



## Description

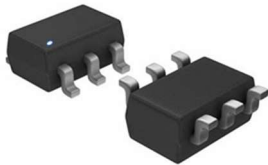
### JMT Dual N-channel Enhancement Mode Power MOSFET

#### Features

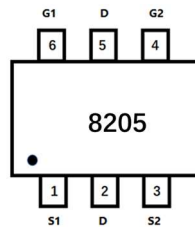
- 20V, 5A  
 $R_{DS(ON)} < 26m\Omega @ V_{GS} = 4.5V$   
 $R_{DS(ON)} < 34m\Omega @ V_{GS} = 2.5V$
- Advanced Trench Technology
- Provide Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

#### Application

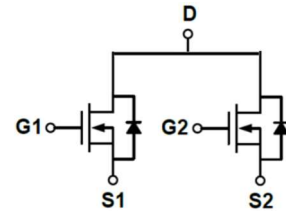
- Load Switch
- PWM Application
- Power management



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<sub>A</sub>=25°C unless otherwise specified)

| Symbol                            | Parameter                               | Max.                   | Units |
|-----------------------------------|---|------------------------|-------|
| V <sub>DSS</sub>                  | Drain-Source Voltage                    | 20                     | V     |
| V <sub>GSS</sub>                  | Gate-Source Voltage                     | ±12                    | V     |
| I <sub>D</sub>                    | Continuous Drain Current                | T <sub>A</sub> = 25°C  | 5     |
|                                   |   | T <sub>A</sub> = 100°C | 3.2   |
| I <sub>DM</sub>                   | Pulsed Drain Current <sup>note1</sup>   | 20                     | A     |
| P <sub>D</sub>                    | Power Dissipation                       | T <sub>A</sub> = 25°C  | 1.5   |
| R <sub>θJA</sub>                  | Thermal Resistance, Junction to Ambient | 83.3                   | °C/W  |
| T <sub>J</sub> , T <sub>STG</sub> | Operating and Storage Temperature Range | -55 to +150            | °C    |



## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

| Symbol  | Parameter   | Test Condition  | Min. | Typ. | Max. | Units |
|---|---|---|------|------|------|-------|
| <b>Off Characteristic</b>                                     |   |   |      |      |      |       |
| V <sub>(BR)DSS</sub>  | Drain-Source Breakdown Voltage                            | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA  | 20   | -    | -    | V     |
| I <sub>DSS</sub>  | Zero Gate Voltage Drain Current                           | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V,  | -    | -    | 1.0  | μA    |
| I <sub>GSS</sub>  | Gate to Body Leakage Current                              | V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V  | -    | -    | ±100 | nA    |
| <b>On Characteristics</b>                                     |   |   |      |      |      |       |
| V <sub>GS(th)</sub>   | Gate Threshold Voltage                                    | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                    | 0.5  | 0.66 | 1.2  | V     |
| R <sub>DS(on)</sub>   | Static Drain-Source on-Resistance<br><small>note2</small> | V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A   | -    | 18   | 26   | mΩ    |
|   |   | V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A   | -    | 23   | 34   |       |
| <b>Dynamic Characteristics</b>                                |   |   |      |      |      |       |
| C <sub>iss</sub>  | Input Capacitance   | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V,<br>f=1.0MHz                                      | -    | 800  | -    | pF    |
| C <sub>oss</sub>  | Output Capacitance  |   | -    | 155  | -    | pF    |
| C <sub>rss</sub>  | Reverse Transfer Capacitance                              |   | -    | 125  | -    | pF    |
| Q <sub>g</sub>  | Total Gate Charge   | V <sub>DS</sub> =10V, I <sub>D</sub> =3A,<br>V <sub>GS</sub> =4.5V                          | -    | 11   | -    | nC    |
| Q <sub>gs</sub>   | Gate-Source Charge  |   | -    | 2.3  | -    | nC    |
| Q <sub>gd</sub>   | Gate-Drain("Miller") Charge                               |   | -    | 2.5  | -    | nC    |
| <b>Switching Characteristics</b>                              |   |   |      |      |      |       |
| t <sub>d(on)</sub>  | Turn-on Delay Time  | V <sub>DS</sub> =10V,<br>I <sub>D</sub> =3A, R <sub>GEN</sub> =3Ω,<br>V <sub>GS</sub> =4.5V | -    | 18   | -    | ns    |
| t <sub>r</sub>  | Turn-on Rise Time   |   | -    | 5    | -    | ns    |
| t <sub>d(off)</sub>   | Turn-off Delay Time                                       |   | -    | 43   | -    | ns    |
| t <sub>f</sub>  | Turn-off Fall Time  |   | -    | 20   | -    | ns    |
| <b>Drain-Source Diode Characteristics and Maximum Ratings</b> |   |   |      |      |      |       |
| I <sub>S</sub>  | Maximum Continuous Drain to Source Diode Forward Current  |   | -    | -    | 6.5  | A     |
| I <sub>SM</sub>   | Maximum Pulsed Drain to Source Diode Forward Current      |   | -    | -    | 26   | A     |
| V <sub>SD</sub>   | Drain to Source Diode Forward Voltage                     | V <sub>GS</sub> =0V, I <sub>S</sub> =5A   | -    | -    | 1.2  | V     |

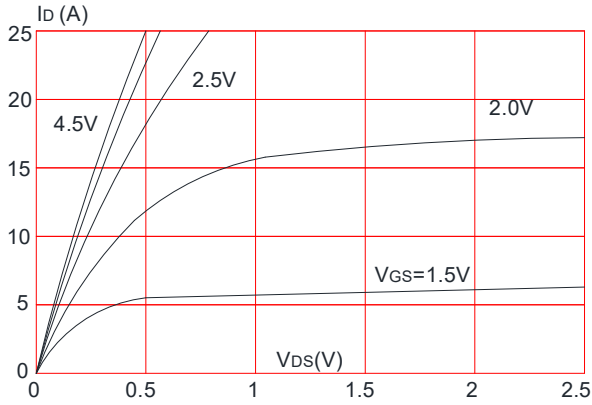
Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

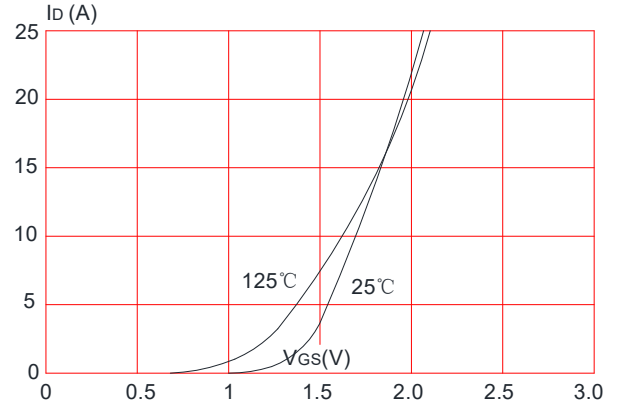


## Typical Performance Characteristics

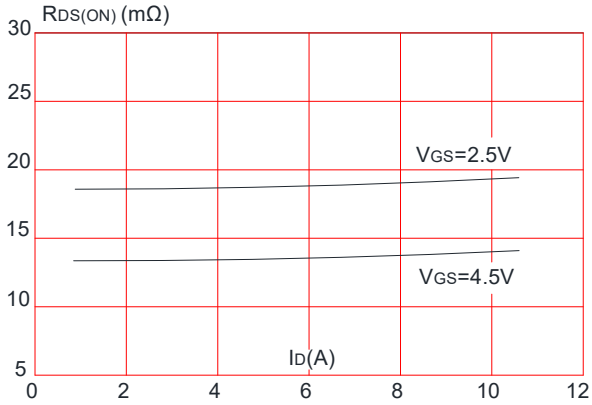
**Figure 1: Output Characteristics**



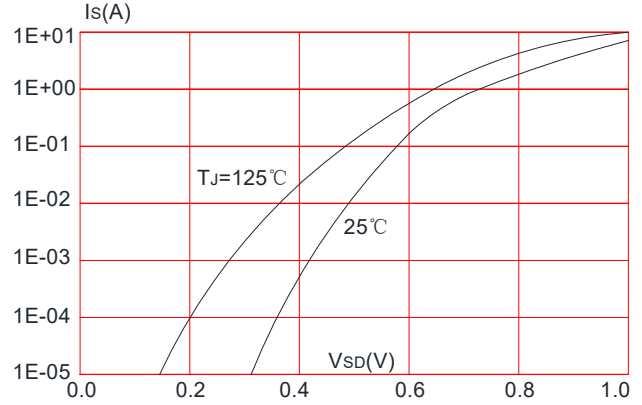
**Figure 2: Typical Transfer Characteristics**



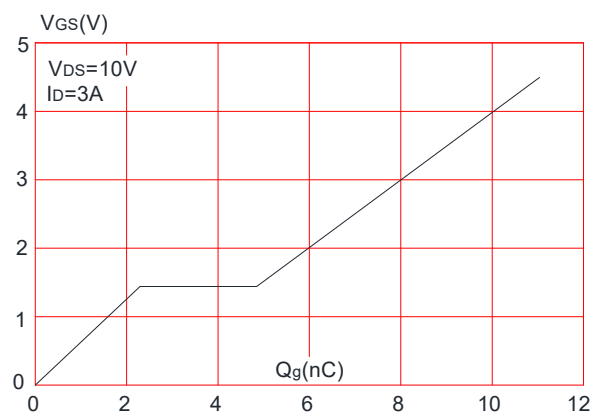
**Figure 3: On-resistance vs. Drain Current**



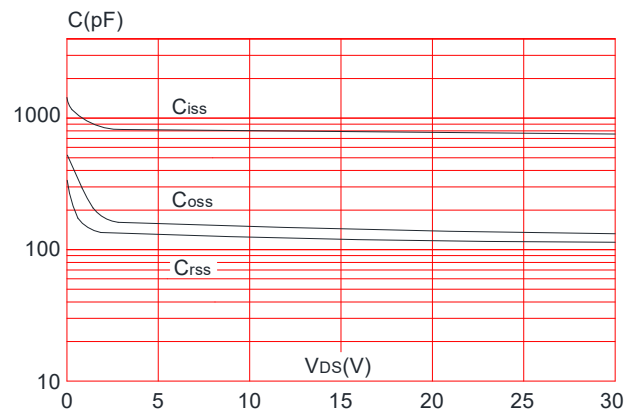
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

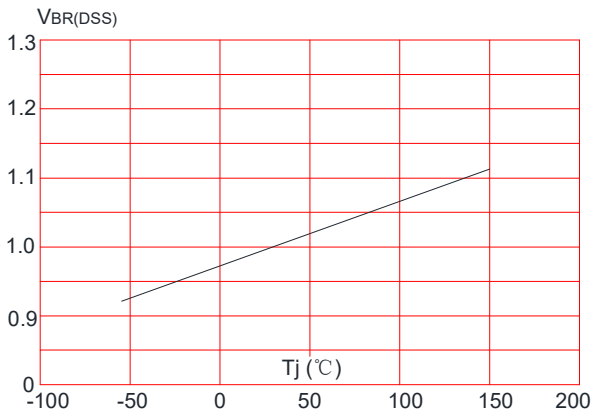


**Figure 6: Capacitance Characteristics**

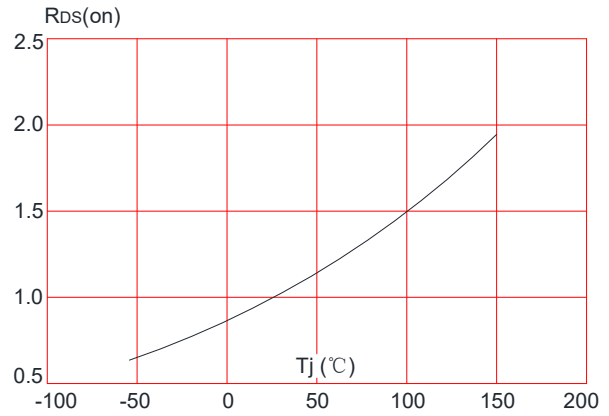




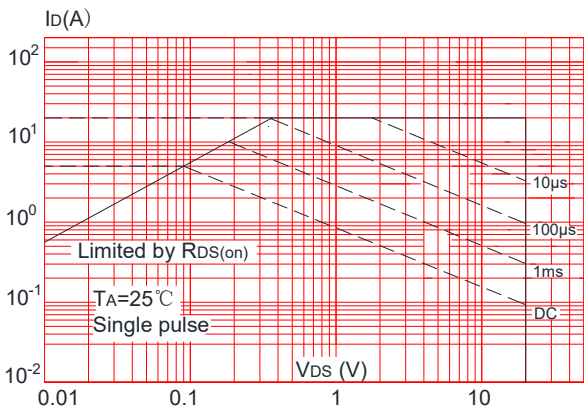
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**



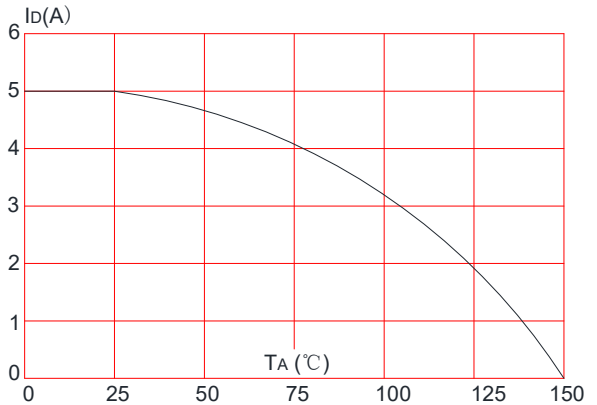
**Figure 8: Normalized on Resistance vs. Junction Temperature**



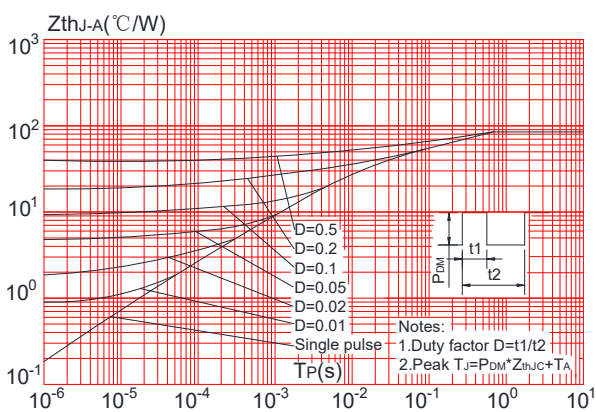
**Figure 9: Maximum Safe Operating Area**



**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

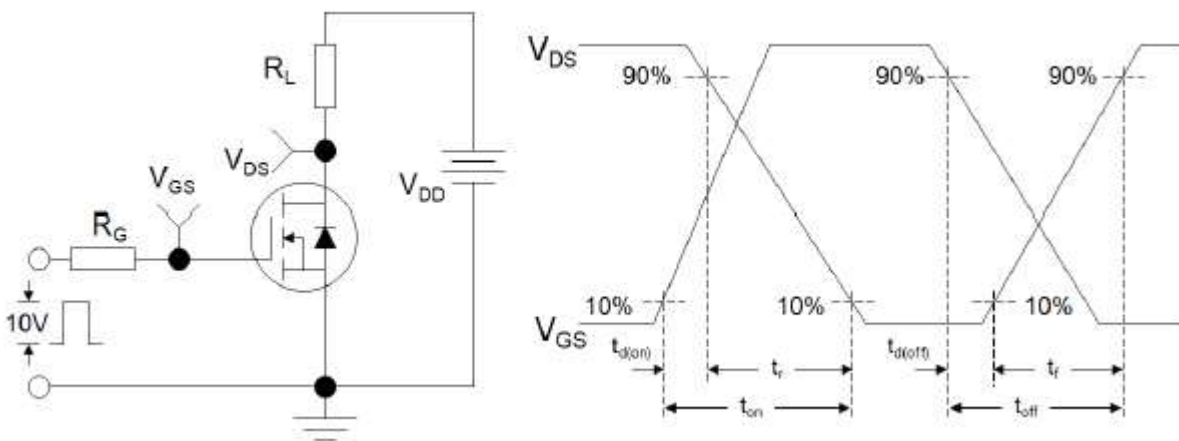


Figure 2: Resistive Switching Test Circuit & Waveforms

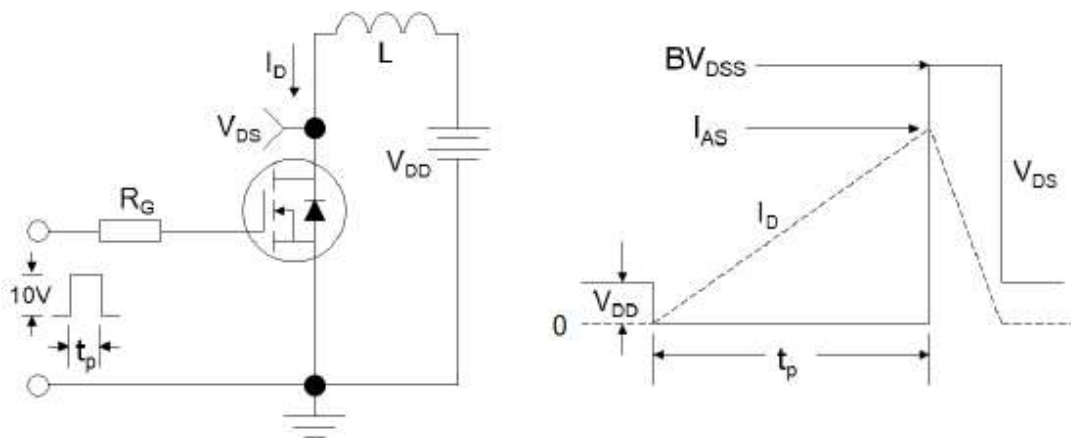
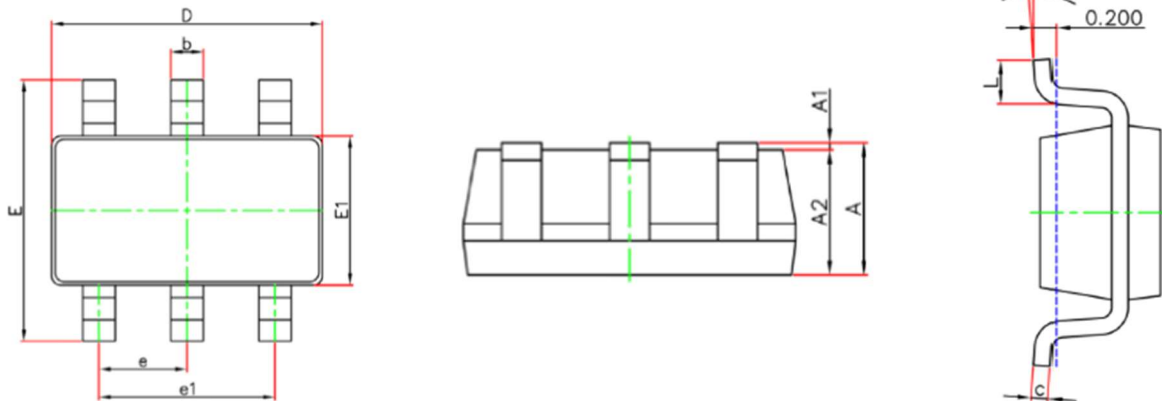


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

## 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 |
| theta  | 0°                        | 8°    | 0°                   | 8°    |

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