SemTron Microtech Corporation

SMC8810A

20V N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SMC8810A is the Single N-Channel logic enhancement mode power field effect transistor which is produced using high cell density. advanced trench technology to provide excellent $R_{DS(ON)}$.

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application , and low in-line power loss are needed in small outline surface mount package. It is ESD protected.

SMC8810AW-TRG ROHS Compliant This is Halogen Free

FEATURE

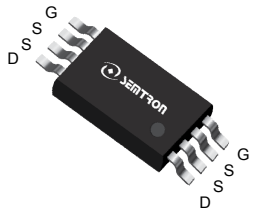
- ***20V/7.0A, $R_{DS(ON)}$ =14.5mΩ(typ.)@V_{GS} =4.5V***
- ***20V/7.0A, $R_{DS(ON)}$ =15mΩ(typ.)@V_{GS} =4.0V***
- ***20V/6.5A, $R_{DS(ON)}$ =16mΩ(typ.)@V_{GS} =3.2V***
- ***20V/5.5A, $R_{DS(ON)}$ =19mΩ(typ.)@V_{GS} =2.5V***
- ***20V/5.0A, $R_{DS(ON)}$ =26mΩ(typ.)@V_{GS} =1.8V***
- ***ESD protection± 2KV***

- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability

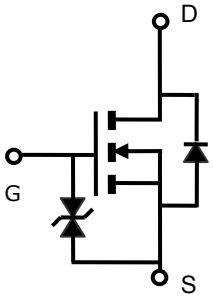
APPLICATIONS

- Load Switch
- Portable Equipment
- Battery Powered System

PIN CONFIGURATION



TSSOP-8
Top View



PART NUMBER INFORMATION

SMC 8810A W - 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
SMC8810AW-TRG	W : TSSOP-8	TR : Tape&Reel	3K/Reel

※ Year Code : 0 ~ 9, 2010 : 0
※ Week Code : A(1~2) ~ Z(53~54)
※ TSSOP-8 : 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		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current (T_C=25°C) [A]	V_{GS}=4.5V	7.0	A
	Continuous Drain Current (T_C=70°C)		5.8	A
I_{DM}	Pulsed Drain Current[B]		30	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.5 1.0	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	-	120	°C/W
$R_{\theta JL}$	Thermal Resistance Junction to Lead[A]	Steady-State	-	75	°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	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA		0.75	1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±8V			±10	μA
I_{DSS}	Zero Gate Voltage, Drain-Source Leakage Current	V_{DS}=16V,V_{GS}=0V T_J=25°C			1	μA
		V_{DS}=16V,V_{GS}=0V T_J=75°C			5	
$R_{DS(ON)}$	Drain-source On-Resistance[B]	V_{GS}=4.5V,I_D=7.0A V_{GS}=4.0V,I_D=7.0A V_{GS}=3.2V,I_D=6.5A V_{GS}=2.5V,I_D=5.5A V_{GS}=1.8V,I_D=5.0A		14.5 15 16 19 26	20 21 22 24 30	mΩ
G_{fs}	Forward Transconductance	V_{DS}=5V,I_D=6.5A		27		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=1.0A,V_{GS}=0V		0.75	1.0	V
I_S	Continuous Source Current[AD]				6.5	A
Dynamic Parameters						
Q_g (4.5V)	Total Gate Charge	V_{DS}=10V V_{GS}=4.5V I_D≡7.0A		16		nC
Q_{gs}	Gate-Source Charge			1.7		
Q_{gd}	Gate-Drain Charge			6		
R_g	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.2		Ω
C_{iss}	Input Capacitance	V_{DS}=10V V_{GS}=0V f=1MHz		1120		pF
C_{oss}	Output Capacitance			212		
C_{rss}	Reverse Transfer Capacitance			198		
$t_{d(on)}$	Turn-On Time	V_{Ds}=10V I_D=7A V_{GEN}=4.5V R_G=3.3Ω		6.6	13.5	nS
t_r				12	20	
$t_{d(off)}$	Turn-Off Time			63	115	
t_f				30	58	

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_C=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}=16V,V_{GS}=4.5V,L=0.1mH.

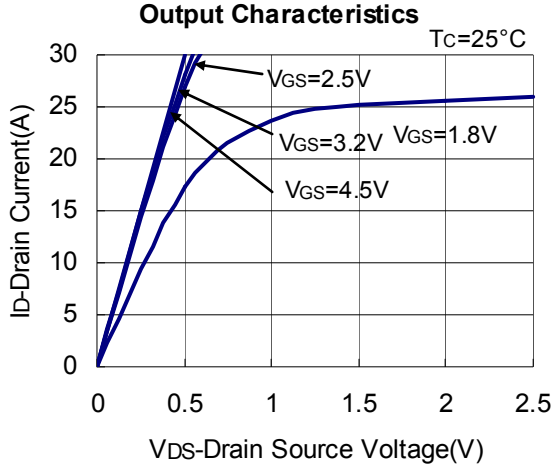
D. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

The products and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date

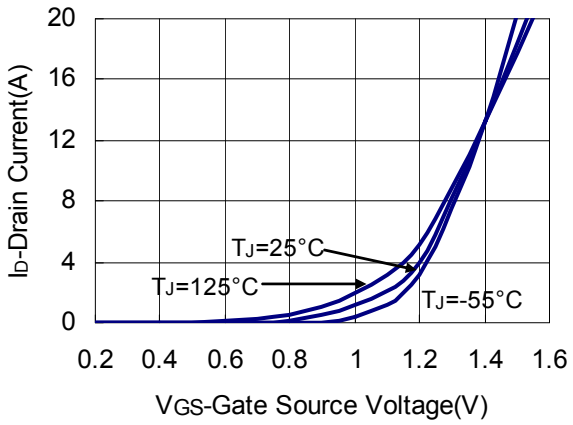
We assume no responsibility for any infringement of patents, patent rights, or other rights arising from the use of any information and circuitry in this datasheet.

TYPICAL CHARACTERISTICS (25℃ Unless Note)

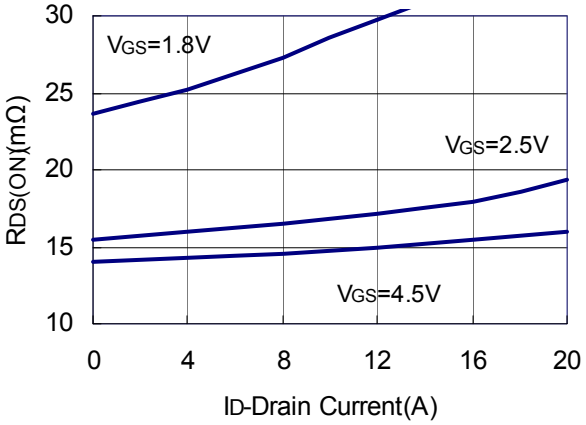
Output Characteristics



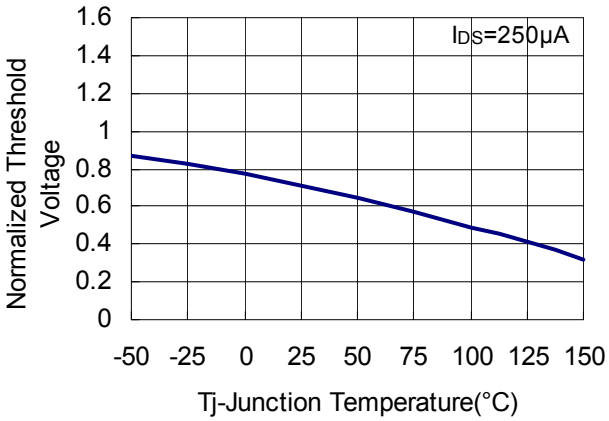
Drain-Source On Resistance



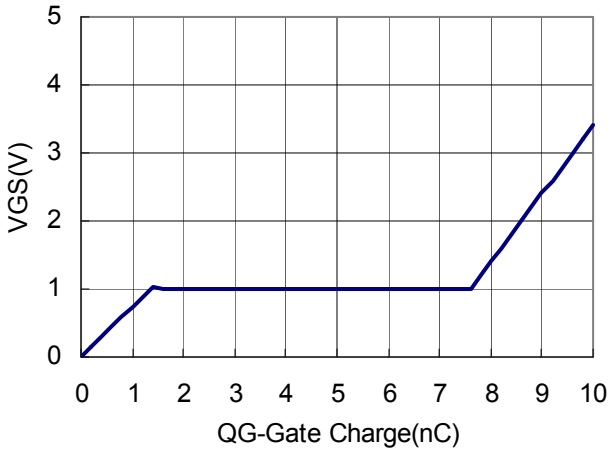
Transfer Characteristics



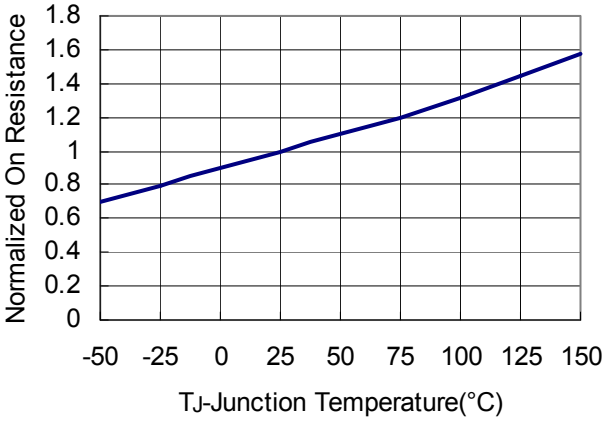
Gate Threshold Voltage



Gate Charge

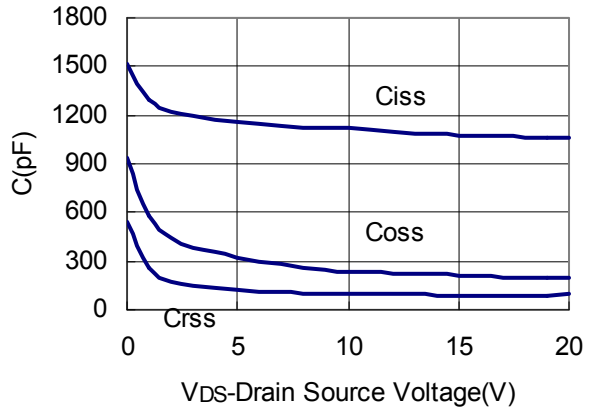


Drain Source On Resistance

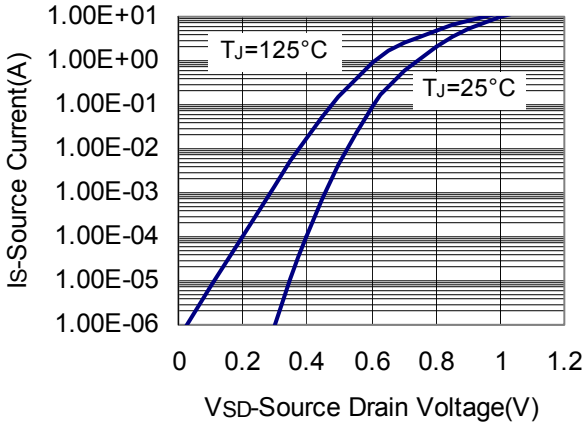


TYPICAL CHARACTERISTICS (25℃ Unless Note)

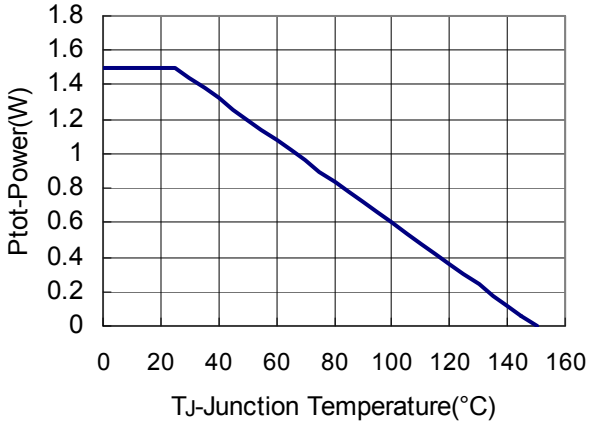
Capacitance



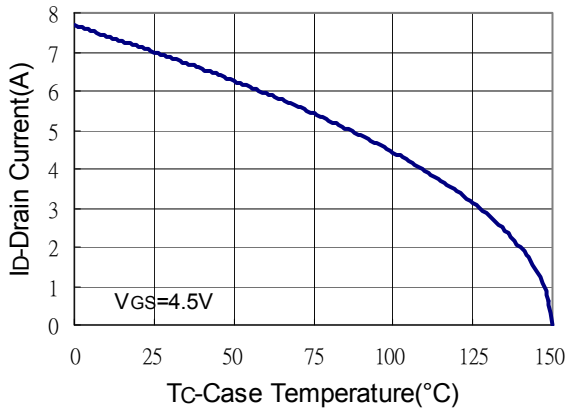
Source Drain Diode Forward



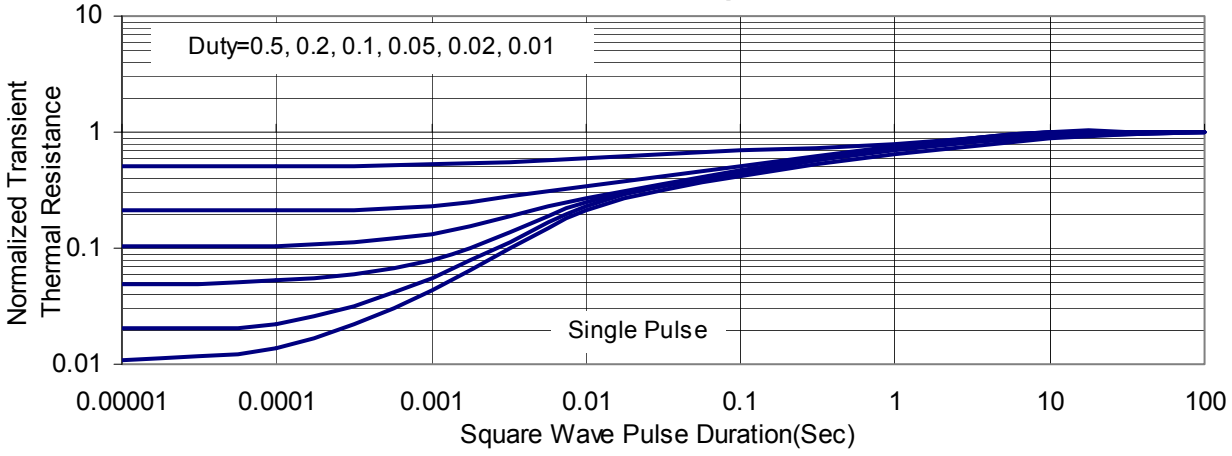
Power Dissipation



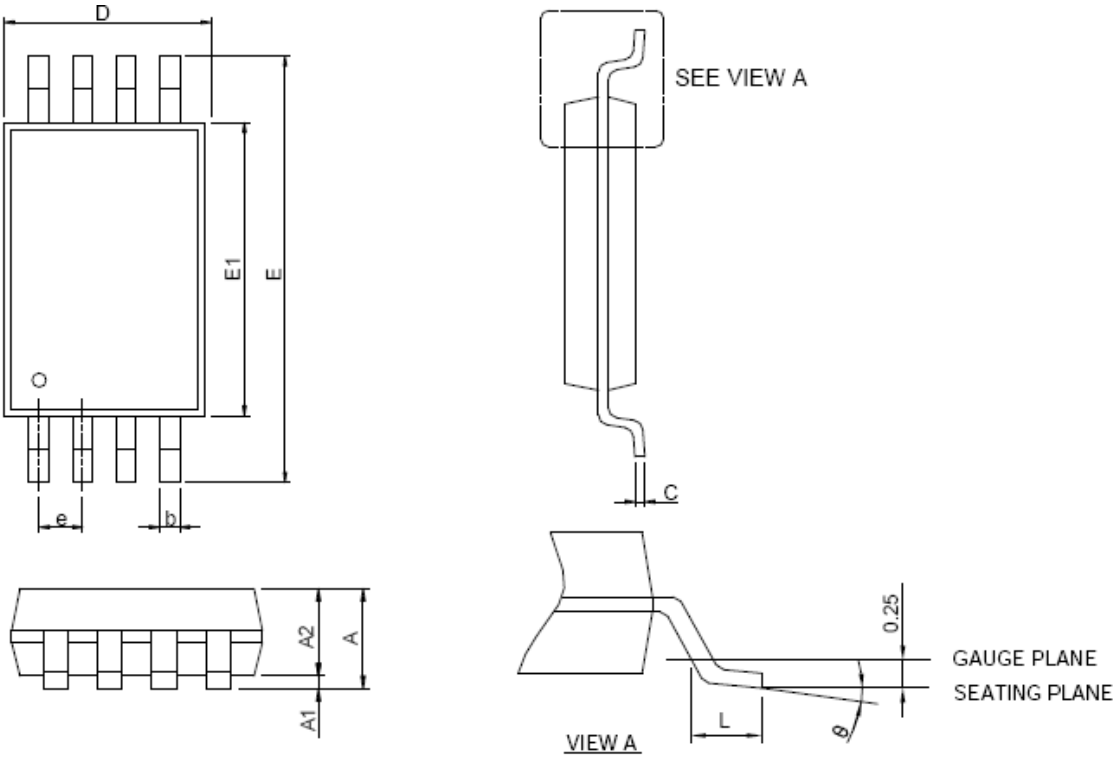
Drain Current



Thermal Transient Impedance



TSSOP-8 PACKAGE DIMENSIONS



SYMBOL	TSSOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A		1.20		0.047
A1	0.05	0.15	0.002	0.006
A2	0.80	1.05	0.031	0.041
b	0.19	0.30	0.007	0.012
c	0.09	0.20	0.004	0.008
D	2.90	3.10	0.114	0.122
E	6.20	6.60	0.244	0.260
E1	4.30	4.50	0.169	0.177
e	0.65 BSC		0.026 BSC	
L	0.45	0.75	0.018	0.030
θ	0 °	8 °	0 °	8°