Elektronische Bauelemente

SMS123Y-C

0.2A, 100V, $R_{DS(ON)}$ 5Ω
N-Ch Enhancement Mode Power MOSFET

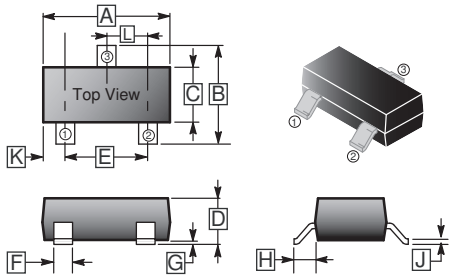
RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTIONS

The SMS123Y-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	2.70	3.10	G	0.09	0.18
B	2.10	2.65	H	0.35	0.65
C	1.20	1.40	J	0.08	0.20
D	0.89	1.17	K	0.6 REF.	
E	1.78	2.04	L	0.95 BSC.	
F	0.30	0.50			

MECHANICAL DATA

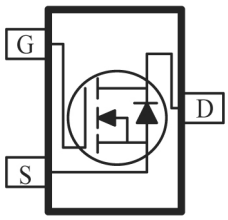
- Trench Technology
- Excellent on Resistance
- Extremely Low Threshold Voltage

APPLICATION

- DC-DC Converter Circuit
- Load Switch
- Power MOSFET Gate Drivers

MARKING

B123.



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS123Y-C	Lead (Pb)-free and Halogen-free

MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	0.2	A
	T_A=70℃		0.16	
Pulsed Drain Current [1]		I_{DM}	0.8	A
Power Dissipation		P_D	350	mW
Thermal Resistance from Junction-Ambient [2]		$R_{\theta JA}$	357	℃/W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	150, -55~150	℃

Notes:
1. Pulse Test: Pulse width≦300μs, duty cycle≦2%
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
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
Gate-Source Leakage	I_{GSS}	-	-	±50	nA	V_{DS}=0V, V_{GS}= ±10V
			-	±100		V_{DS}=0V, V_{GS}= ±20V
Gate-Threshold Voltage	$V_{GS(th)}$	1	1.8	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Drain-Source On Resistance	$R_{DS(ON)}$	-	3	5	Ω	V_{GS}=10V, I_D=0.2A
		-	3.5	5.5		V_{GS}=4.5V, I_D=0.175A
Diode Forward On Voltage	V_{SD}	-	-	1.2	V	I_S=0.2A, V_{GS}=0V
Total Gate Charge	Q_g	-	1.8	2.5	nC	V_{DS}=50V V_{GS}=10V I_D=0.2A
Gate-Source Charge	Q_{gs}	-	0.25	-		
Gate-Drain Charge	Q_{gd}	-	0.51	-		
Turn-on Delay Time	$T_{d(on)}$	-	1.7	-	nS	V_{DD}=50V I_D=0.2A V_{GS}=10V R_{GEN}=6Ω
Rise Time	T_r	-	9	-		
Turn-off Delay Time	$T_{d(off)}$	-	17	-		
Fall Time	T_f	-	7	-		
Input Capacitance	C_{iss}	-	14	-	pF	V_{DS}=50V V_{GS}=0V f=1MHz
Output Capacitance	C_{oss}	-	10	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		

CHARACTERISTIC CURVES

Figure1. Output Characteristics

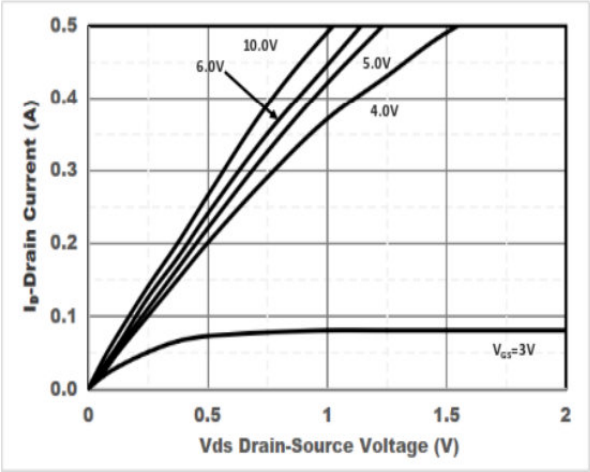


Figure2. Transfer Characteristics

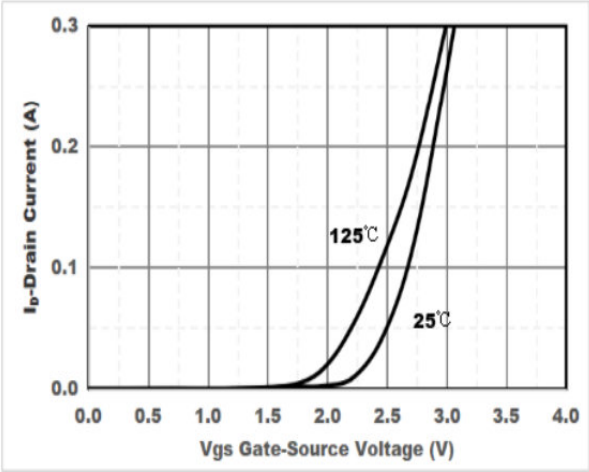


Figure3. Capacitance Characteristics

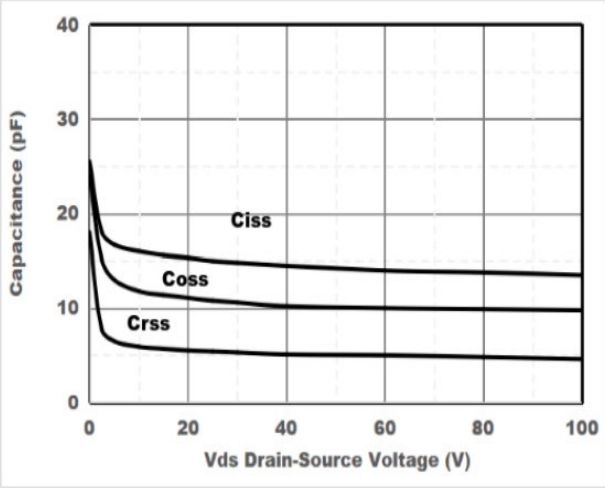


Figure4. Gate Charge

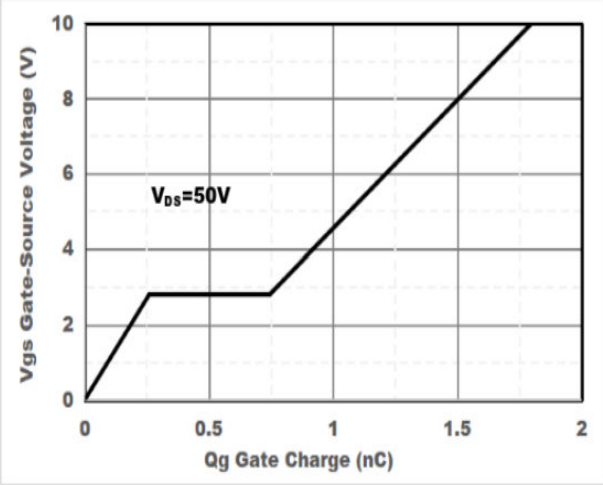


Figure5. Drain-Source on Resistance

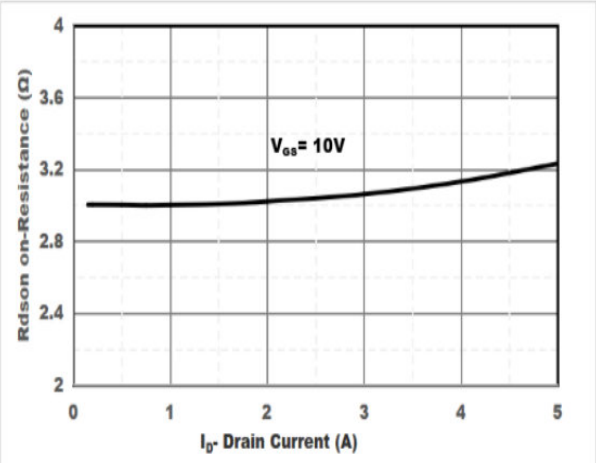
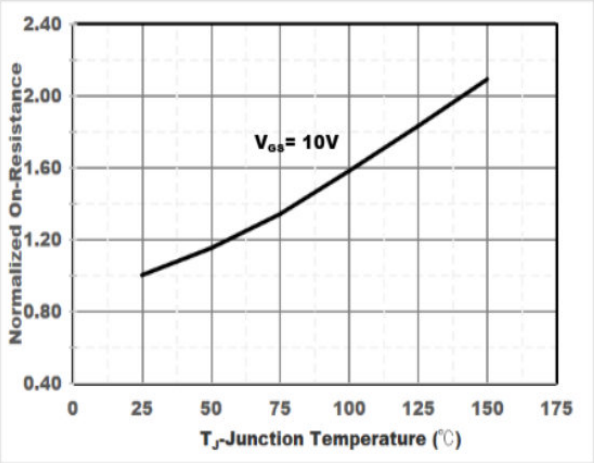


Figure6. Drain-Source on Resistance



CHARACTERISTIC CURVES

Figure7. Safe Operation Area

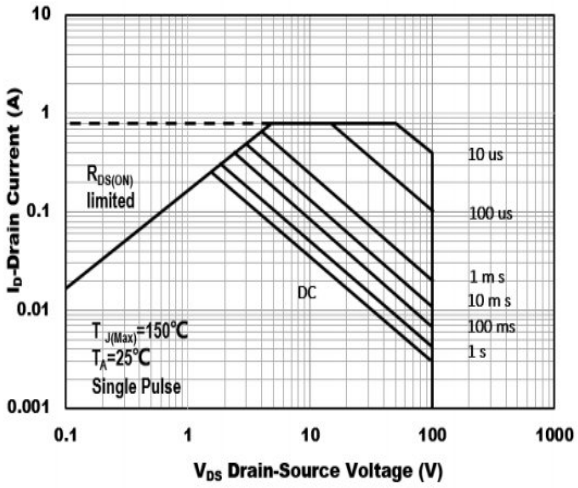


Figure8. Switching wave