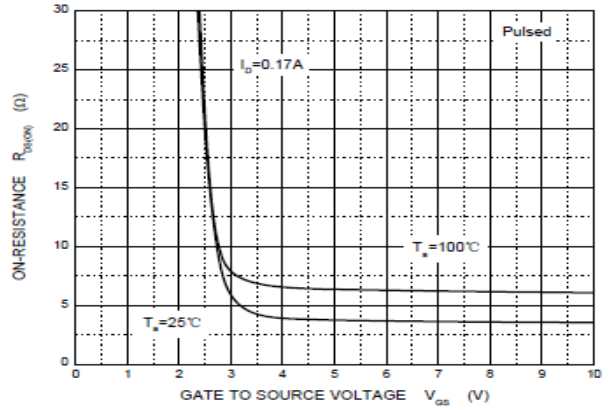
Transfer Characteristics



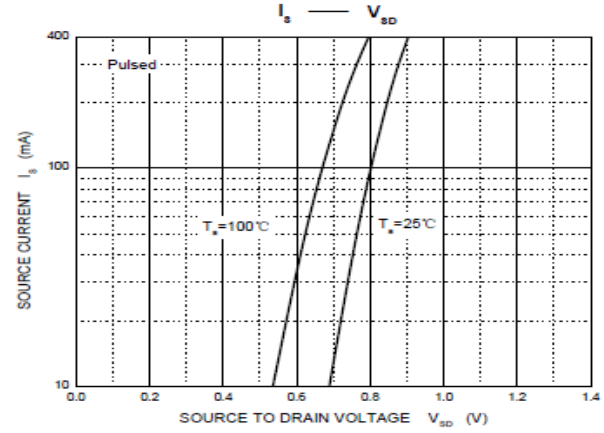
$R_{DS(ON)}$ —— I_D



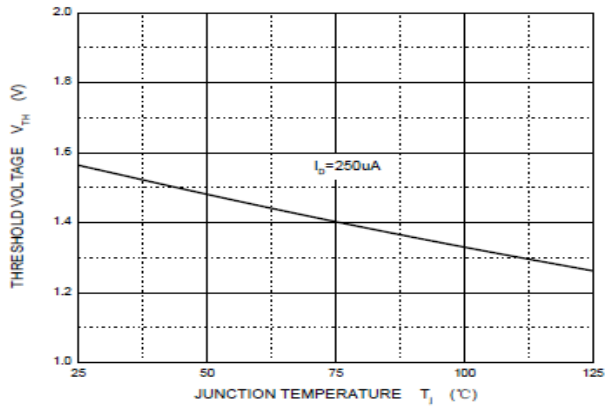
$R_{DS(ON)}$ —— V_{GS}



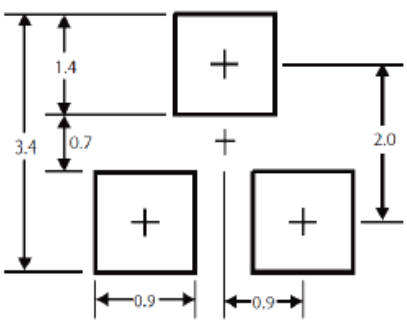
I_s —— V_{SD}



Threshold Voltage



Mounting Pad Layout



*Dimensions in millimeters