

### HM8205

Dual N-Channel Power Mosfet

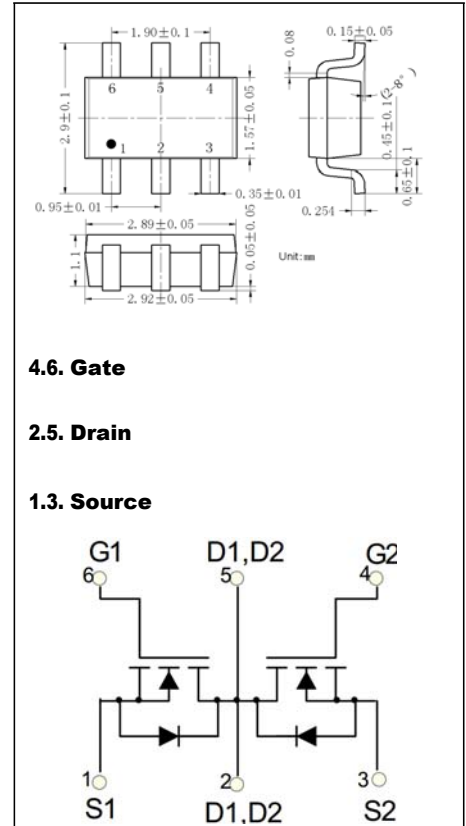
#### Features

- TrenchFET Power MOSFET
- Excellent  $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package

#### Applications

- Battery Protection
- Load Switch
- Power Management

**Marking: 8205 XX (XX:批次码)**



#### Maximum Ratings ( $T_a = 25^\circ\text{C}$ unless otherwise specified)

| Symbol          | Parameter  | Value      | Unit                      |
|-----------------|--|------------|---------------------------|
| $V_{DS}$        | Drain-Source voltage   | 19         | V                         |
| $V_{GS}$        | Gate-Source voltage  | $\pm 10$   |                           |
| $I_D$           | Continuous Drain Current   | 6          | A                         |
| $I_{DM}$        | Pulsed Drain Current <sup>1)</sup>                               | 25         |                           |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient <sup>2)</sup>        | 357        | $^\circ\text{C}/\text{W}$ |
| $T_J$           | Junction Temperature   | 150        | $^\circ\text{C}$          |
| $T_{STG}$       | Storage Temperature  | -55 ~ +150 | $^\circ\text{C}$          |
| $T_L$           | Lead Temperature for Soldering Purposes(1/8" from case for 10 s) | 260        | $^\circ\text{C}$          |

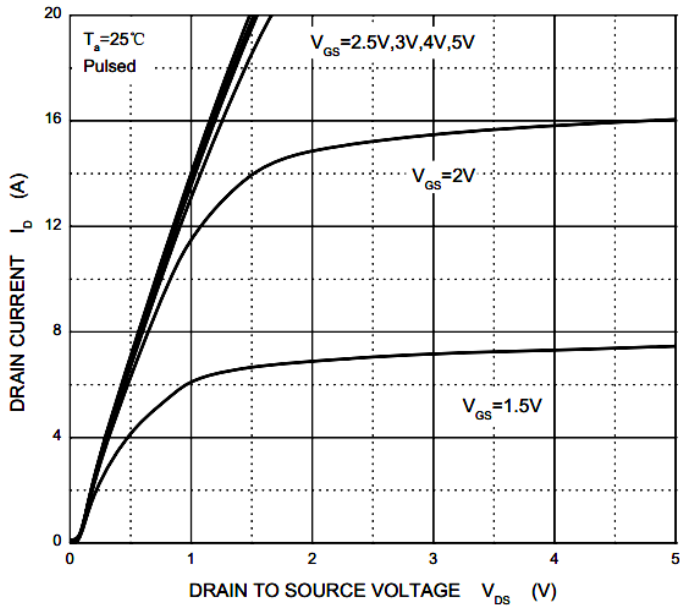
**Electrical Characteristics (T<sub>a</sub> = 25°C unless otherwise specified)**
**HM8205**

| Symbol   | Parameter                                | Test Conditions   | Min | Typ | Max  | Unit |
|--|--|---|-----|-----|------|------|
| <b>Static Characteristics</b>                  |  |   |     |     |      |      |
| <b>V<sub>(BR)DSS</sub></b>                     | Drain-Source Breakdown Voltage           | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA  | 19  |     |      | V    |
| <b>V<sub>GS(th)</sub></b>                      | Gate-Threshold Voltage <sup>3)</sup>     | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                  | 0.5 |     | 0.9  | V    |
| <b>I<sub>GSS</sub></b>                         | Gate-body Leakage current                | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±10V  |     |     | ±100 | nA   |
| <b>I<sub>DSS</sub></b>                         | Zero Gate Voltage Drain Current          | V <sub>DS</sub> = 18V, V <sub>GS</sub> = 0V   |     |     | 1    | μA   |
| <b>R<sub>DS(on)</sub></b>                      | Drain-Source On-Resistance <sup>3)</sup> | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5A   |     |     | 18   | mΩ   |
|  |  | V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 4A   |     |     | 22   | mΩ   |
| <b>g<sub>fs</sub></b>                          | Forward Trans conductance <sup>3)</sup>  | V <sub>DS</sub> = 5V, I <sub>D</sub> = 4.5A   |     | 10  |      | S    |
| <b>V<sub>SD</sub></b>                          | Diode forward voltage <sup>3)</sup>      | I <sub>S</sub> = 1.25A, V <sub>GS</sub> = 0V  |     |     | 1.2  | V    |
| <b>Dynamic Characteristics <sup>4)</sup></b>   |  |   |     |     |      |      |
| <b>C<sub>iss</sub></b>                         | Input Capacitance                        | V <sub>GS</sub> = 0V  |     | 800 |      | pF   |
| <b>C<sub>oss</sub></b>                         | Output Capacitance                       | V <sub>DS</sub> = 8V  |     | 155 |      |      |
| <b>C<sub>rss</sub></b>                         | Reverse Transfer Capacitance             | f = 1.0MHz  |     | 125 |      |      |
| <b>Switching Characteristics <sup>4)</sup></b> |  |   |     |     |      |      |
| <b>Q<sub>g</sub></b>                           | Total Gate Charge                        | V <sub>GS</sub> = 4.5V,   |     | 11  |      | nC   |
| <b>Q<sub>gs</sub></b>                          | Gate-Source Charge                       | I <sub>D</sub> = 4A,  |     | 2.3 |      |      |
| <b>Q<sub>gd</sub></b>                          | Gate-Drain Charge                        | V <sub>DS</sub> = 10V   |     | 2.5 |      |      |
| <b>t<sub>d(on)</sub></b>                       | Turn-On Delay Time                       | V <sub>DD</sub> = 10V, I <sub>D</sub> = 1A,<br>R <sub>GEN</sub> = 10Ω, V <sub>GS</sub> = 4V |     | 18  |      | ns   |
| <b>t<sub>r</sub></b>                           | Rise Time                                |   |     | 5   |      |      |
| <b>t<sub>d(off)</sub></b>                      | Turn-Off Delay Time                      |   |     | 43  |      |      |
| <b>t<sub>f</sub></b>                           | Fall Time                                |   |     | 20  |      |      |

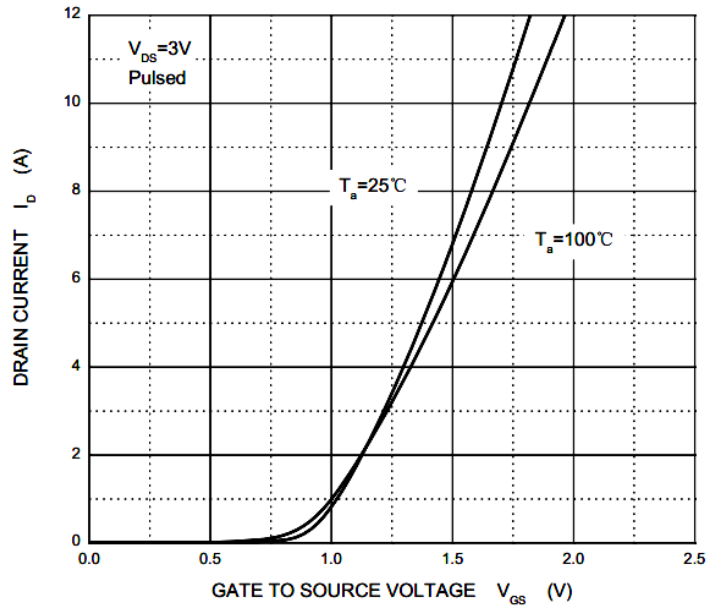
Notes:

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.

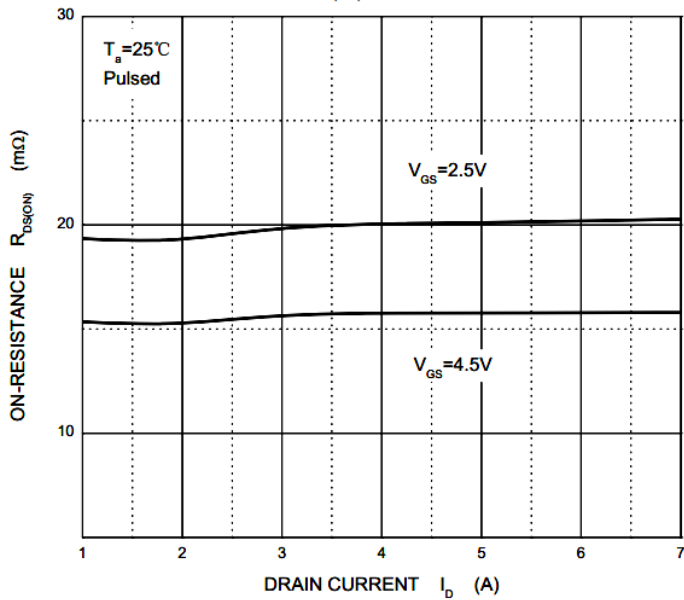
Output Characteristics



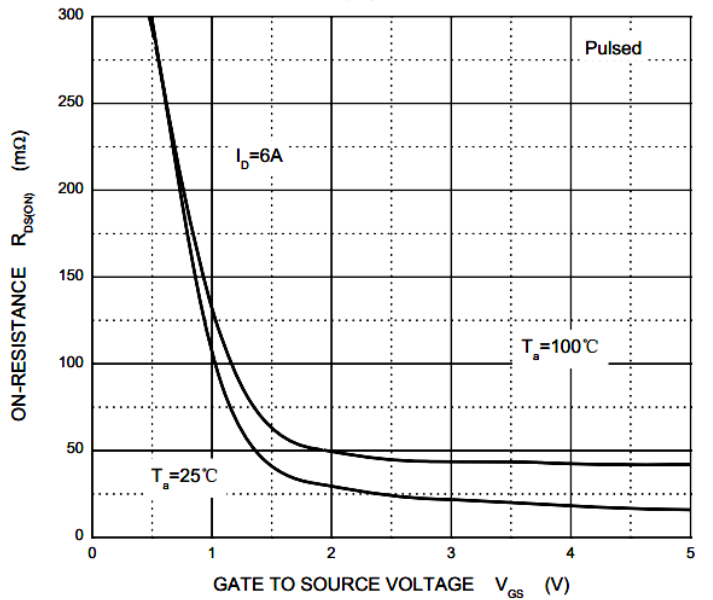
Transfer Characteristics



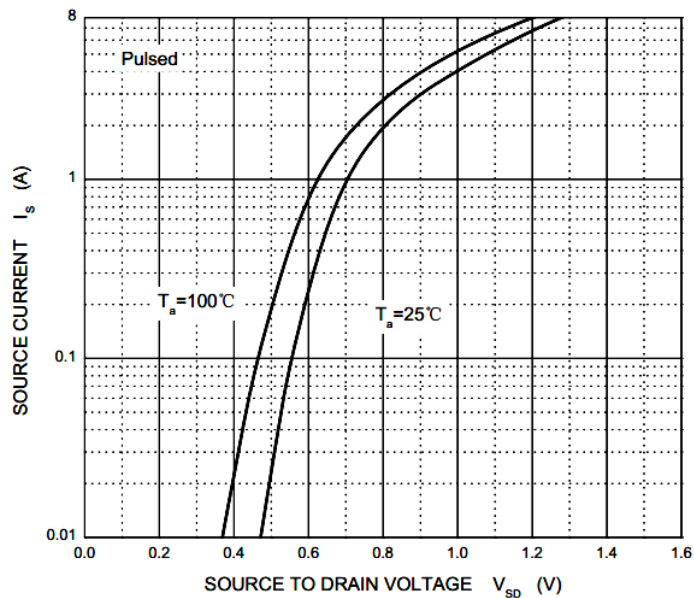
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$



Threshold Voltage

