



Description

Dual N-channel Enhancement Mode Power MOSFET

Features

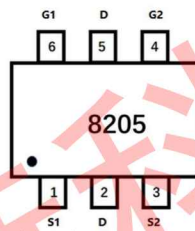
- 20V, 5A
 $R_{DS(ON)} < 26m\Omega$ @ $V_{GS} = 4.5V$
 $R_{DS(ON)} < 34m\Omega$ @ $V_{GS} = 2.5V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

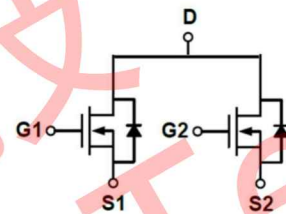
- Load Switch
- PWM Application
- Power management



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	A
		T _A = 100°C	3.2	A
I _{DM}	Pulsed Drain Current ^{note1}		20	A
P _D	Power Dissipation	T _A = 25°C	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 =250μA	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} =±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5	0.66	1.2	V
R _{DS(on)}	Static Drain-Source on-Resistance note2	V _{GS} =4.5V, I _D =5A	-	18	26	mΩ
		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} =3Ω, 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

Figure1: Output Characteristics

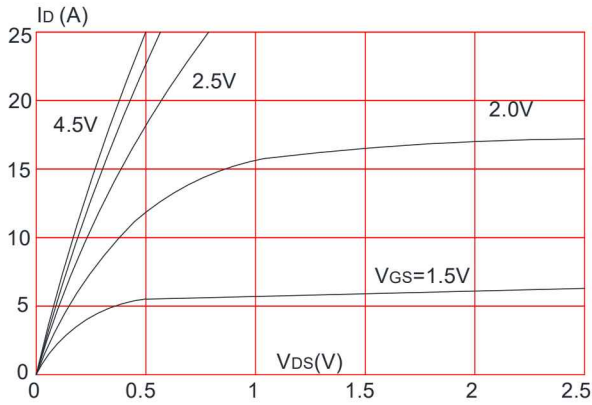


Figure 2: Typical Transfer Characteristics

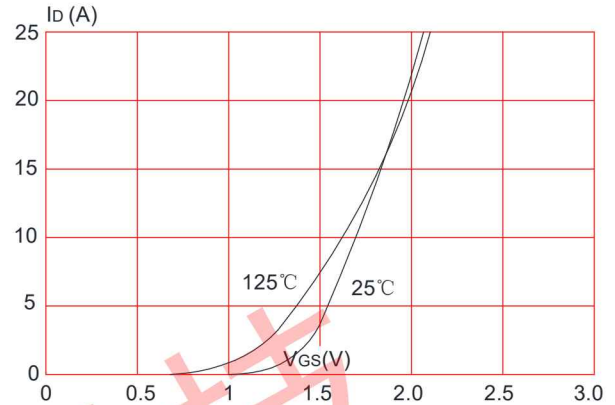


Figure 3: On-resistance vs. Drain Current

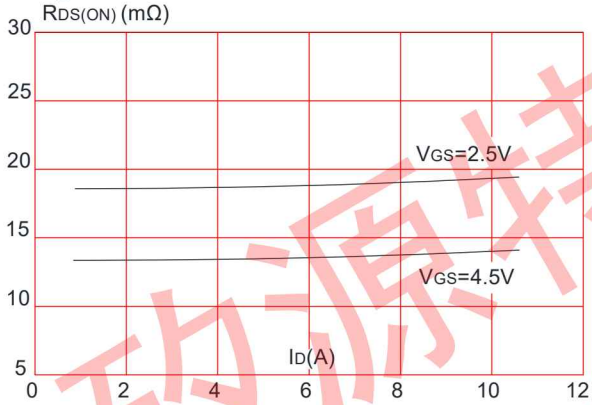


Figure 4: Body Diode Characteristics

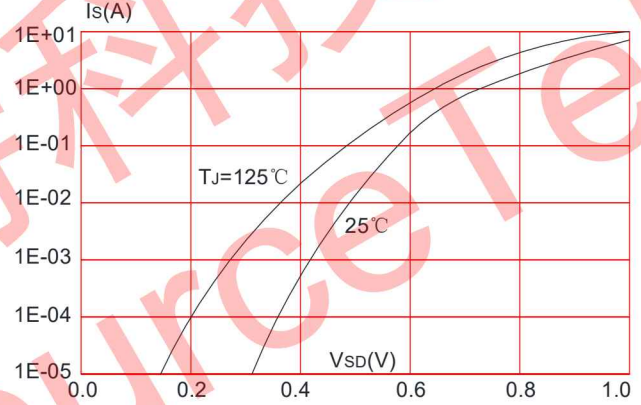


Figure 5: Gate Charge Characteristics

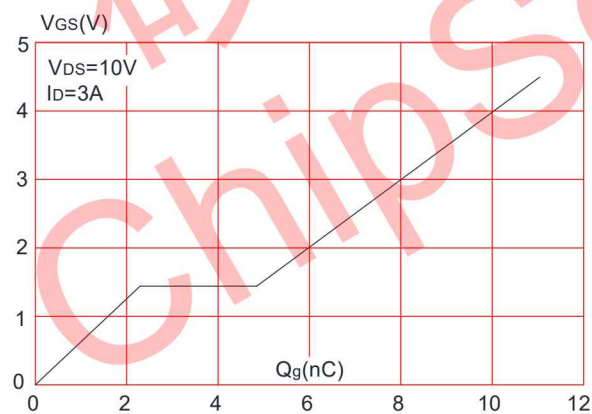


Figure 6: Capacitance Characteristics

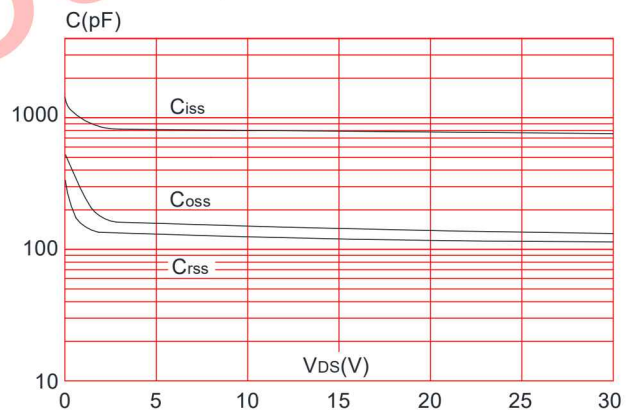




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

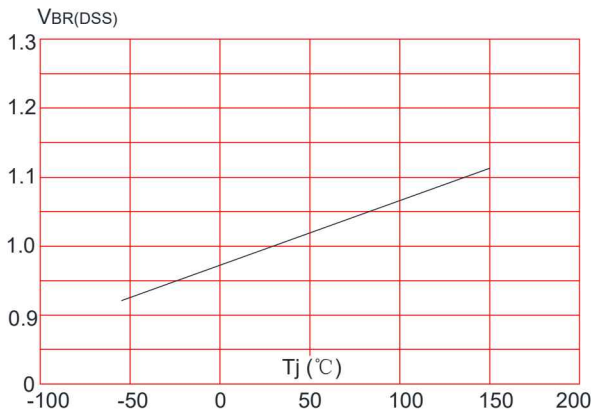


Figure 8: Normalized on Resistance vs. Junction Temperature

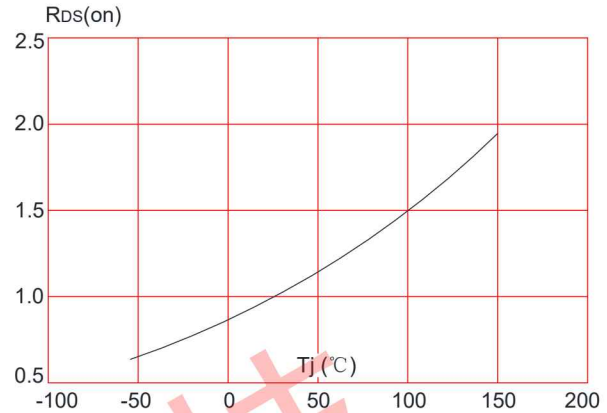


Figure 9: Maximum Safe Operating Area

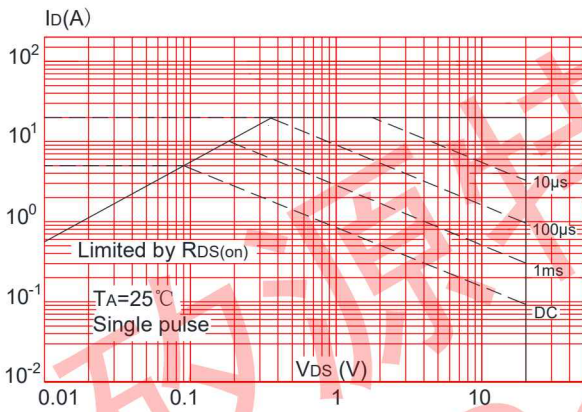


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

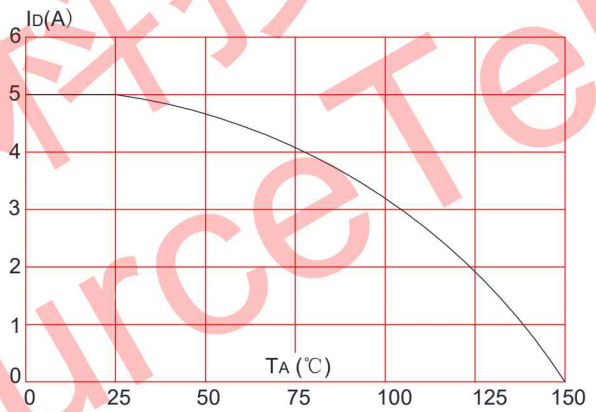
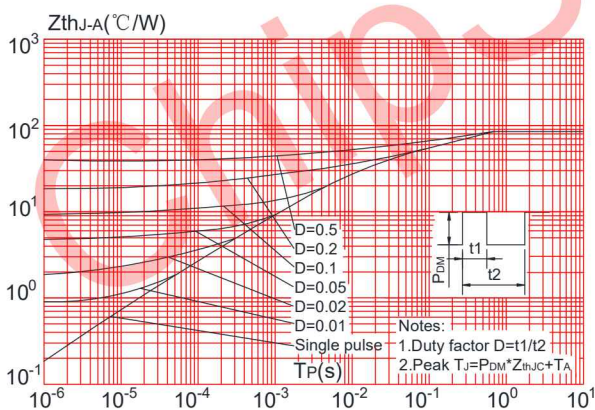


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient





Test Circuit

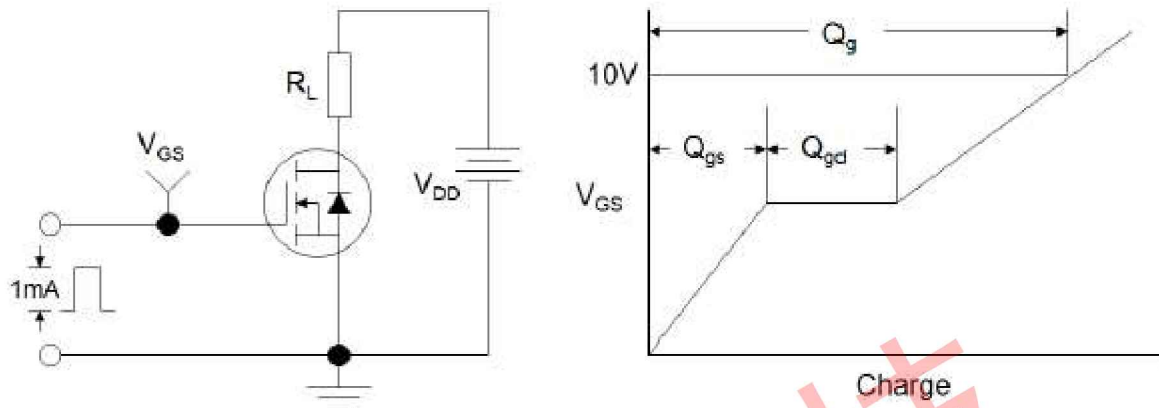


Figure1:Gate Charge Test Circuit & Waveform

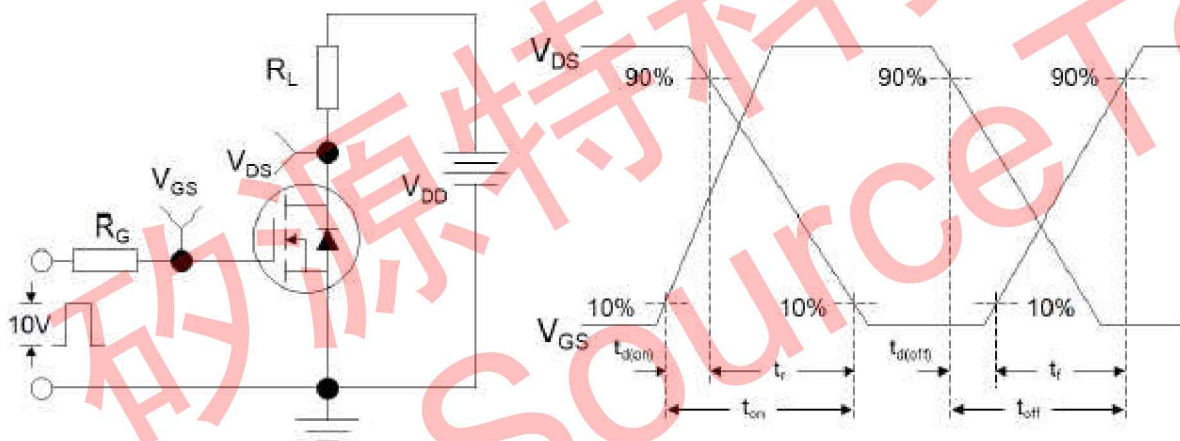


Figure 2: Resistive Switching Test Circuit & Waveforms

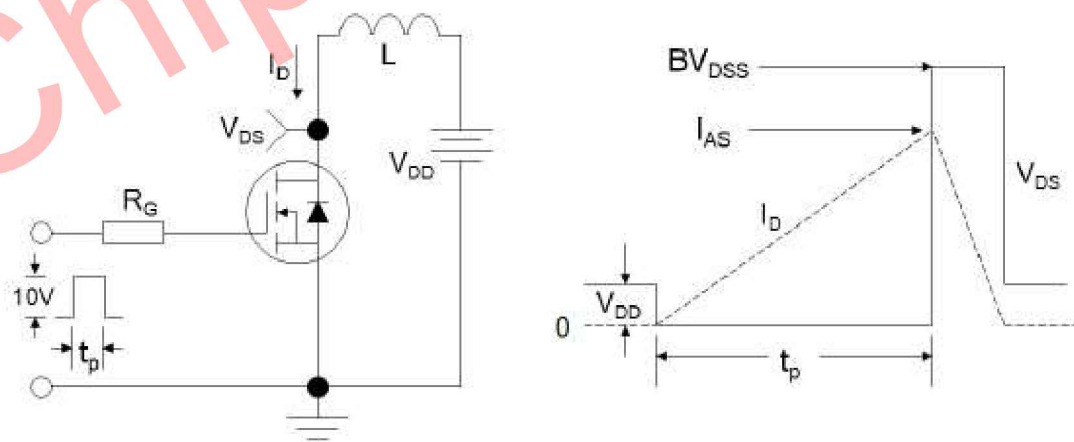
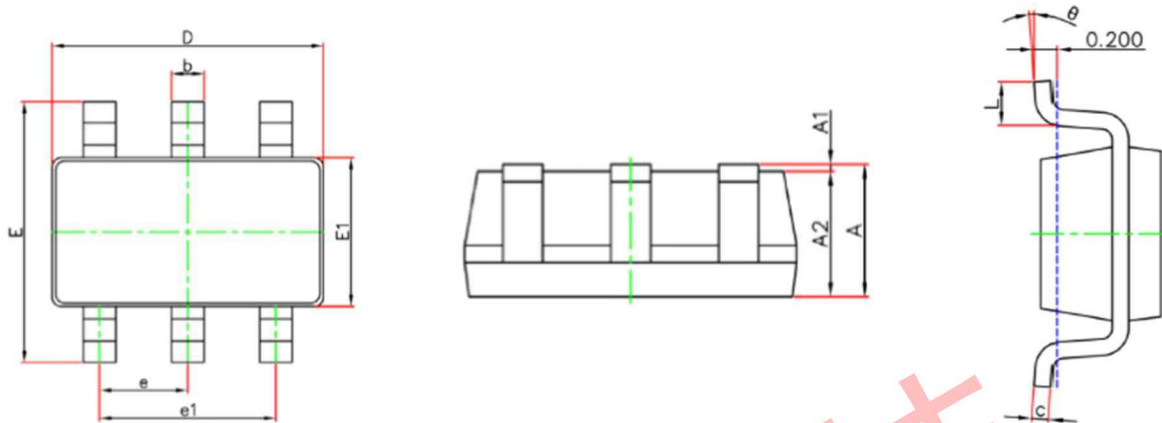


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



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°