



Description

Dual N-channel Enhancement Mode Power MOSFET

Features

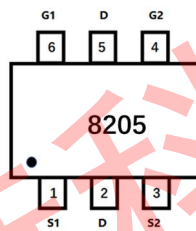
- 20V, 5A
 $R_{DS(ON)} < 26m\Omega @ V_{GS} = 4.5V$
 $R_{DS(ON)} < 34m\Omega @ V_{GS} = 2.5V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

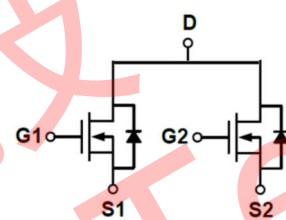
- Load Switch
- PWM Application
- Power management



SOT23-6L(Dual)



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
8205	JMTM8205A	TAPING	SOT23-6L	7inch	3000	180000

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate-Source Voltage	±12	V
I _D	Continuous Drain Current	T _A = 25°C	5
		T _A = 100°C	3.2
I _{DM}	Pulsed Drain Current ^{note1}	20	A
P _D	Power Dissipation	1.5	W
R _{θJA}	Thermal Resistance, Junction to Ambient	83.3	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°C



Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V,$	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.66	1.2	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS}=4.5V, I_D=5A$	-	18	26	m Ω
		$V_{GS}=2.5V, I_D=3A$	-	23	34	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	800	-	pF
C_{oss}	Output Capacitance		-	155	-	pF
C_{rss}	Reverse Transfer Capacitance		-	125	-	pF
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=3A,$ $V_{GS}=4.5V$	-	11	-	nC
Q_{gs}	Gate-Source Charge		-	2.3	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	2.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=10V,$ $I_D=3A, R_{GEN}=3\Omega,$ $V_{GS}=4.5V$	-	18	-	ns
t_r	Turn-on Rise Time		-	5	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	43	-	ns
t_f	Turn-off Fall Time		-	20	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6.5	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	26	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=5A$	-	-	1.2	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Typical Performance Characteristics

Figure 1: Output Characteristics

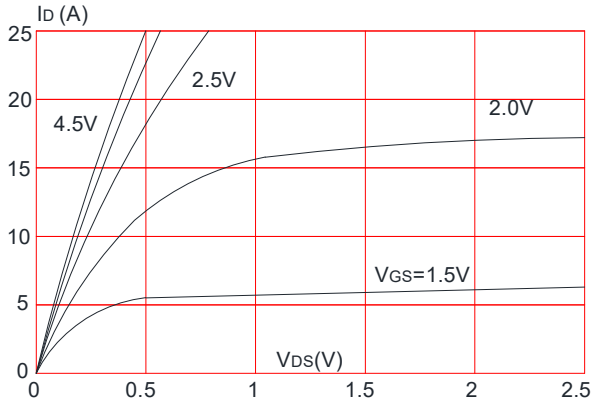


Figure 2: Typical Transfer Characteristics

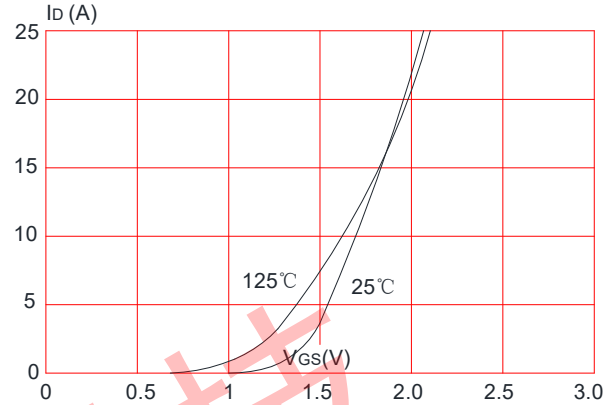


Figure 3: On-resistance vs. Drain Current

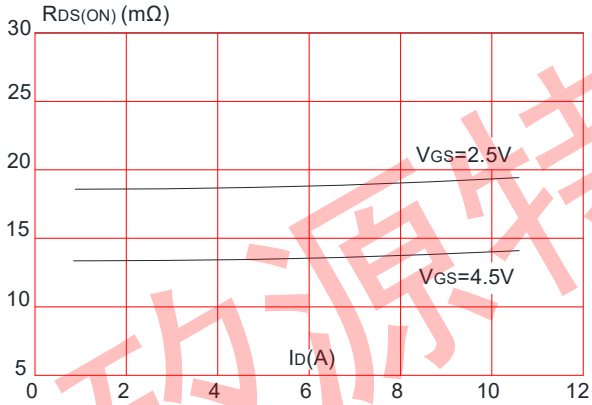


Figure 4: Body Diode Characteristics

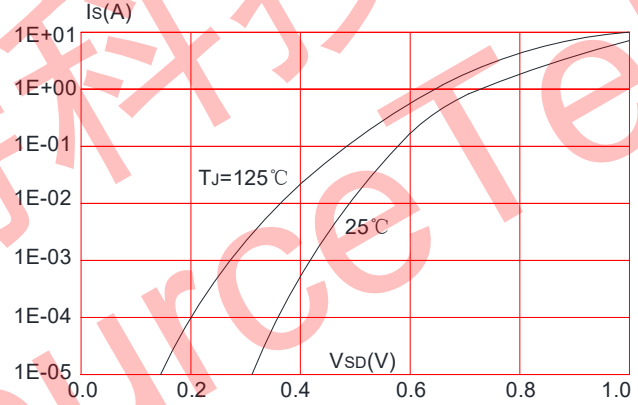


Figure 5: Gate Charge Characteristics

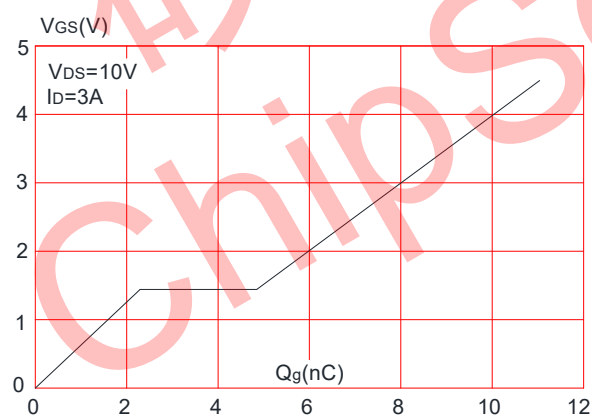


Figure 6: Capacitance Characteristics

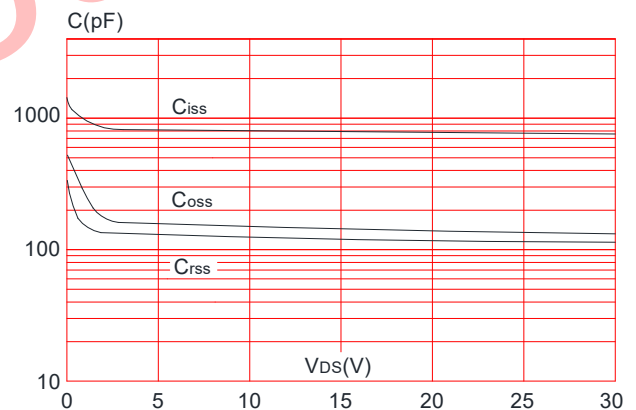




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

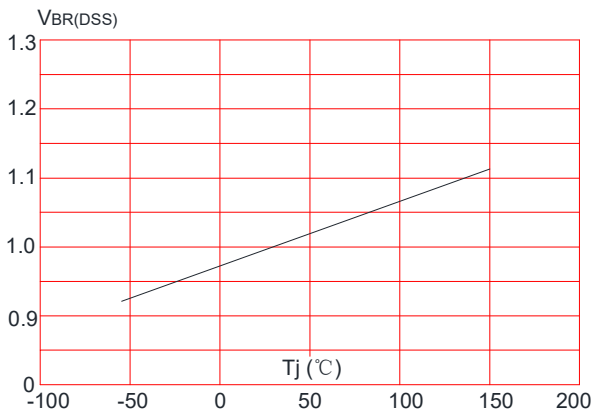


Figure 8: Normalized on Resistance vs. Junction Temperature

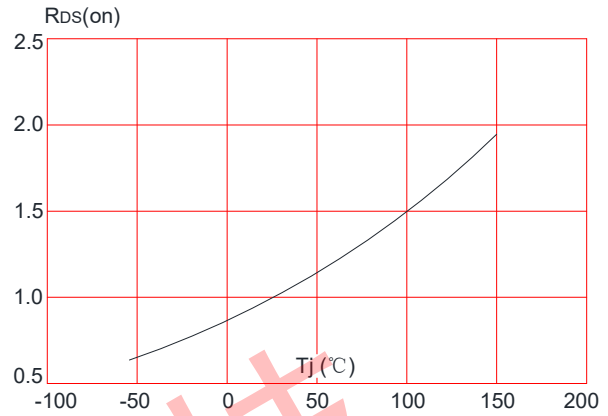


Figure 9: Maximum Safe Operating Area

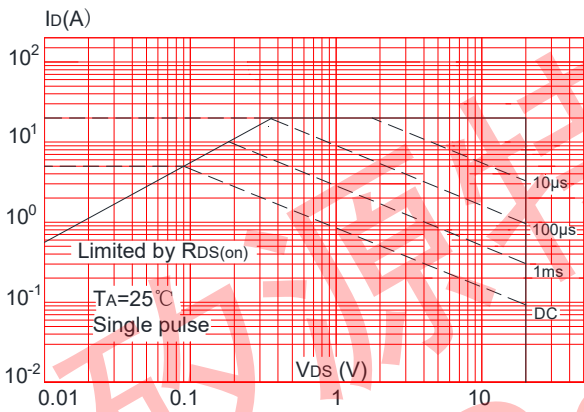


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

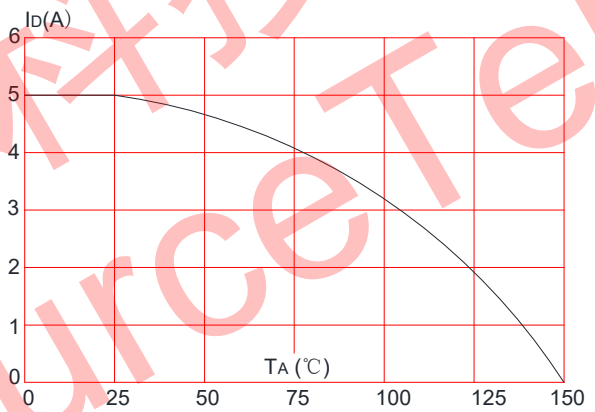
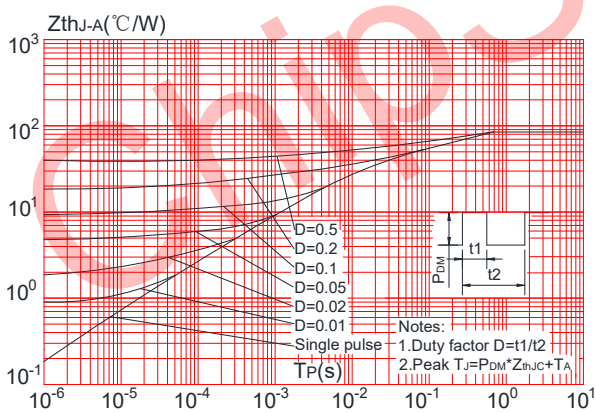


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





Test Circuit

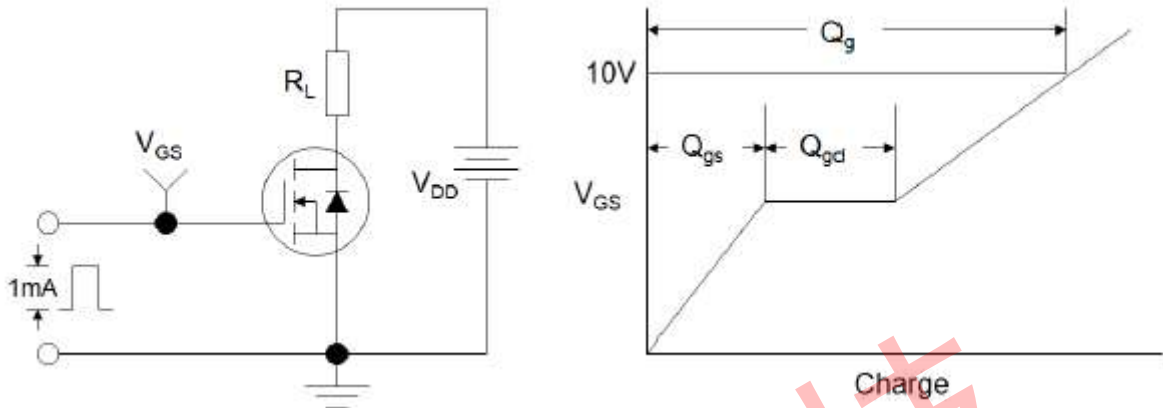


Figure1:Gate Charge Test Circuit & Waveform

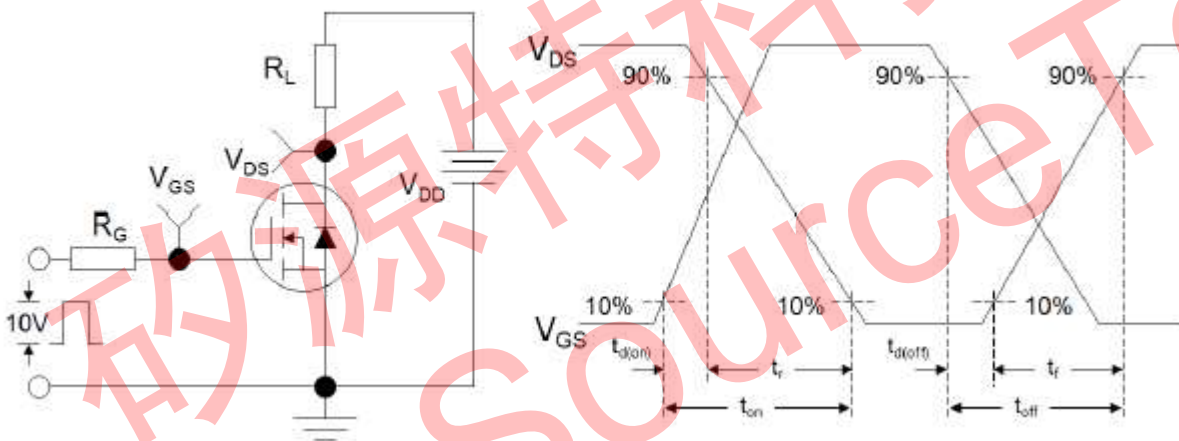


Figure 2: Resistive Switching Test Circuit & Waveforms

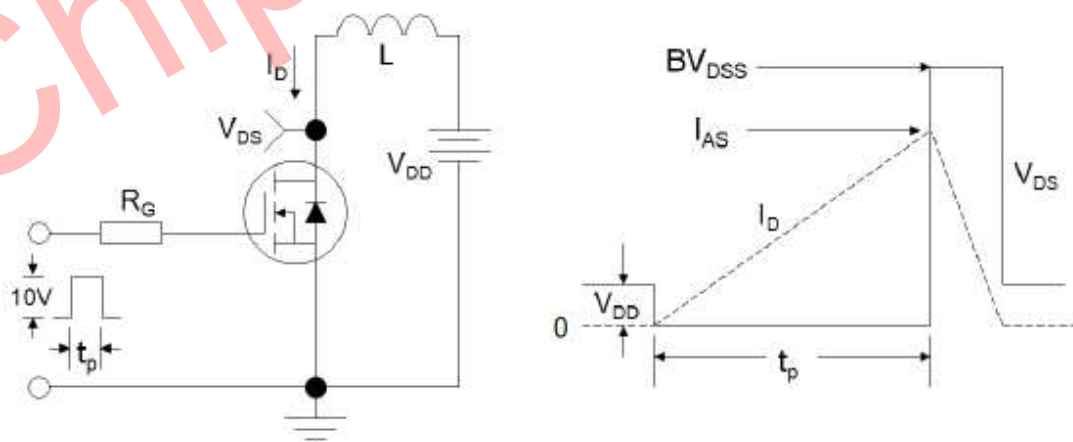
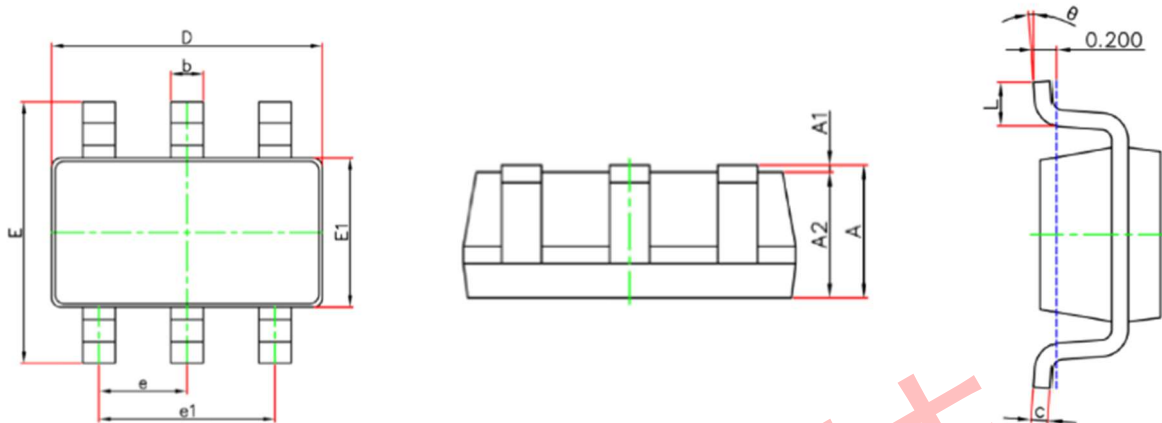


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-SOT23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037 (BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°