Elektronische Bauelemente

SMS502

-0.18A, -50V, $R_{DS(ON)}$ 8 Ω
P-Channel Enhancement MOSFET

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

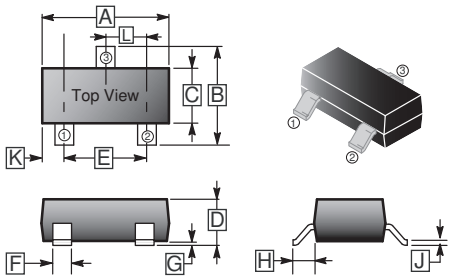
FEATURES

- The device reduces power loss and conserves energy. It is ideal for the use in small power management circuitry.

APPLICATIONS

- Relay driver
- High-speed line driver
- High-side load switch
- Switching circuits

SOT-23



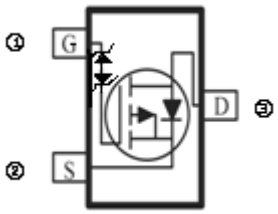
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.09	0.18
B	2.10	2.65	H	0.35	0.65
C	1.20	1.40	J	0.08	0.20
D	0.89	1.17	K	0.6 REF.	
E	1.78	2.04	L	0.95 BSC.	
F	0.30	0.50			

MARKING

502K

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-50	V
Continuous Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current [1]	I_D	-0.18	A
Pulsed Drain Current@ t_P＜10μs	I_{DM}	-0.7	A
Maximum Power Dissipation [1]	P_D	0.42	W
Maximum Power Dissipation [2]	P_D	0.35	W
Thermal Resistance from Junction to Ambient [1]	$R_{\theta JA}$	298	℃/W
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	357	℃/W
Maximum Lead Temperature for Soldering Purposes@ 5-second duration	T_L	260	℃
Junction and Storage Temperature Range	T_J, T_{STG}	150, -55~150	℃

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	-50	-	-	V	V_{GS}=0, I_D= -250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-15	μA	V_{DS}= -50V, V_{GS}=0
		-	-	-0.1		V_{DS}= -25V, V_{GS}=0
Gate-Source Leakage Current	I_{GSS}	-	-	±10	μA	V_{GS}=±20V, V_{DS}=0
Gate-Source Threshold Voltage [3]	$V_{GS(th)}$	-0.9	-	-2	V	V_{DS}=V_{GS}, I_D= -250μA
Static Drain-Source On Resistance [3]	$R_{DS(ON)}$	-	-	10	Ω	V_{GS}= -5V, I_D= -0.1A
		-	-	8		V_{GS}= -10V, I_D= -0.1A
Forward Transconductance [3]	g_{FS}	-	50	-	mS	V_{DS}= -25V, I_D= -0.1A
Dynamic Characteristics						
Input Capacitance	C_{iss}	-	30	-	pF	V_{DS}= -5V V_{GS}=0 f=1MHz
Output Capacitance	C_{oss}	-	10	-		
Reverse Transfer Capacitance	C_{rss}	-	5	-		
Switching Characteristics						
Turn-On Delay Time	$T_{d(on)}$	-	2.5	-	nS	I_D= -2.5A V_{DD}= -15V R_L=50Ω
Rise Time	T_r	-	1	-		
Turn-Off Delay Time	$T_{d(off)}$	-	16	-		
Fall Time	T_f	-	8	-		
Source-Drain Diode Characteristics						
Continuous Current	I_S	-	-	-0.18	A	
Pulsed Current	I_{SM}	-	-	-0.7	A	
Forward Voltage [3]	V_{SD}	-	-	-2.2	V	I_S = -0.13A, V_{GS}=0

Notes:
1. The device is mounted on a FR4 PCB with a single-side copper and tin-plated pad and 1 cm^2 drain.
2. The device is mounted on a FR4 PCB with a single-side copper and tin-plated pad which has a standard footprint.
3. Pulse Test: Pulse width≦300μs, duty cycle≦2%.

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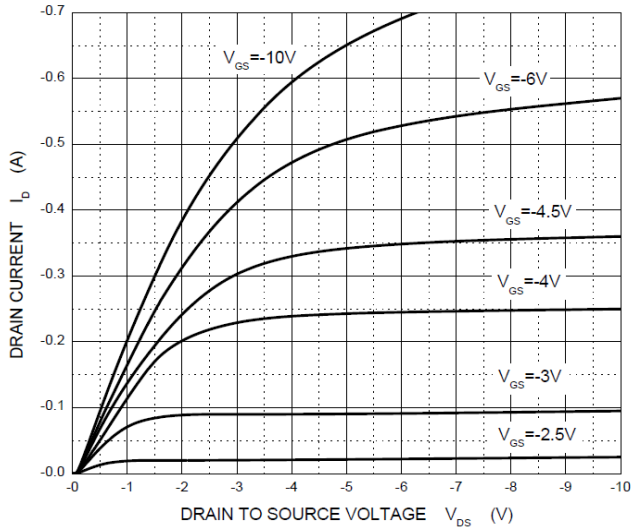
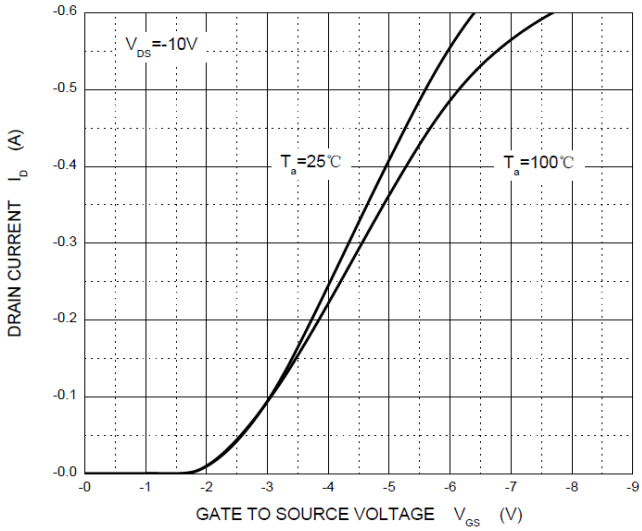
CHARACTERISTIC CURVE

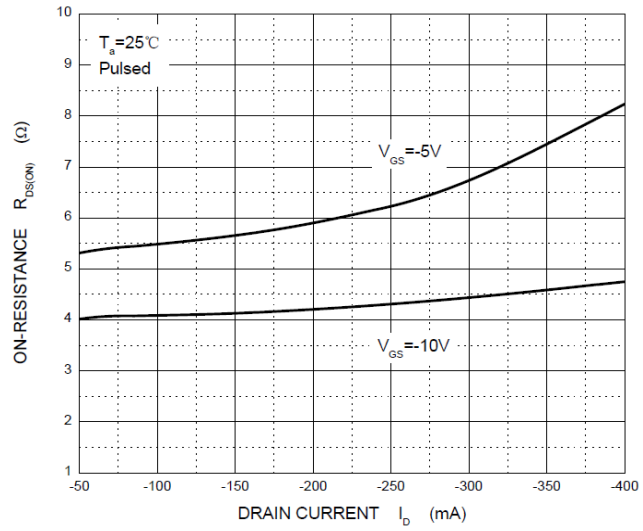
Output Characteristics



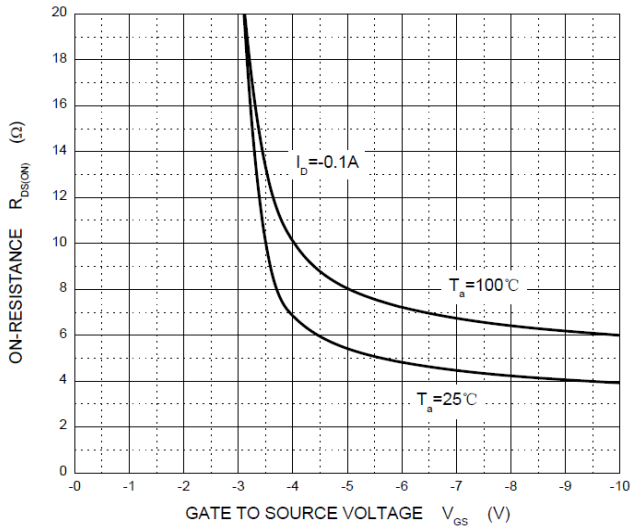
Transfer Characteristics



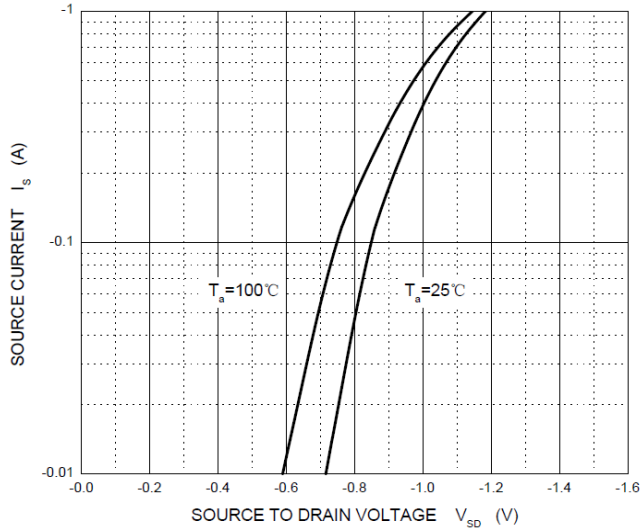
$R_{DS(ON)}$ —— I_D



$R_{DS(ON)}$ —— V_{GS}



I_S —— V_{SD}



Threshold Voltage