Elektronische Bauelemente

SMS6510P-C

-0.9A, -100V, $R_{DS(ON)}$ 0.65Ω

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

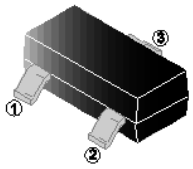
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS6510P-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 SMS6510P-C meet the RoHS and Green Product requirement with full function reliability approved.

SOT-23



FEATURES

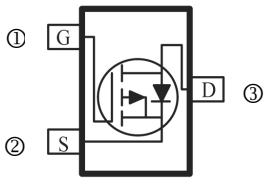
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

6510P

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMS6510P-C	Lead (Pb)-free and Halogen-free

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-100	V
Continuous Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current @V_{GS}= -10V [1]	T_A=25℃	I_D	-0.9	A
	T_A=70℃		-0.7	
Pulsed Drain Current [2]		I_{DM}	-1.8	A
Total Power Dissipation [3]	T_A=25℃	P_D	1	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	150, -55~150	℃
Thermal Resistance Rating				
Thermal Resistance from Junction-Ambient [1]		$R_{\theta JA}$	125	℃/W
Thermal Resistance from Junction-Case [1]		$R_{\theta JC}$	80	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-100	-	-	V	V_{GS}=0V, I_D= -250μA
Gate-Source Threshold Voltage [1]		$V_{GS(th)}$	-1	-	-2.5	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transfer Conductance		g_{fs}	-	3	-	S	V_{DS}= -5V, I_D= -0.8A
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-10	μA	V_{GS}=0V, V_{DS}= -80V
	T_J=55℃		-	-	-100		
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{DS}=0V
Static Drain-Source On Resistance [2]		$R_{DS(ON)}$	-	0.52	0.65	Ω	V_{GS}= -10V, I_D= -0.8A
			-	0.56	0.7		V_{GS}= -4.5V, I_D= -0.4A
Gate Resistance		R_g	-	16	-	Ω	f=1MHz
Total Gate Charge		Q_g	-	4.7	-	nC	V_{DS}= -20V V_{GS}= -4.5V I_D= -0.5A
Gate-Source Charge		Q_{gs}	-	1.2	-		
Gate-Drain (“Miller”) Charge		Q_{gd}	-	1.3	-		
Turn-On Delay Time		$T_{d(on)}$	-	13.6	-	nS	I_D= -0.5A V_{DD}= -50V V_{GS}= -10V R_G=3.3Ω
Rise Time		T_r	-	6.8	-		
Turn-Off Delay Time		$T_{d(off)}$	-	34	-		
Fall Time		T_f	-	3	-		
Input Capacitance		C_{iss}	-	520	-	pF	V_{DS}= -25V V_{GS}=0V f=1MHz
Output Capacitance		C_{oss}	-	15	-		
Reverse Transfer Capacitance		C_{rss}	-	7	-		
Source Drain Diode							
Forward On Voltage [2]		V_{SD}	-	-	-1.2	V	I_S= -1A, V_{GS}=0V, T_J=25℃
Continuous Source Current [1 4]		I_S	-	-	-0.9	A	V_G=V_D=0V, Force Current
Pulsed Source Current [2 4]		I_{SM}	-	-	-1.8		

Notes:
1. The data tested by surface mounted on 1inch^2 FR-4 Board with 2oz copper.
2. The data tested by pulsed, pulse width≦300μs, duty cycle≦2%.
3. The power dissipation is limited by 150℃ juncti on temperature.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

TYPICAL CHARACTERISTIC CURVE

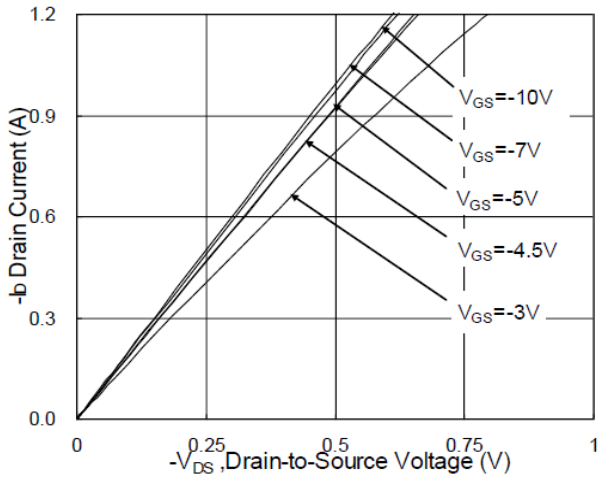


Fig.1 Typical Output Characteristics

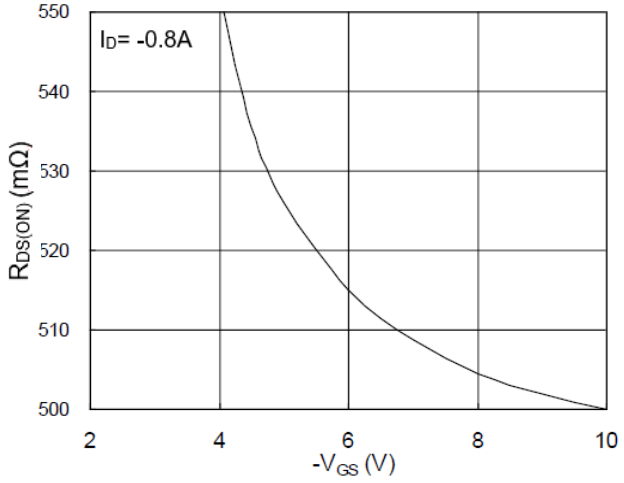


Fig.2 On-Resistance vs. Gate-Source

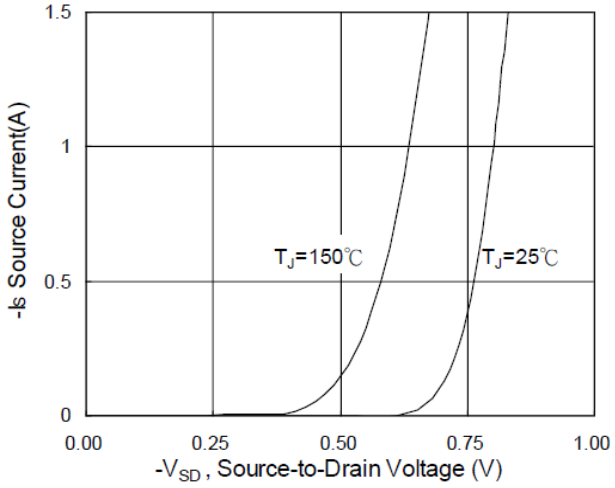


Fig.3 Forward Characteristics Of Reverse

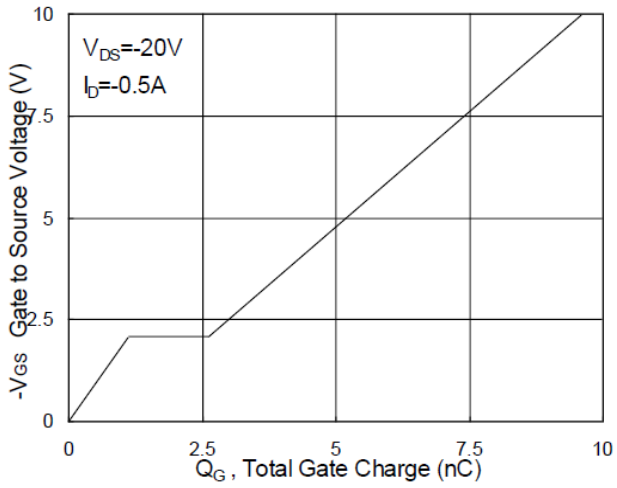


Fig.4 Gate-Charge Characteristics

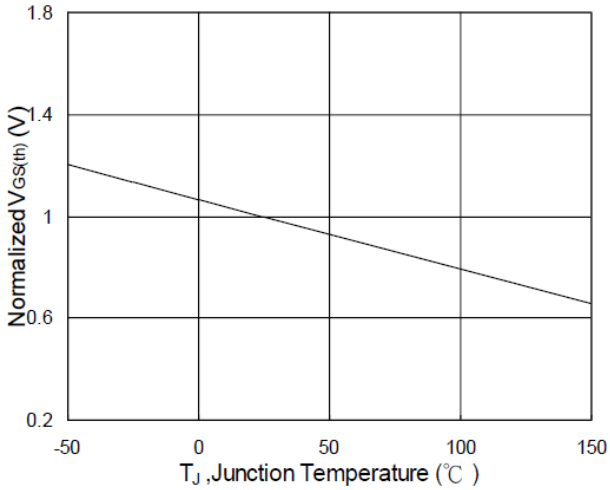


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

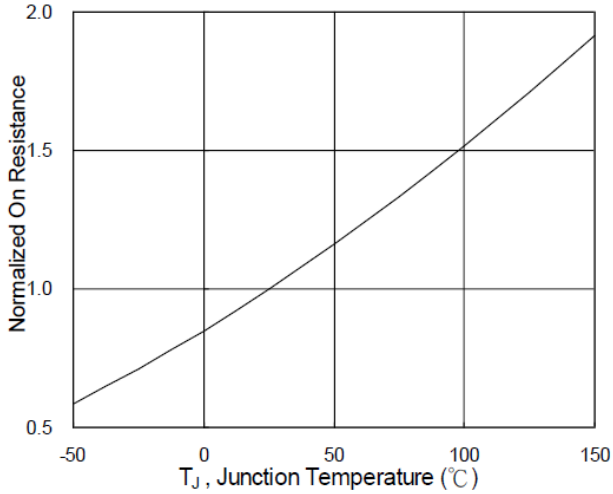


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTIC CURVE

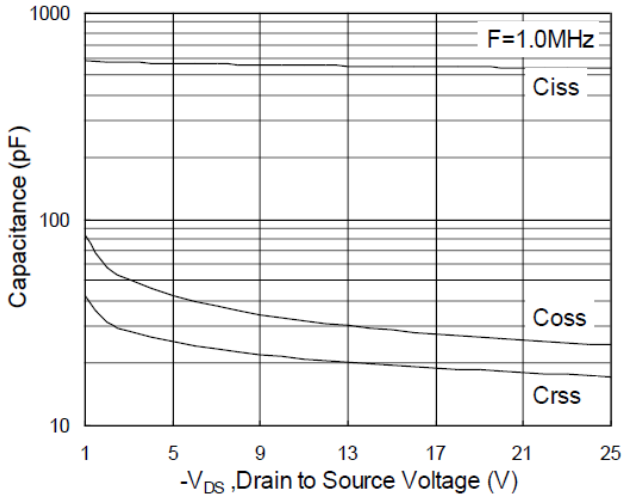


Fig.7 Capacitance

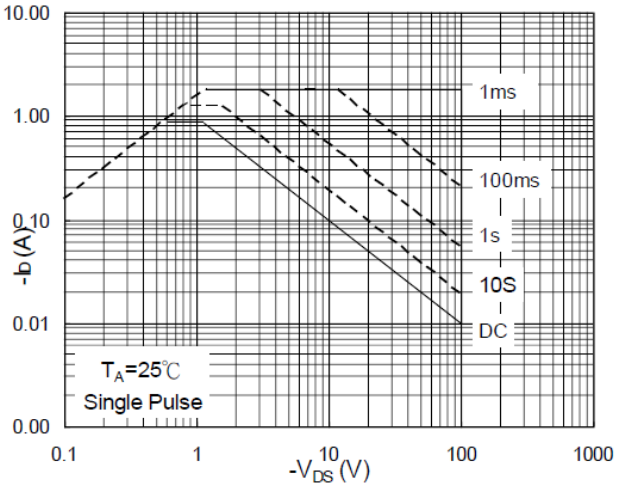


Fig.8 Safe Operating Area

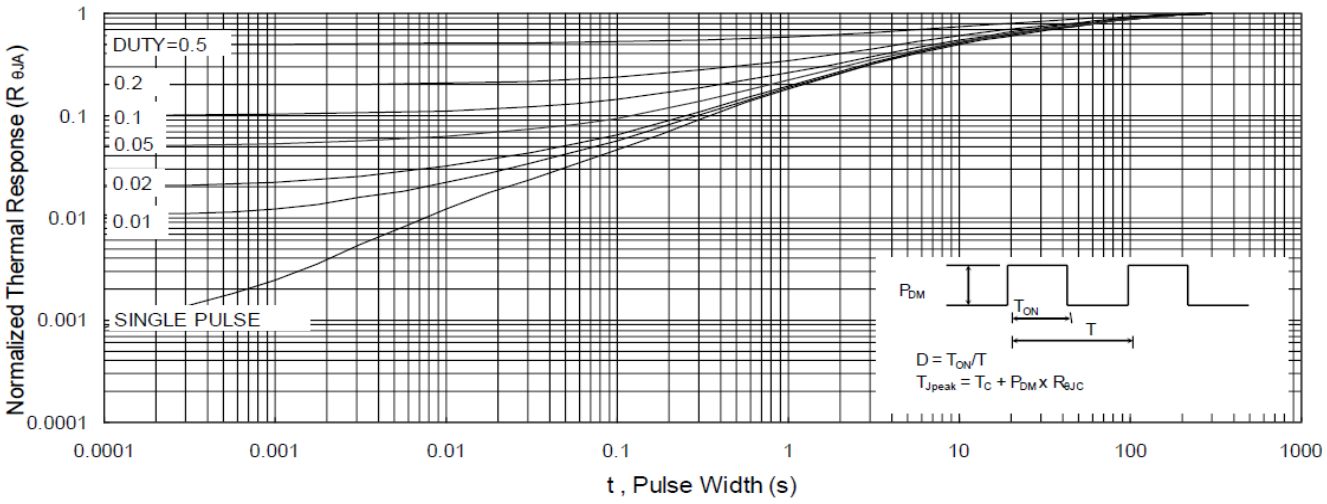


Fig.9 Normalized Maximum Transient Thermal Impedance

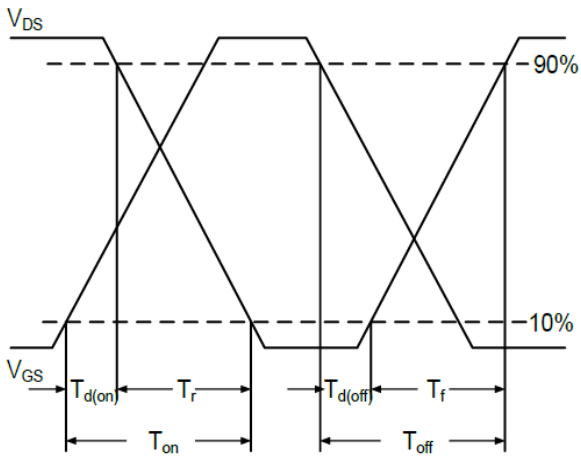


Fig.10 Switching Time Waveform

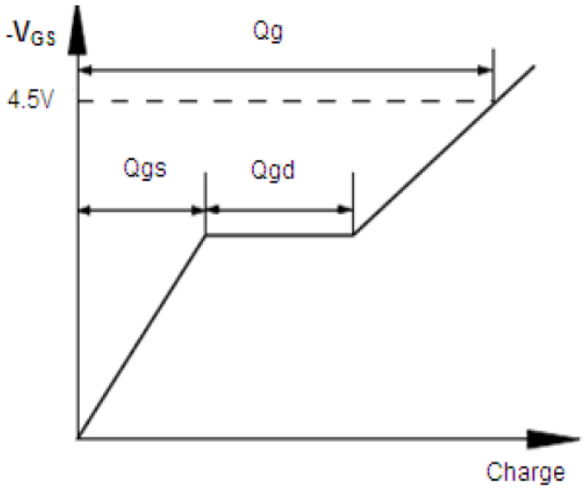
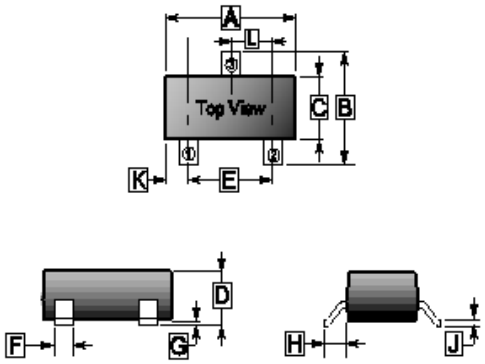


Fig.11 Gate Charge Waveform

PACKAGE OUTLINE DIMENSIONS

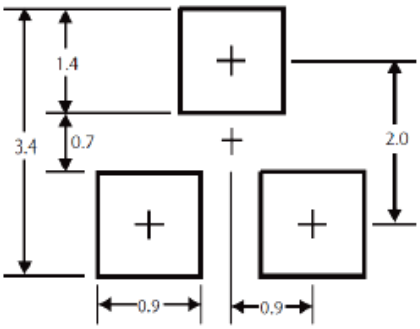
SOT-23



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