

Common-Drain Dual N-Channel MOSFET

DESCRIPTION

SMC8205AG is the Dual N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced trench technology to provide excellent $R_{DS(ON)}$. These devices are well suited for high efficiency fast switching applications, low in-line power loss are needed in small outline surface mount package.

PART NUMBER INFORMATION

SMC 8205AG S6 - TR G
 a b c d e

- a : Company name.
- b : Product Serial number.
- c : Package code S6:SOT-23-6L
- d : Handling code TR:Tape&Reel
- e : Green produce code G:RoHS Compliant

FEATURES

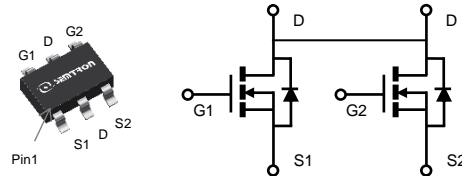
$V_{DS} = 20V, I_D = 6A$

$R_{DS(ON)}=22m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)}=25m\Omega(Typ.)@V_{GS}=2.5V$

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

APPLICATIONS

- ◆ Power Management in Notebook Computer
- ◆ Portable Equipment and Battery Powered.



SOT-23-6L

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ 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 ($V_{GS}=4.5V$)	$T_A=25^\circ C$	6
		$T_A=70^\circ C$	4.7
I_{DM}	Pulsed Drain Current ^A	24	A
P_D	Power Dissipation ^B	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	0.9
T_J	Operation Junction Temperature	-55/150	$^\circ C$
T_{STG}	Storage Temperature Range	-55/150	$^\circ C$

THERMAL RESISTANCE

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^B	$t \leq 10s$	90	$^\circ C/W$
	Thermal Resistance Junction to Ambient ^{BC}	Steady-State	130	

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

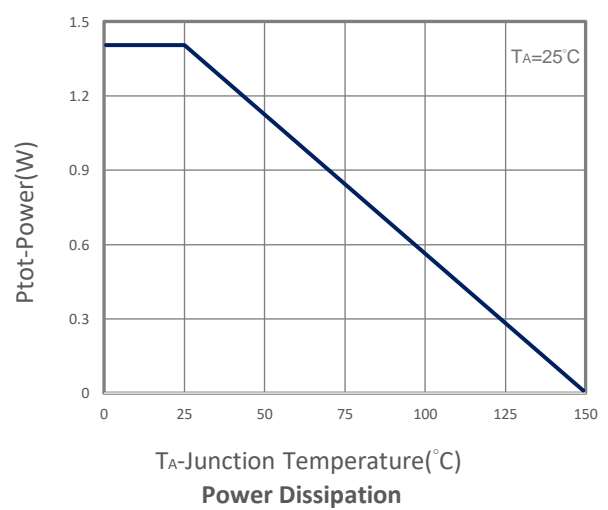
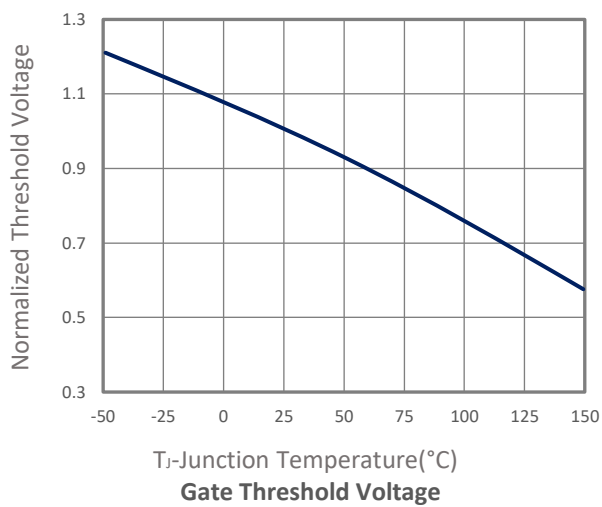
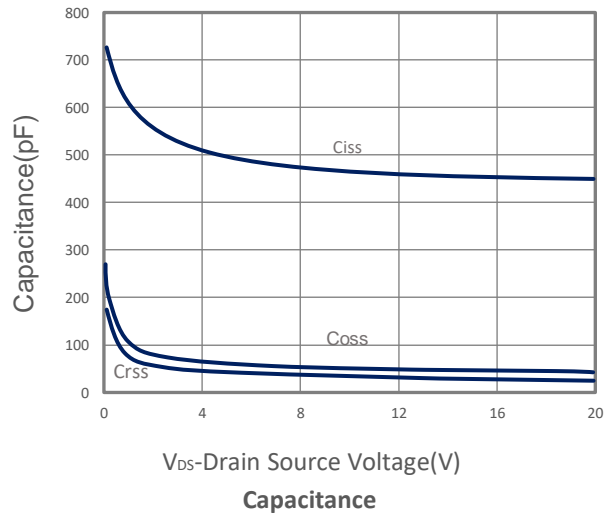
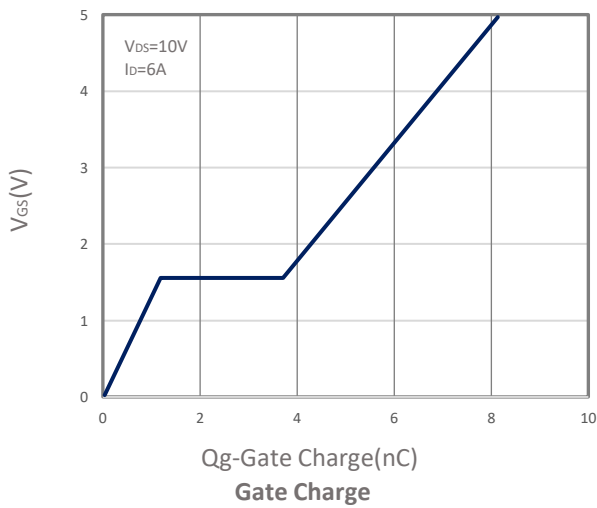
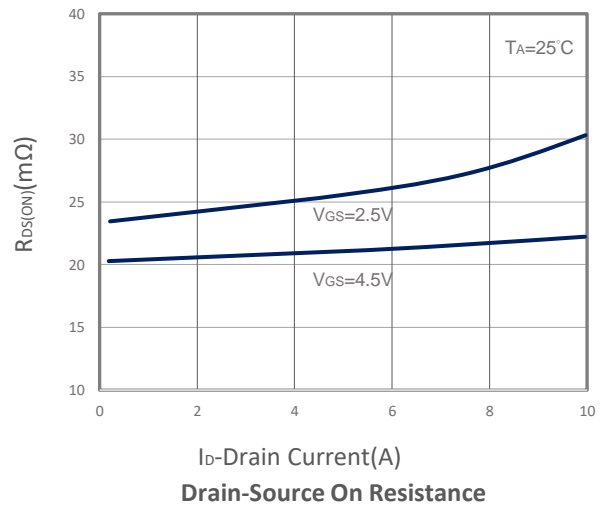
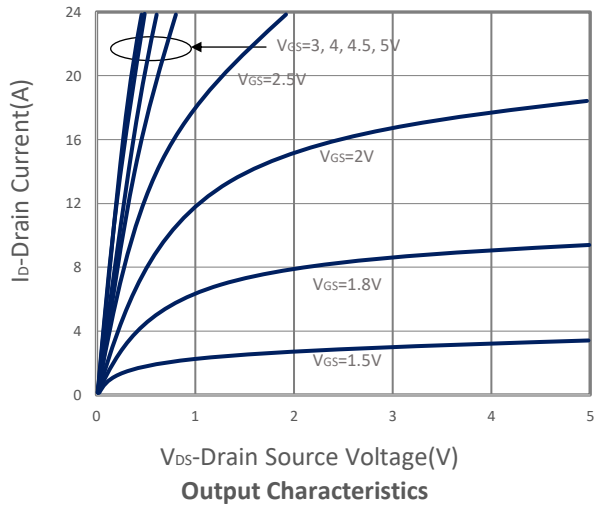
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250 μ A	0.4	0.7	1.0	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} = \pm 12V			\pm 100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V, T _J =25 $^\circ$ C			1	μ A
		V _{DS} =16V, V _{GS} =0V, T _J =75 $^\circ$ C			10	
R _{DS(ON)}	Drain-source On-Resistance ^D	V _{GS} =4.5V, I _D =6A		22	26	m Ω
		V _{GS} =2.5V, I _D =4A		25	30	
G _{fs}	Forward Transconductance	V _{DS} =5V, I _D =4A		7		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage ^D	I _S =1A, V _{GS} =0V		0.7	1	V
I _S	Continuous Source Current				3	A
t _{rr}	Reverse Recovery Time	I _S =6A, dI/dt=100A/ μ s		17		ns
Q _{rr}	Reverse Recovery Charge			8		nC
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =6A		8.1	11.3	nC
Q _{gs}	Gate-Source Charge			1.2	1.7	
Q _{gd}	Gate-Drain Charge			2.6	3.6	
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz		485		pF
C _{oss}	Output Capacitance			50		
C _{rss}	Reverse Transfer Capacitance			30		
t _{d(on)}	Turn-On Time	V _{DD} =10V, V _{GEN} =4.5V, R _G =25 Ω , I _D =1A		3.9	7	nS
t _r				11	21	
t _{d(off)}	Turn-Off Time			21	40	
t _f				6.8	13	

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

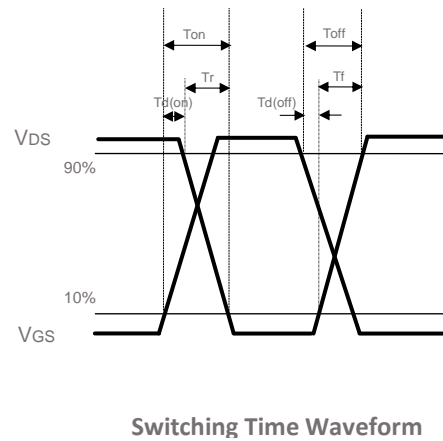
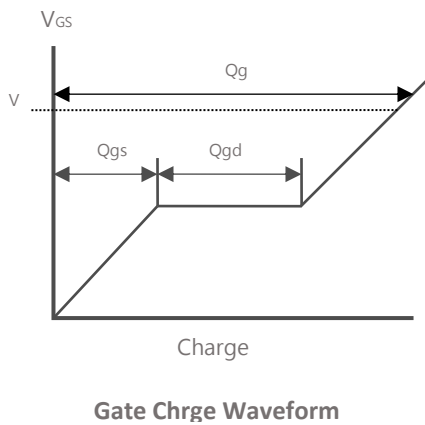
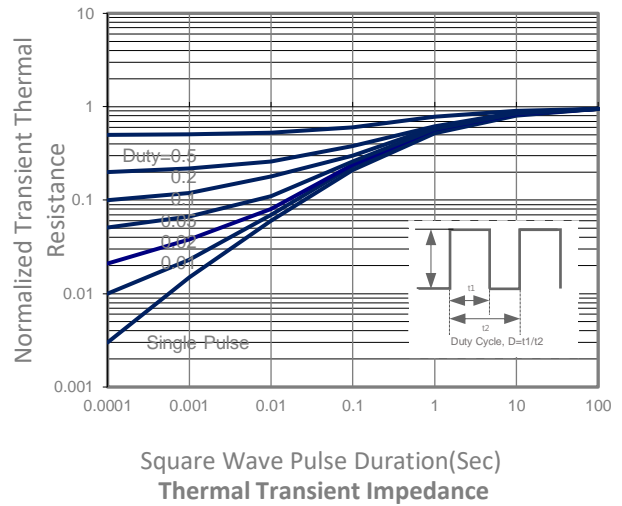
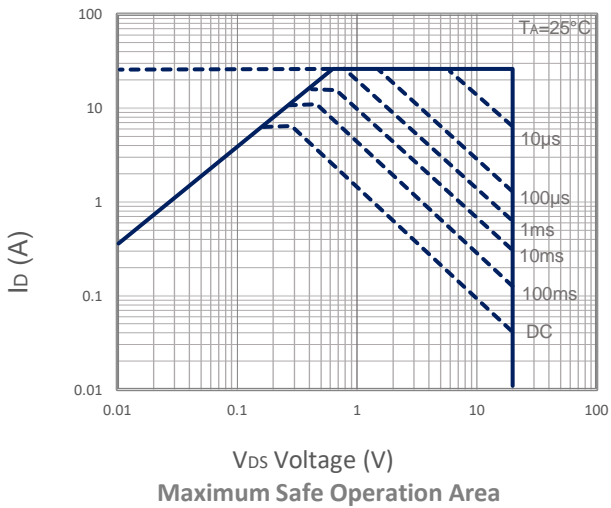
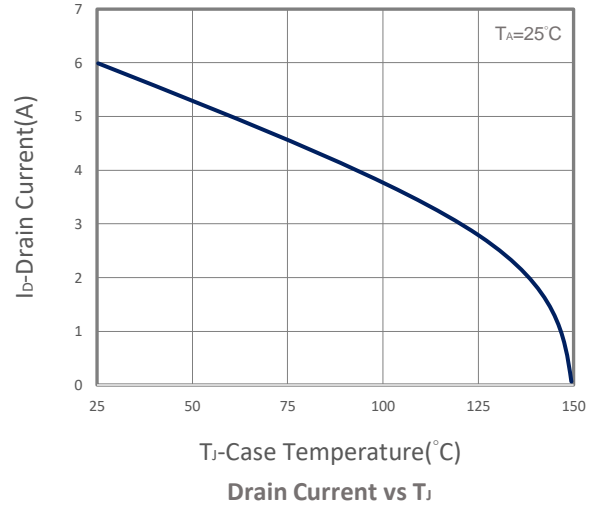
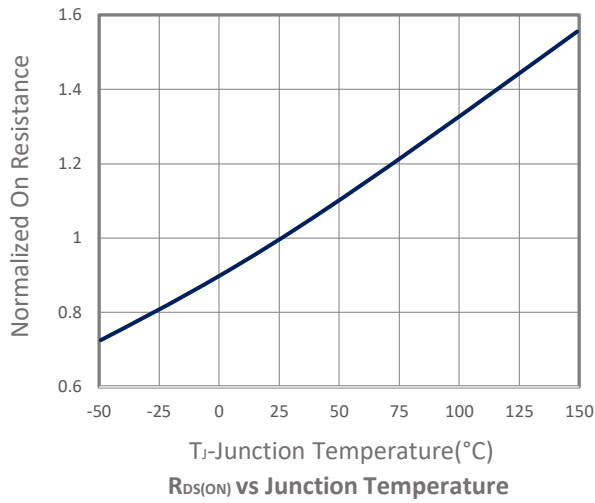
- Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^\circ$ C.
- Measure the value in a still air environment at T_A=25 $^\circ$ C, using an installation mounted on a 1 in2 FR-4 board, maximum junction temperature T_{J(MAX)}=150 $^\circ$ C.
- T_{J(MAX)}=150 $^\circ$ C, using junction-to-case thermal resistance (R_{θJC}) is more useful in additional heat sinking is used.
- The pulse test width is \leq 300 μ s and the duty cycle \leq 2%.

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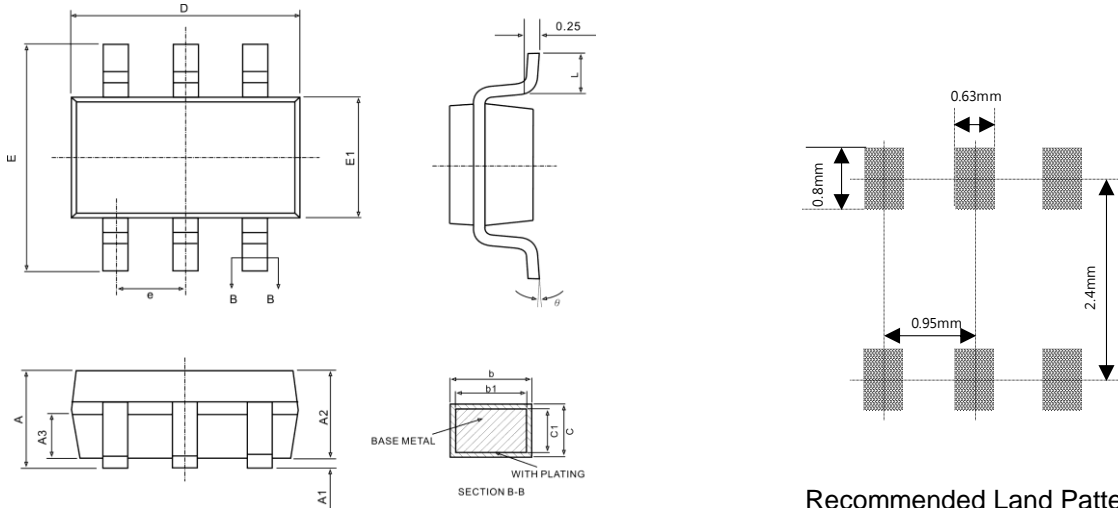
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



SOT-23-6L PACKAGE DIMENSIONS



Recommended Land Pattern

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	-	1.300	-	0.051
A1	0.040	0.100	0.002	0.004
A2	1.000	1.200	0.039	0.047
A3	0.550	0.750	0.022	0.030
b	0.340	0.430	0.013	0.017
b1	0.330	0.380	0.013	0.015
c	0.150	0.210	0.006	0.008
c1	0.140	0.160	0.006	0.006
D	2.720	3.120	0.107	0.123
E	2.600	3.000	0.102	0.118
E1	1.400	1.800	0.055	0.071
e	0.950 BSC		0.066 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°