SemTron Microtech Corporation

SMC3910

100V N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SMC3910 is the N-Channel enhancement mode power field effect transistor. is produced using high cell density. advanced trench technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications. This device is suitable for use as a load switch or other general applications.

SMC3910J-TRG ROHS Compliant This is Halogen Free

FEATURE

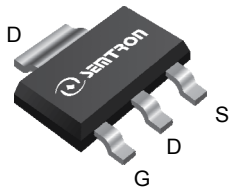
- ***100V/2.0A, $R_{DS(ON)}$ =160mΩ(typ.)@V_{GS} =10V***
- ***100V/1.0A, $R_{DS(ON)}$ =170mΩ(typ.)@V_{GS} =4.5V***

- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed

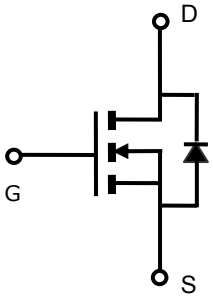
APPLICATIONS

- *LED applications*Portable Equipment
- *Networking*
- LED applications

PIN CONFIGURATION



SOT-223
Top View



PART NUMBER INFORMATION

SMC 3910 J – TR G a b c d e	**a : Company name.** **b : Product Serial number.** **c : Package code** **d : Handling code** **e : Green produce code**

■ORDERING INFORMATION

Part Number	Package Code	Handling Code	Shipping
SMC3910J-TRG	J : SOT-223	TR : Tape&Reel	2.5K/Reel

※ Year Code : 0 ~ 9, 2015 : 5
※ Week Code : A(1~2) ~ Z(53~54)
※ SOT-223 : Only available in tape and reel packaging.

■ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current (T_C=25°C) [A]	V_{GS}=4.5V	2.0	A
	Continuous Drain Current (T_C=100°C) [A]		1.4	A
I_{DM}	Pulsed Drain Current[B]		12	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.8 14	W
T_J	Operation Junction Temperature		-55 to150	°C
T_{STG}	Storage Temperature Range		-55 to150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■THERMAL DATA

Symbol	Parameter		Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[A]	Steady-State	-	72	°C/W
$R_{\theta JL}$	Thermal Resistance Junction to Lead[A]	Steady-State	-	32	°C/W

ELECTRICAL CHARACTERISTICS (T_J = 25℃ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.3		2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage, Drain-Source Leakage Current	V_{DS}=100V,V_{GS}=0V T_J=25°C			1	μA
		V_{DS}=80V,V_{GS}=0V T_J=100°C			10	
$R_{DS(ON)}$	Drain-source On-Resistance[B]	V_{GS}=10.0V,I_D=2.0A V_{GS}=4.5V,I_D=1.0A		162 170	182 190	mΩ
G_{fs}	Forward Transconductance	V_{DS}=10V,I_D=1.0A		5		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=1.0A,V_{GS}=0V		0.7	1.2	V
I_S	Continuous Source Current[AD]				3	A
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=50V V_{GS}=10V I_D=2.0A		13.5		nC
Q_{gs}	Gate-Source Charge			2.9		
Q_{gd}	Gate-Drain Charge			1.8		
C_{iss}	Input Capacitance	V_{DS}=50V V_{GS}=0V f=1MHz		830		pF
C_{oss}	Output Capacitance			35		
C_{rss}	Reverse Transfer Capacitance			20		
$t_{d(on)}$	Turn-On Time	V_{DD}=30V I_D=1.0A V_{GEN}=10V R_G=3.3Ω		1.6		nS
t_r				6.6		
$t_{d(off)}$	Turn-Off Time			11.5		
t_f				3.6		

Note:

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

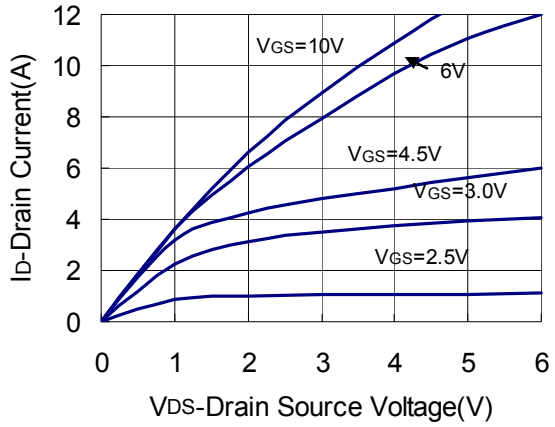
B. The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%

C. The EAS data shows Max. rating . The test condition is V_{DD}=20V,V_{GS}=10V,L=0.1mH.

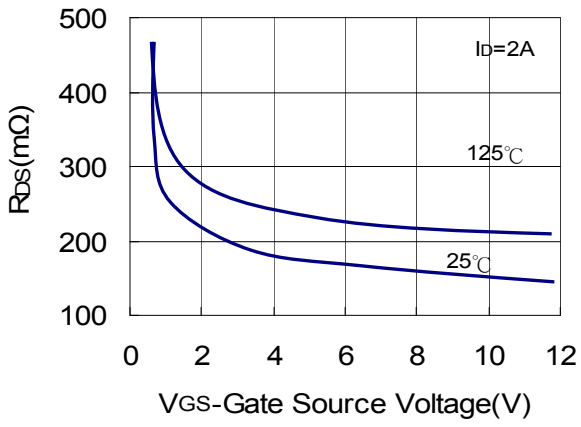
D. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

TYPICAL CHARACTERISTICS (25℃ Unless Note)

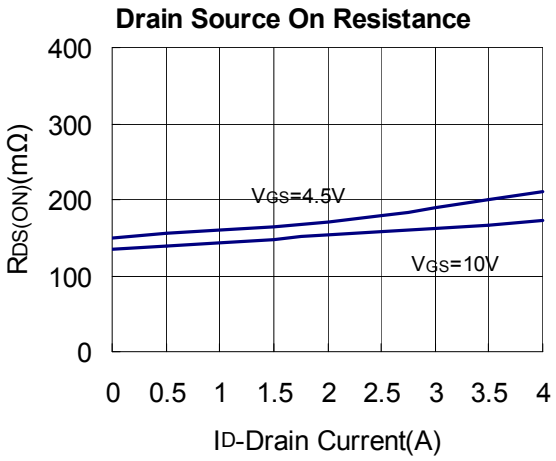
Output Characteristics



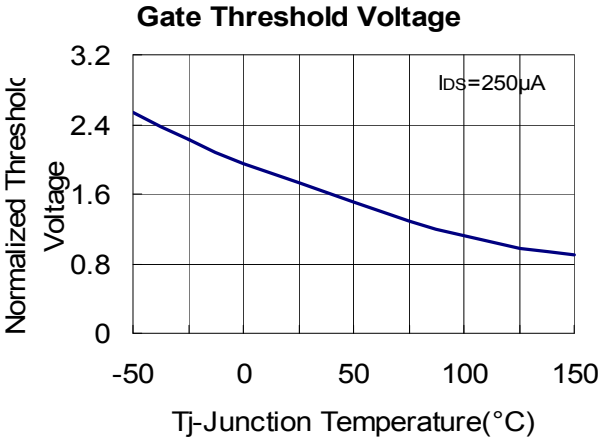
Drain-Source On Resistance



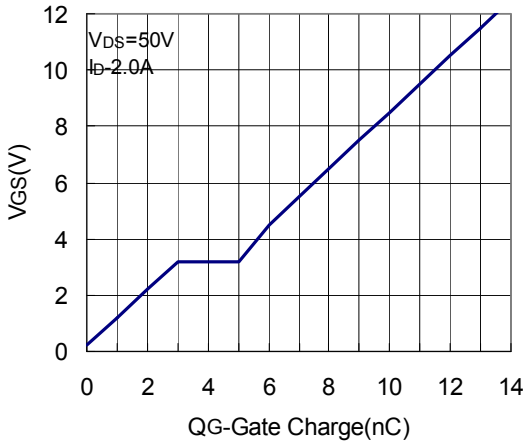
Drain Source On Resistance



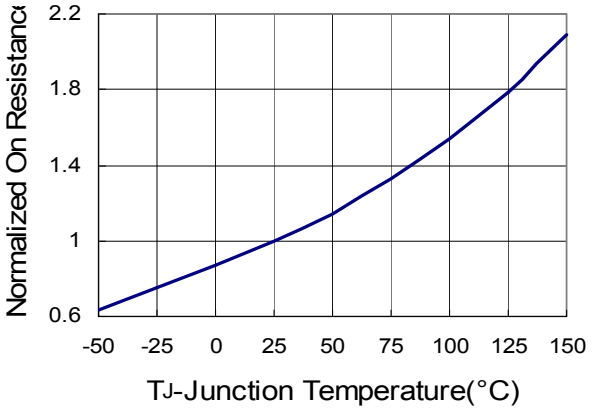
Gate Threshold Voltage



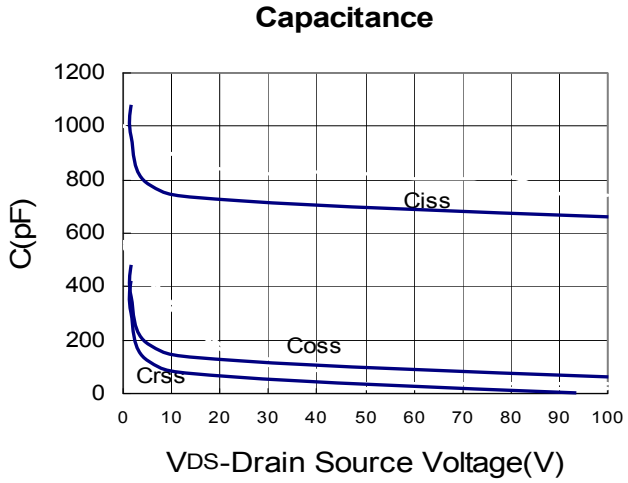
Gate Charge

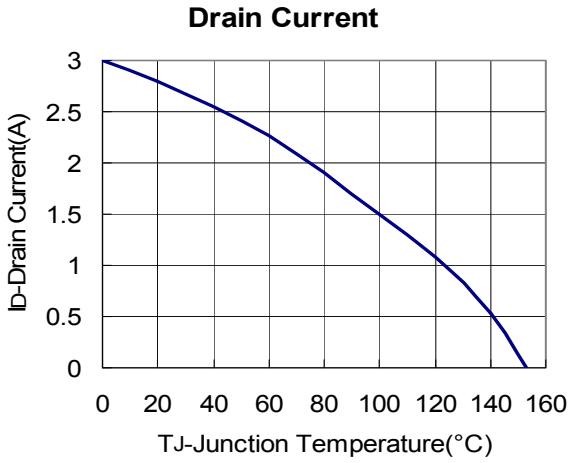


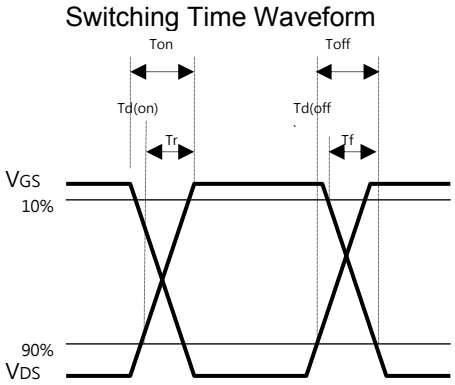
Drain Source On Resistance

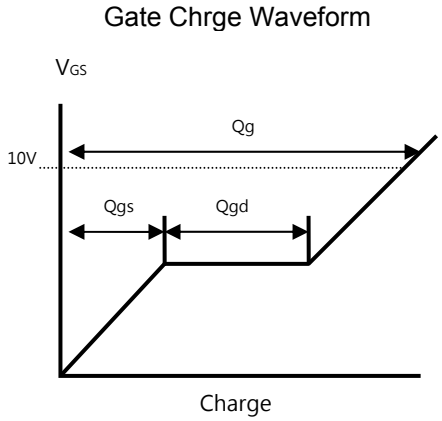


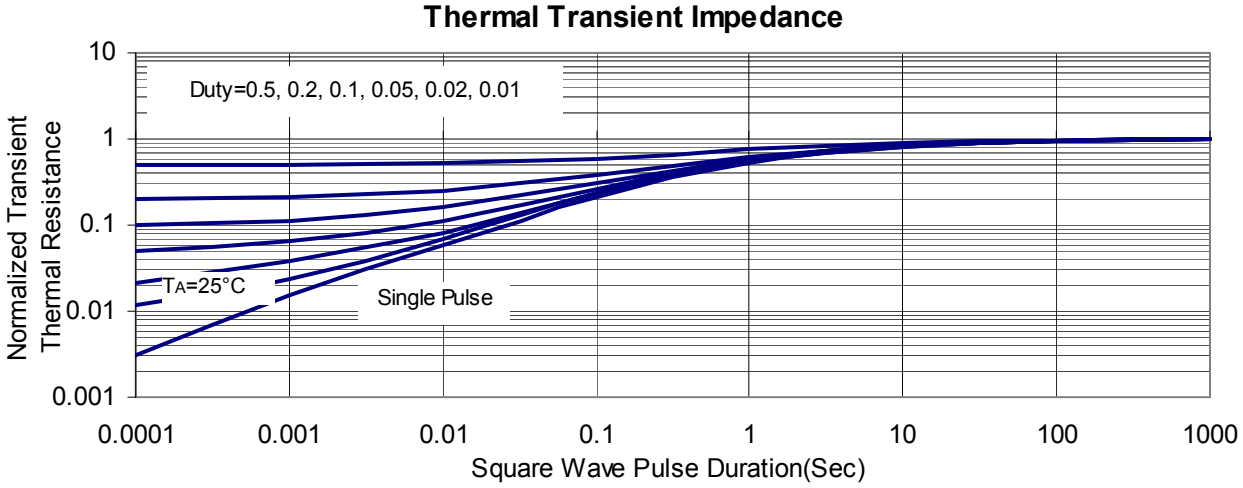
TYPICAL CHARACTERISTICS (25℃ Unless Note)











SOT-223 PACKAGE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.500	1.800	0.059	0.071
A1	0.030	0.090	0.001	0.004
A2	1.450	1.750	0.057	0.069
A3	0.800	1.000	0.031	0.039
b	0.690	0.780	0.027	0.031
b1	0.680	0.740	0.027	0.029
c	0.300	0.350	0.012	0.014
c1	0.290	0.310	0.011	0.012
D	0.630	6.700	0.025	0.264
D1	3.000 REF		0.118 REF	
E	6.800	7.200	0.268	0.283
E1	3.400	3.600	0.134	0.142
e	2.300 BSC		0.091 BSC	
L	0.900	-	0.035	-
L1	1.750 BSC		0.069 BSC	
θ	0°	7°	0°	7°
θ 1	37.500 REF		1.476 BSC