SemTron Microtech Corporation

SMC8205AGW

Common-Drain Dual N-Channel MOSFET

DESCRIPTION

SMC8205AGW is the Dual N-Channel MOSFET , this advanced trench technology to provide excellent $R_{DS(ON)}$, facilitatedby it's common-drain as a Unidirectional or bidirectional load switch applications.

FEATURES

V_{DS}=20V, I_D=6.4A

$R_{DS(ON)}$=21mΩ(Typ.)@V_{GS}=4.5V
$R_{DS(ON)}$=22mΩ(Typ.)@V_{GS}=4.0V
$R_{DS(ON)}$=23mΩ(Typ.)@V_{GS}=3.2V
$R_{DS(ON)}$=25mΩ(Typ.)@V_{GS}=2.5V

- Fast switch
- High power and current handling capability
- Exceptional on-resistance

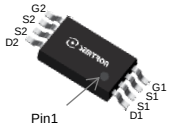
PART NUMBER INFORMATION

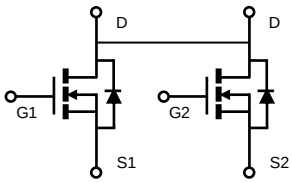
SMC 8205AG W - TR G
a b c d e

a : Company name.
b : Product Serial number.
c : Package code W:TSSOP-8
d : Handling code TR:Tape&Reel
e : Green produce code G:*RoHS Compliant*

APPLICATIONS

- Unidirectional / bidirectional Portable
- Equipment and Battery Powered.





TSSOP-8

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless otherwise noted)

Symbol	Parameter		Rating	Units
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current (V_{GS}=4.5V)	T_A=25°C	6.4	A
		T_A=70°C	5.1	A
I_{DM}	Pulsed Drain Current [B]		25.6	A
P_D	Power Dissipation [A]	T_A=25°C	1.6	W
		T_A=70°C	1	W
T_J	Operation Junction Temperature		-55/150	°C
T_{STG}	Storage Temperature Range		-55/150	°C

THERMAL RESISTANCE

Symbol	Parameter		Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient [A]	t≦10s		80	°C/W
	Thermal Resistance Junction to Ambient [AC]	Steady-State		120	

Copyright © Semtron Microtech Corp.

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV_{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	0.4	0.7	1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V,			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V, T_J=25°C			1	μA
		V_{DS}=16V, V_{GS}=0V, T_J=75°C			10	
$R_{DS(ON)}$	Drain-source On-Resistance [D]	V_{GS}=4.5V, I_D=6.4A		21	25	mΩ
		V_{GS}=4.0V, I_D=5A		22	26	
		V_{GS}=3.2V, I_D=4A		23	28	
		V_{GS}=2.5V, I_D=3A		25	30	
G_{fs}	Forward Transconductance	V_{DS}=5V, I_D=5A		7		S
Diode Characteristics						
V_{SD}	Diode Forward Voltage [D]	I_S=1A, V_{GS}=0V			1	V
I_S	Diode Continuous Forward Current				6.4	A
t_{rr}	Reverse Recovery Time	I_S=5A, dI/dt=100A/μs		8.5		ns
Q_{rr}	Reverse Recovery Charge			2.7		nC
Dynamic and Switching Parameters [E]						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D=5A		8.4	11.8	nC
Q_{gs}	Gate-Source Charge			1	1.4	
Q_{gd}	Gate-Drain Charge			2.8	3.9	
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz		492		pF
C_{oss}	Output Capacitance			82		
C_{rss}	Reverse Transfer Capacitance			70		
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		1.6		Ω
$t_{d(on)}$	Turn-On Time	V_{DD}=10V, V_{GEN}=4.5V R_G=3.3Ω, I_D=1A		4.7	9	nS
t_r				14	27	
$t_{d(off)}$	Turn-Off Time			23.6	45	
t_f				8.5	16	

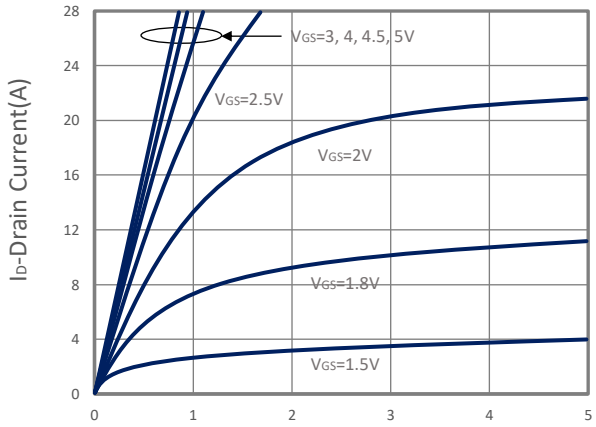
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

A. Surface mounted on FR4 board using 1 in^2 pad size.
B. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}$=150°C.
C. Using ≤ 10s junction-to-ambient thermal resistance is base on $T_{J(MAX)}$=150°C.
D. Pulse test width ≤300μs and duty cycle ≤ 2%.
E. Guaranteed by design, not subject to production testing.

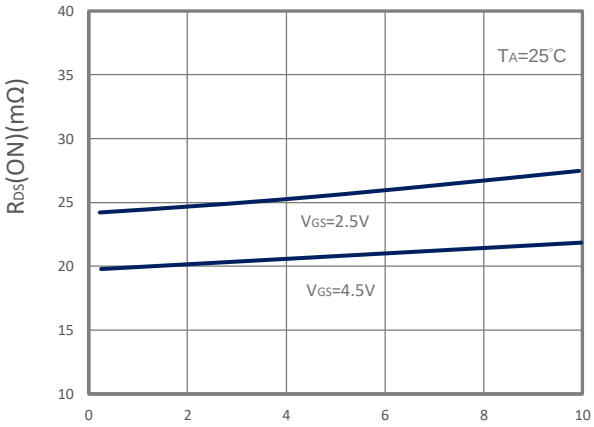
The products and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date We assume no responsibility for any infringement of patents, patent rights, or other rights arising from the use of any information and circuitry in this datasheet.

Copyright © Semtron Microtech Corp.

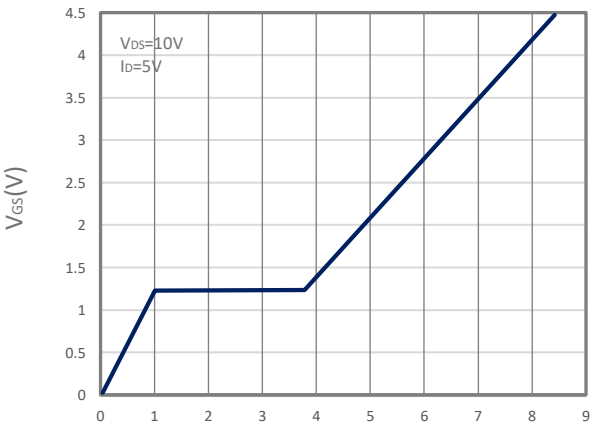
TYPICAL CHARACTERISTICS



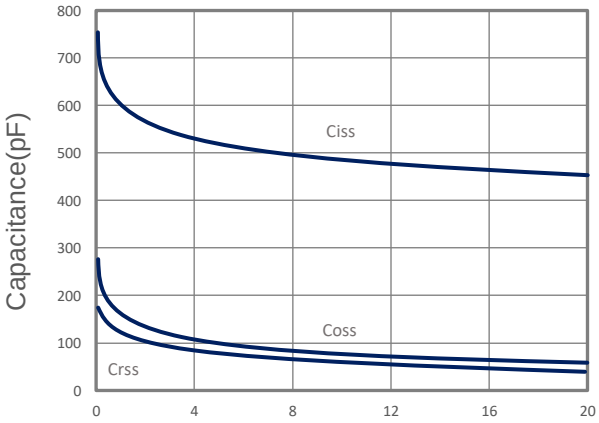
Output Characteristics



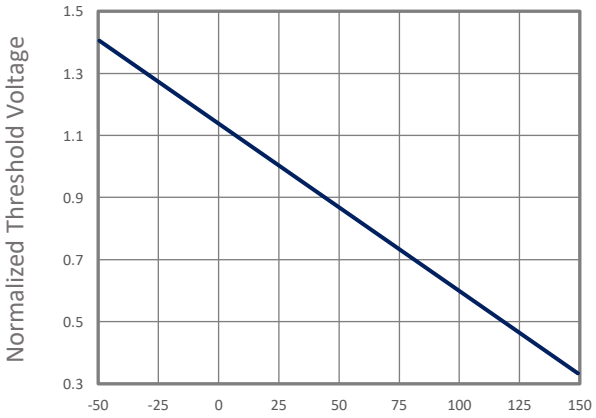
Drain-Source On Resistance



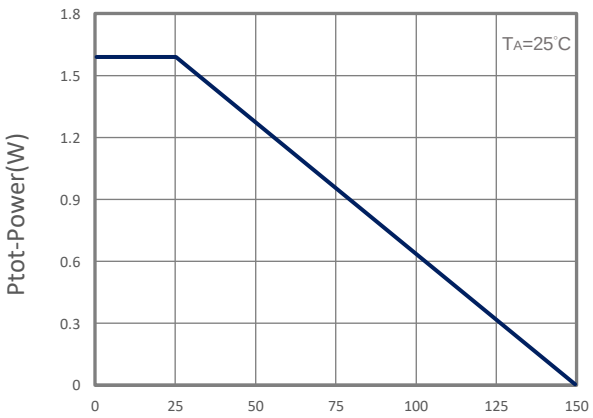
Gate Charge



Capacitance



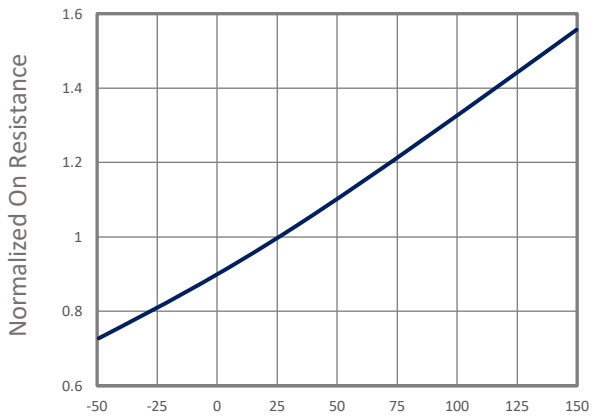
Gate Threshold Voltage



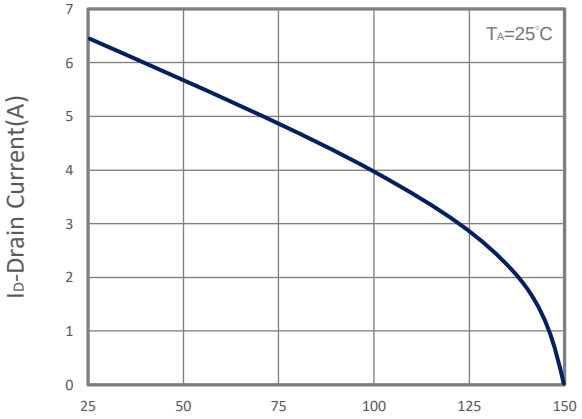
Power Dissipation

Copyright © Semtron Microtech Corp.

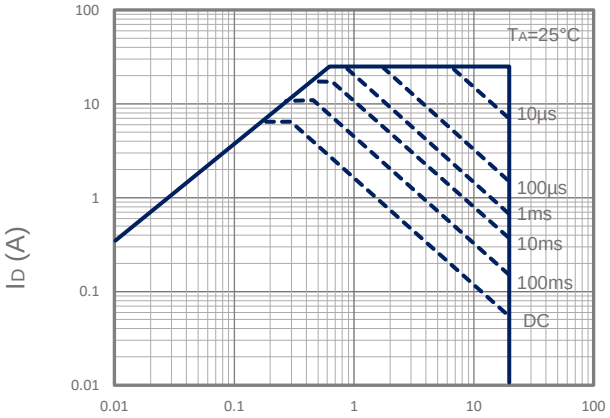
TYPICAL CHARACTERISTICS



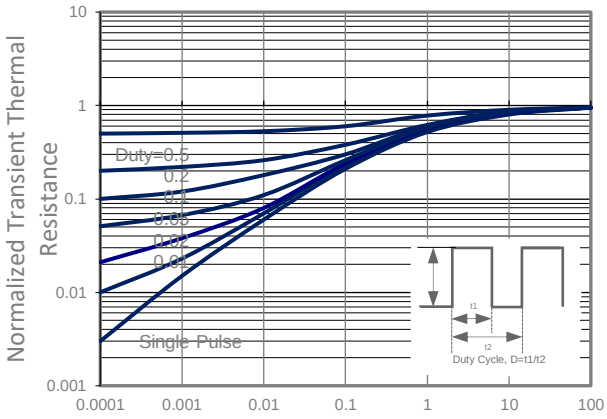
RDS(ON) vs Junction Temperature



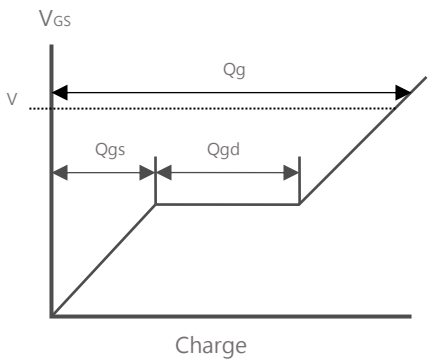
Drain Current vs TJ



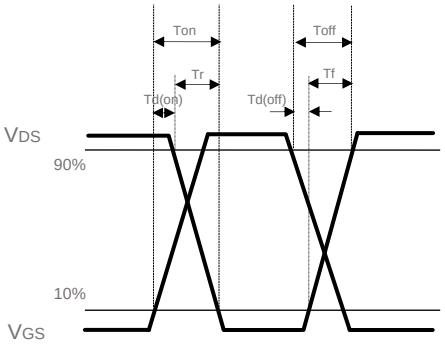
Maximum Safe Operation Area



Thermal Transient Impedance



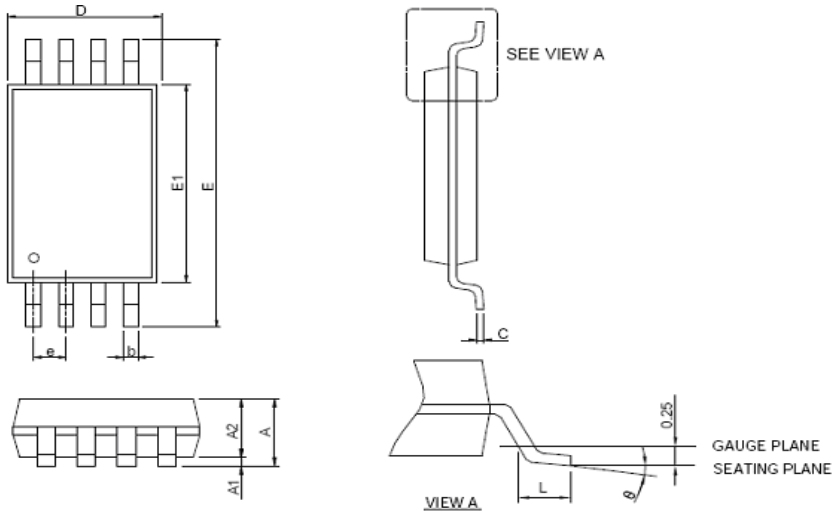
Gate Chrge Waveform



Switching Time Waveform

Copyright © Semtron Microtech Corp.

TSSOP-8 PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A		1.200		0.047
A1	0.050	0.150	0.002	0.006
A2	0.800	1.050	0.031	0.041
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	2.900	3.100	0.114	0.122
E	6.200	6.600	0.244	0.260
E1	4.300	4.500	0.169	0.177
e	0.650 REF		0.026 REF	
L	0.450	0.750	0.018	0.030
θ	0°	8°	0°	8°

Copyright © Semtron Microtech Corp.