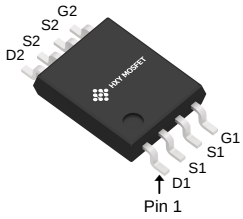
SMC8205AGW

Dual N-Channel Enhancement Mode MOSFET

General Description

The SMC8205AGW is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications. The meet the RoHS and Product requirement with full function reliability approved.



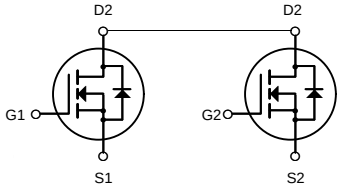
TSSOP-8

General Features

V_{DS} = 20V I_D = 6A

$R_{DS(ON)}$ < 27mΩ @ V_{GS}=4. 5V

$R_{DS(ON)}$ <37mΩ @ V_{GS}=2. 5V



Dual N-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
SMC8205AGW	TSSOP-8	HXY MOSFET	5000

Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current-Continuous	6	A
I_{DM}	Drain Current-Pulsed (Note 1)	25	A
P_D	Maximum Power Dissipation	1.5	W
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient (Note 2)	83	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20	21	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=19.5V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A	-	21	27	mΩ
		V_{GS}=2.5V, I_D=3.5A	-	27	37	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=4.5A	-	10	-	S
Input Capacitance	C_{lss}	V_{DS}=8V,V_{GS}=0V, F=1.0MHz	-	600	-	PF
Output Capacitance	C_{oss}		-	330	-	PF
Reverse Transfer Capacitance	C_{rss}		-	140	-	PF
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,I_D=1A V_{GS}=4.5V,R_{GEN}=6Ω	-	10	20	nS
Turn-on Rise Time	t_r		-	11	25	nS
Turn-Off Delay Time	$t_{d(off)}$		-	35	70	nS
Turn-Off Fall Time	t_f		-	30	60	nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=6A, V_{GS}=4.5V	-	10	15	nC
Gate-Source Charge	Q_{gs}		-	2.3	-	nC
Gate-Drain Charge	Q_{gd}		-	1.5	-	nC
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=1.7A	-	0.75	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	1.7	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Characteristics

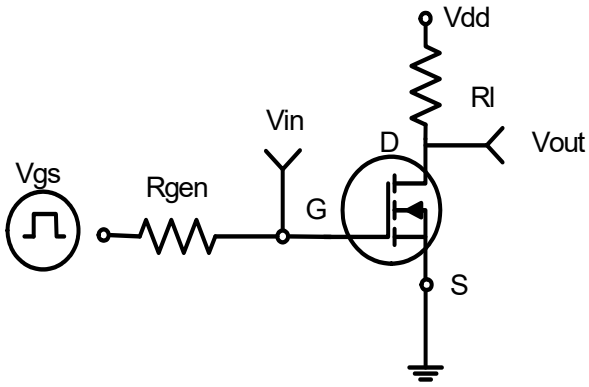


Figure 1:Switching Test Circuit

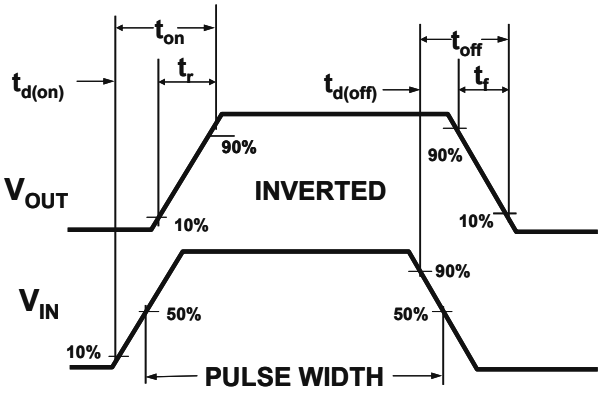


Figure 2:Switching Waveforms

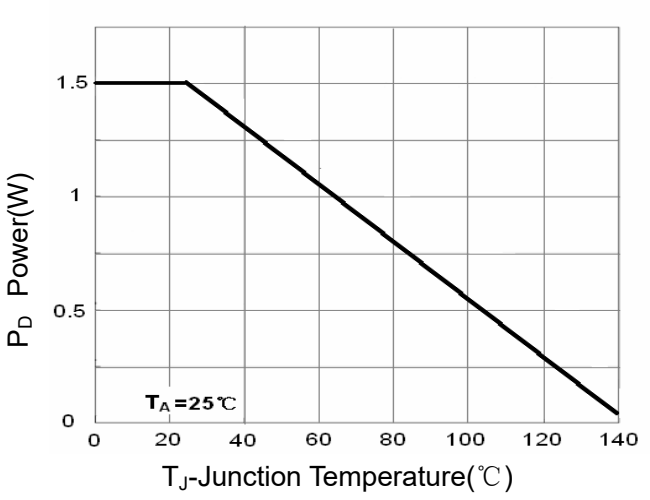


Figure 3 Power Dissipation

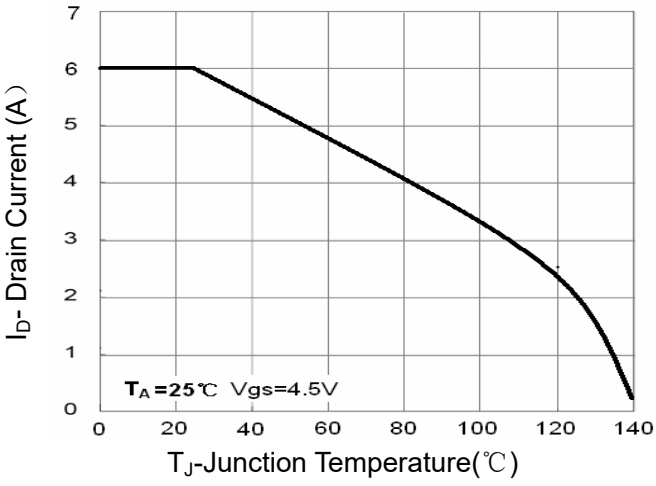


Figure 4 Drain Current

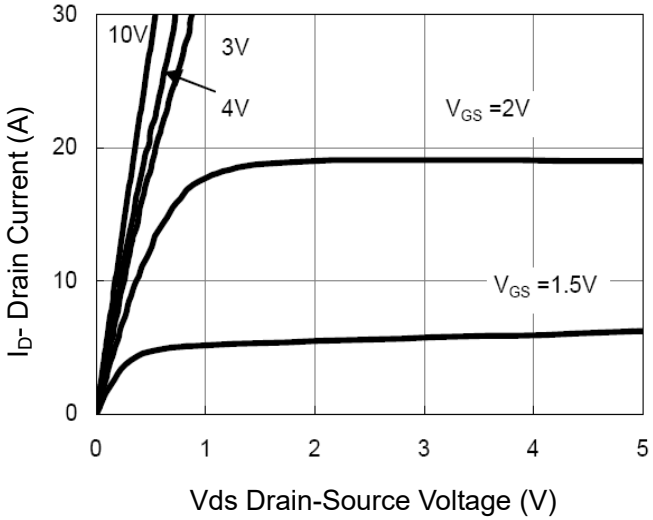


Figure 5 Output Characteristics

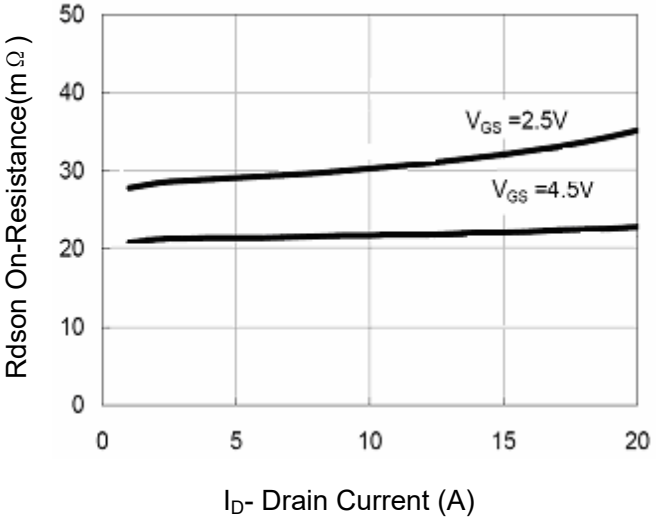
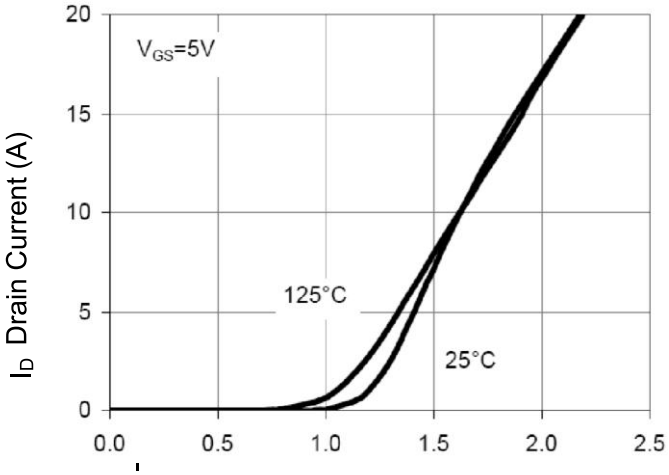
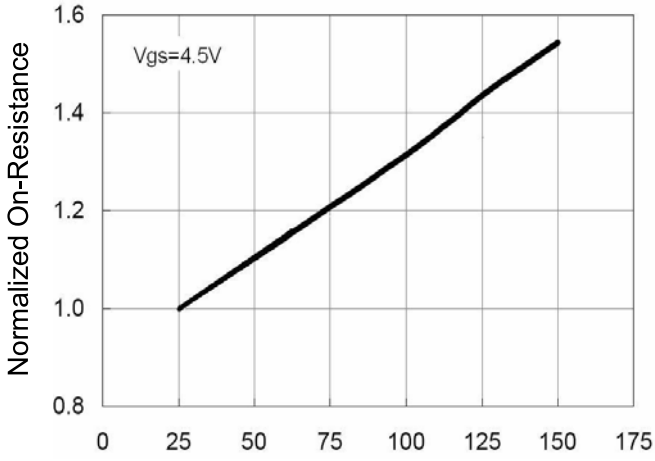


Figure 6 Drain-Source On-Resistance



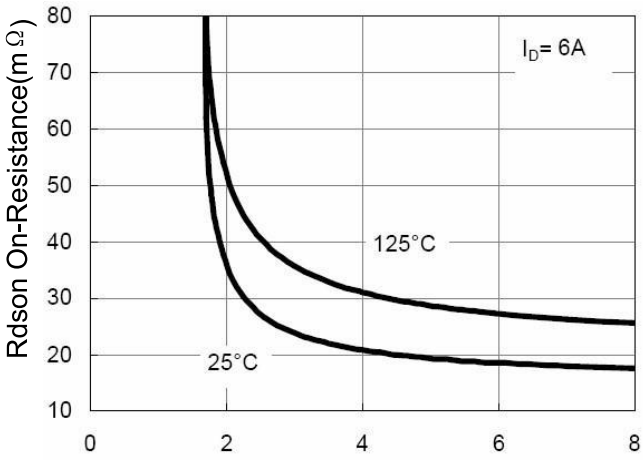
Vgs Gate-Source Voltage (V)

Figure 7 Transfer Characteristics



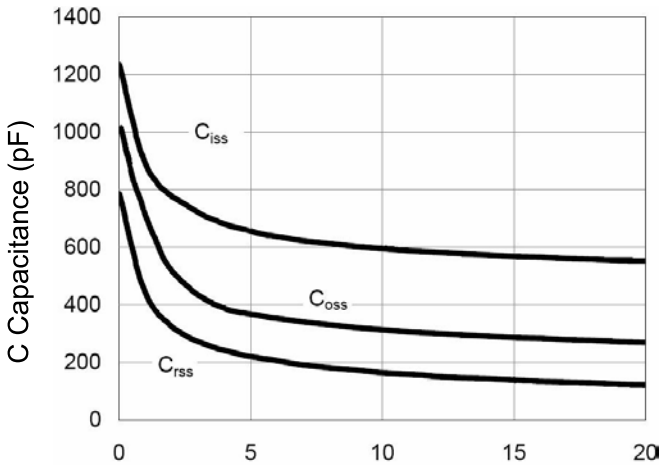
T_J-Junction Temperature(℃)

Figure 8 Drain-Source On-Resistance



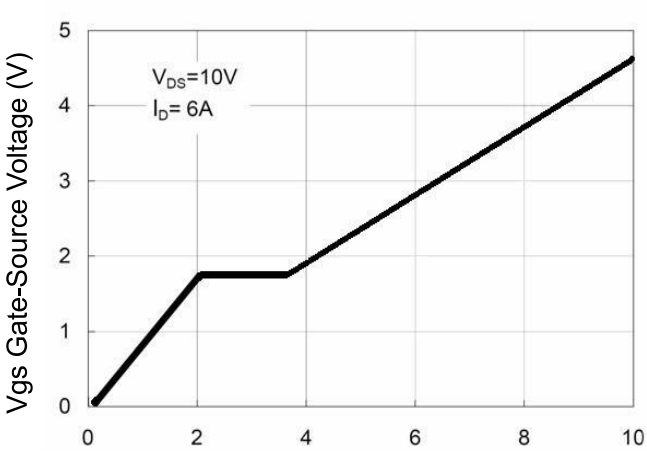
Vgs Gate-Source Voltage (V)

Figure 9 Rdson vs Vgs



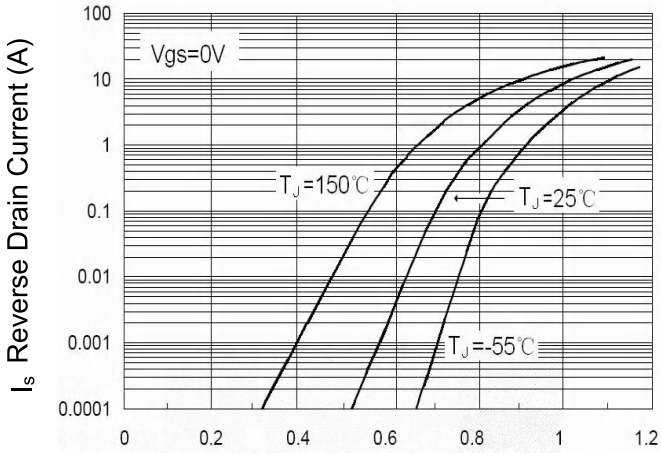
Vds Drain-Source Voltage (V)

Figure 10 Capacitance vs Vds



Qg Gate Charge (nC)

Figure 11 Gate Charge



Vsd Source-Drain Voltage (V)

Figure 12 Source- Drain Diode Forward

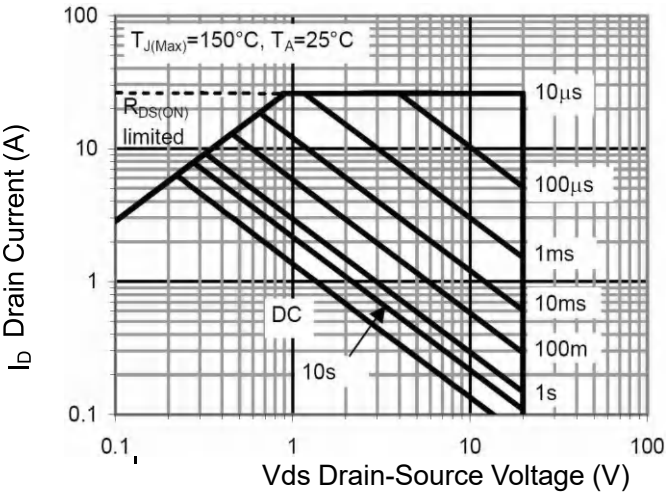


Figure 13 Safe Operation Area

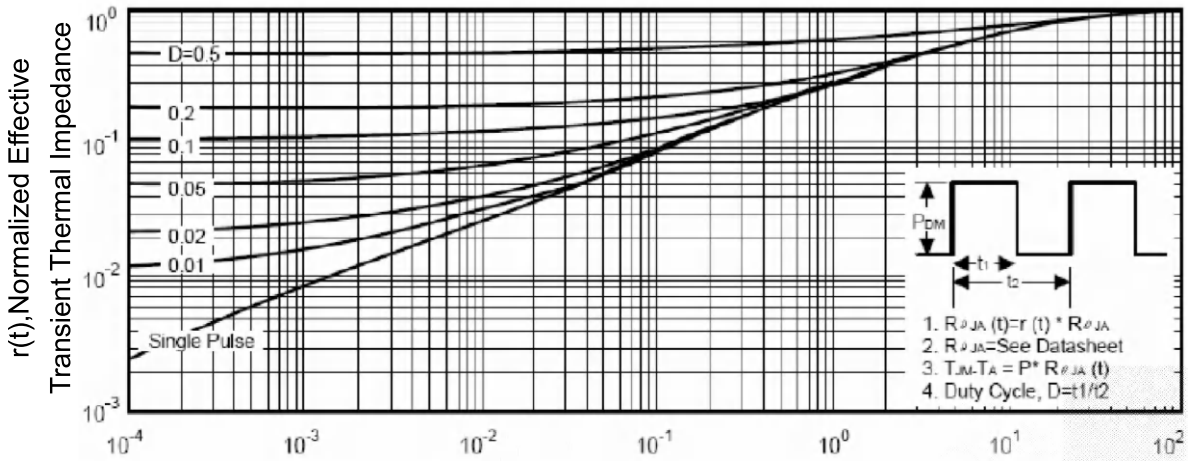
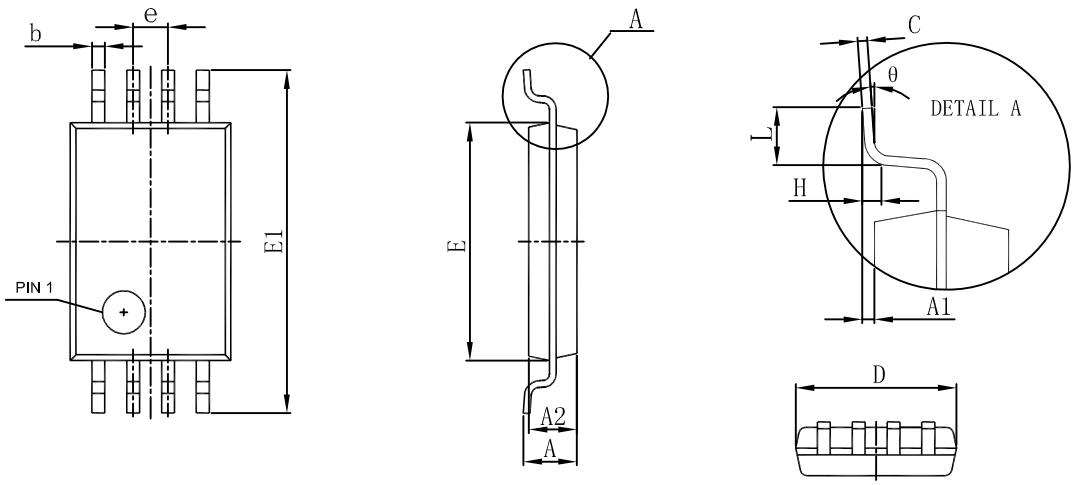


Figure 14 Normalized Maximum Transient Thermal Impedance

TSSOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.200		0.047
A2	0.800	1.000	0.031	0.039
A1	0.050	0.150	0.002	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25(TYP)		0.01(TYP)	
θ	1°	7°	1°	7°

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