





## YJSD04N06C

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

| Parameter                             | Symbol              | Conditions                                                       | Min | Typ  | Max  | Units |
|---------------------------------------|---------------------|------------------------------------------------------------------|-----|------|------|-------|
| Static Parameter                      |                     |                                                                  |     |      |      |       |
| Drain-Source Breakdown Voltage        | BV <sub>DSS</sub>   | V <sub>GS</sub> = 0V, I <sub>D</sub>                             | 60  | -    | -    | V     |
| Zero Gate Voltage Drain Current       | I <sub>DSS</sub>    | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V                        | -   | -    | 1    |       |
|                                       |                     | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>j</sub> =150°C | -   | -    | 100  |       |
| Gate-Body Leakage Current             | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> =0V                      | -   | -    | ±100 | nA    |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub>               | 0.9 | 1.3  | 2    | V     |
| Static Drain-Source On-Resistance     | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =4A                         | -   | 55   | 75   |       |
|                                       |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A                        | -   | 65   | 90   |       |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>S</sub> =4A, V <sub>GS</sub> =0V                          | -   | 0.85 | 1.2  | V     |
| Gate resistance                       | R <sub>G</sub>      | f=1MHz, Open drain                                               | -   | 2.5  | -    |       |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |                                                                  | -   | -    | 4    | A     |
| Dynamic Parameters                    |                     |                                                                  |     |      |      |       |
| Input Capacitance                     | C <sub>iss</sub>    | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz                | -   | 400  | -    | pF    |
| Output Capacitance                    | C <sub>oss</sub>    |                                                                  | -   | 60   | -    |       |
| Reverse Transfer Capacitance          | C <sub>rss</sub>    |                                                                  | -   | 25   | -    |       |
| Switching Parameters                  |                     |                                                                  |     |      |      |       |
| Total Gate Charge                     | Q <sub>g</sub>      | V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =4A   | -   | 9    | -    | nC    |
| Gate-Source Charge                    | Q <sub>gs</sub>     |                                                                  | -   | 1    | -    |       |
| Gate-Drain Charge                     | Q <sub>gd</sub>     |                                                                  | -   | 2.5  | -    |       |
| Reverse Recovery Charge               | Q <sub>rr</sub>     | I <sub>F</sub> =4A, di/dt=500A/us                                | -   | 24   | -    | nC    |
| Reverse Recovery Time                 | t <sub>rr</sub>     |                                                                  | -   | 12   | -    | ns    |

Turn-on Delay Time



## Typical Electrical and Thermal Characteristics Diagrams

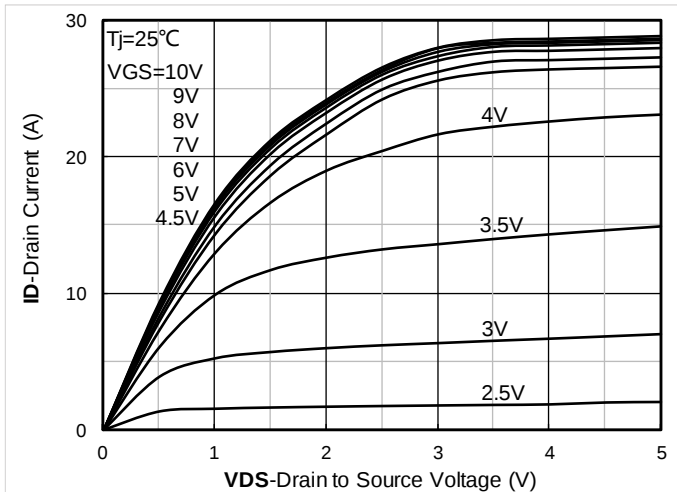


Figure 1. Output Characteristics

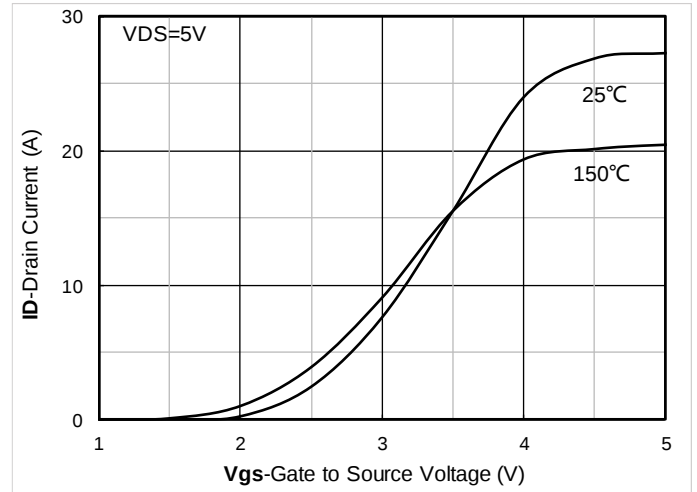


Figure 2. Transfer Characteristics

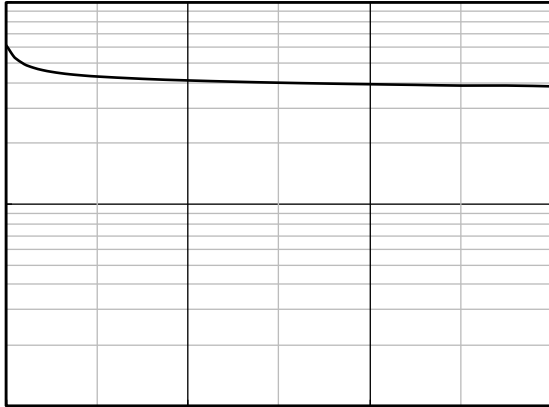


Figure 3. Capacitance Characteristics

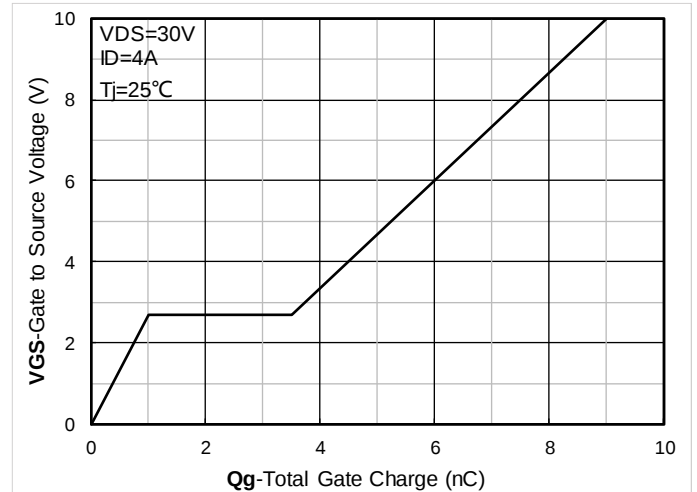


Figure 4. Gate Charge

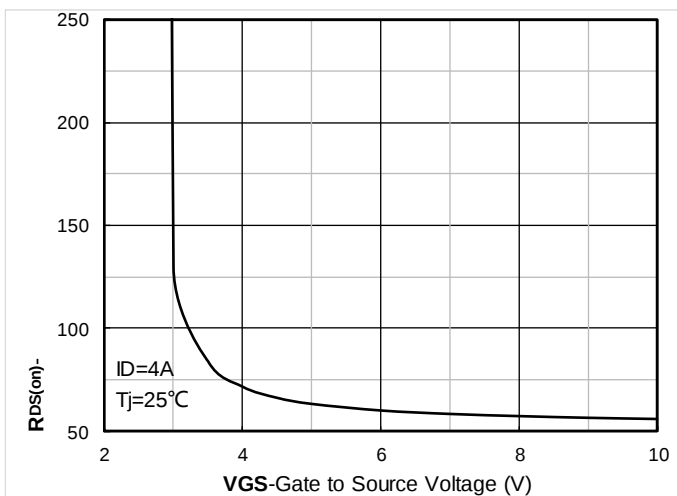


Figure 5. On-Resistance vs Gate to Source Voltage

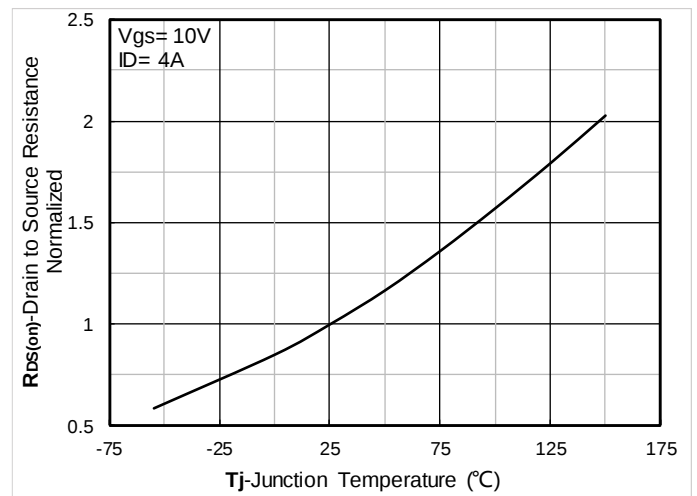


Figure 6. Normalized On-Resistance

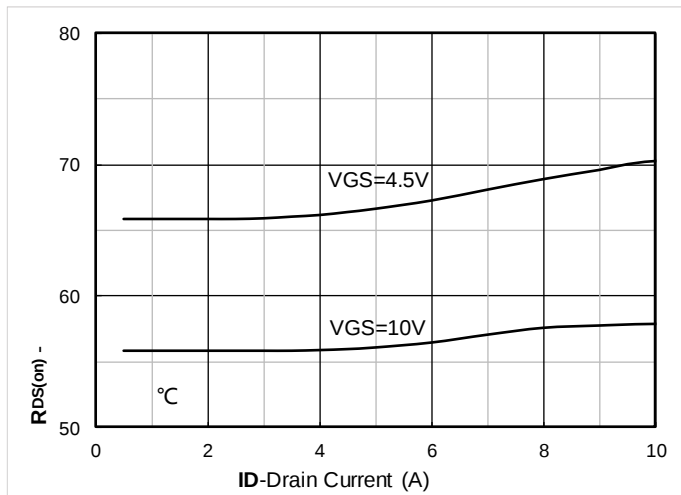


Figure 7.  $R_{DS(on)}$  VS Drain Current

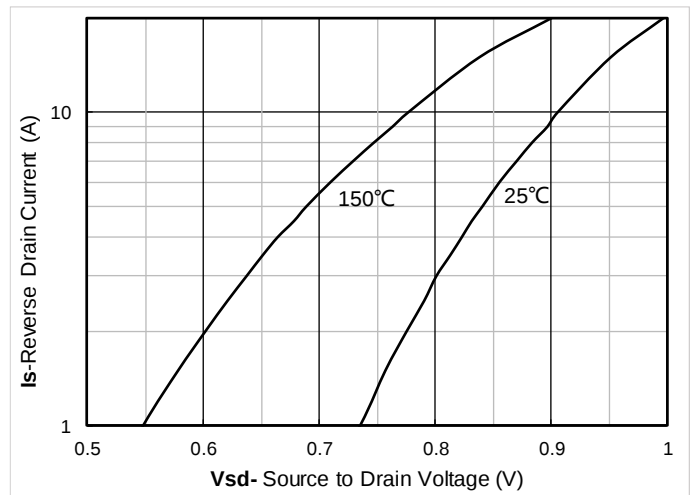


Figure 8. Forward characteristics of reverse diode

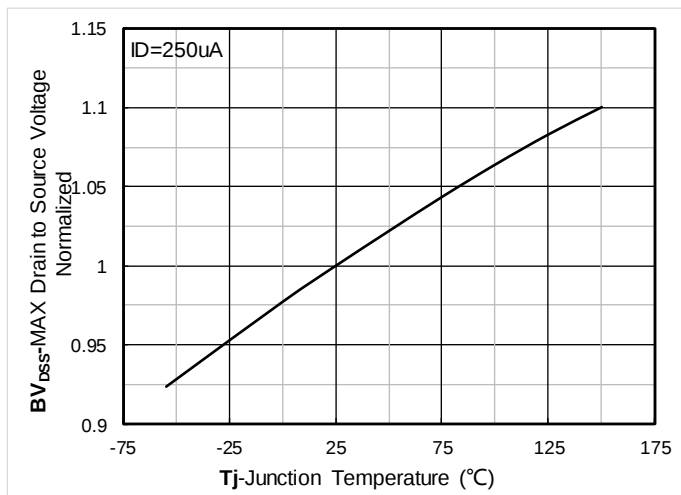


Figure 9. Normalized breakdown voltage

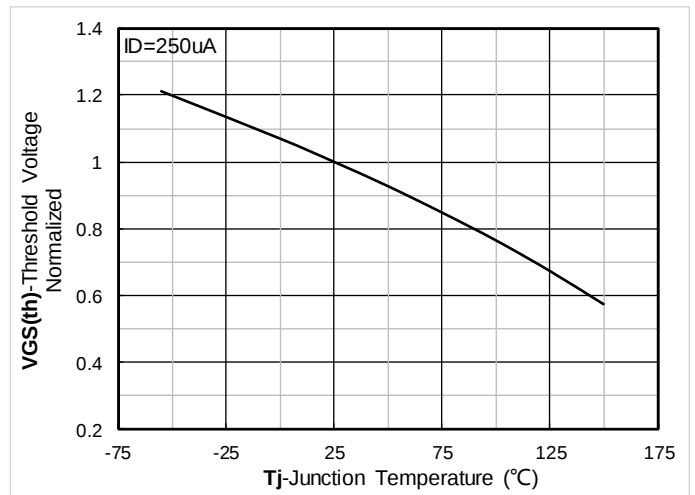


Figure 10. Normalized Threshold voltage

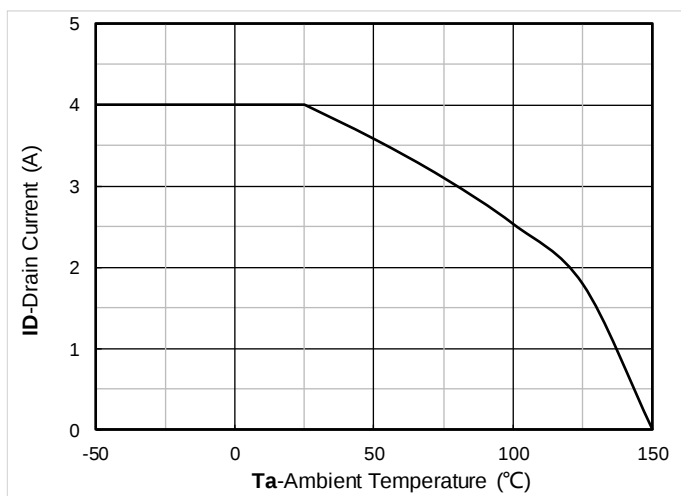


Figure 11. Current dissipation

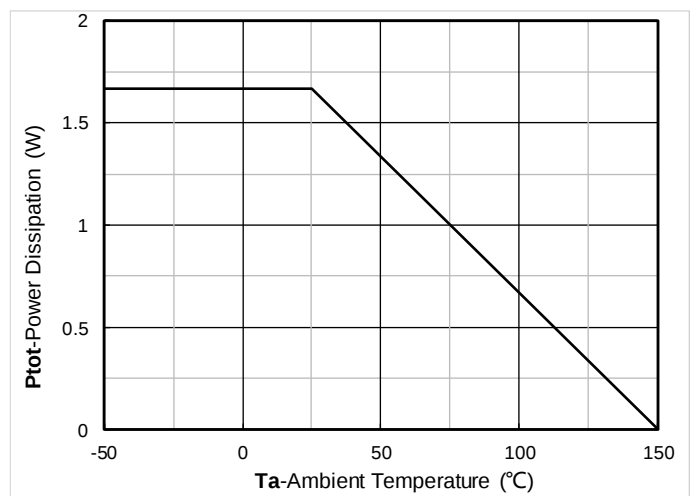


Figure 12. Power dissipation



Figure 13. Maximum Transient Thermal Impedance

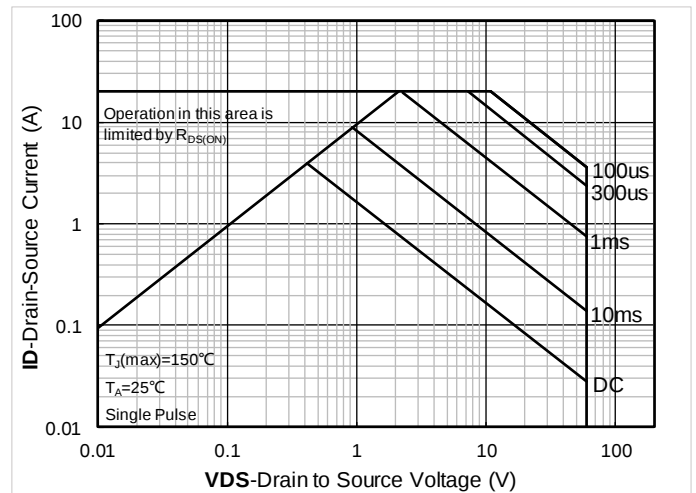


Figure 14. Safe Operation Area

## Test Circuits & Waveforms

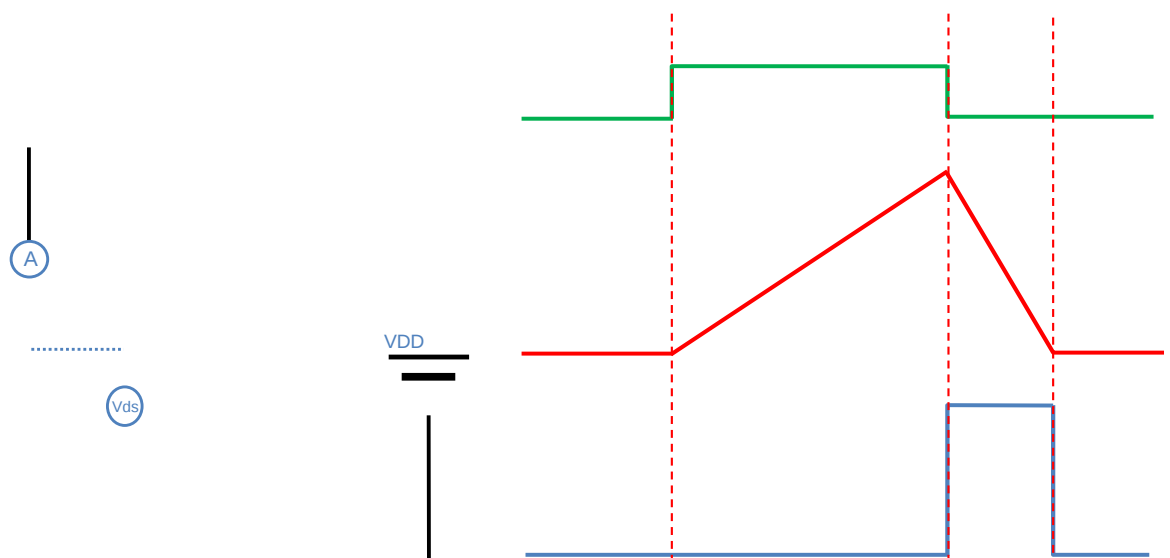


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

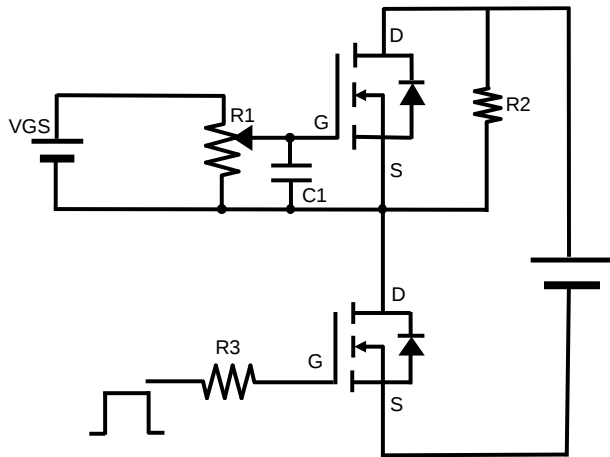


Figure B. Gate Charge Test Circuit & Waveform

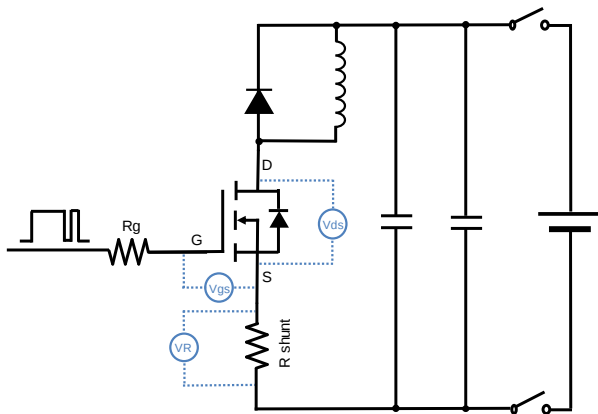


Figure C. Resistive Switching Test Circuit & Waveform

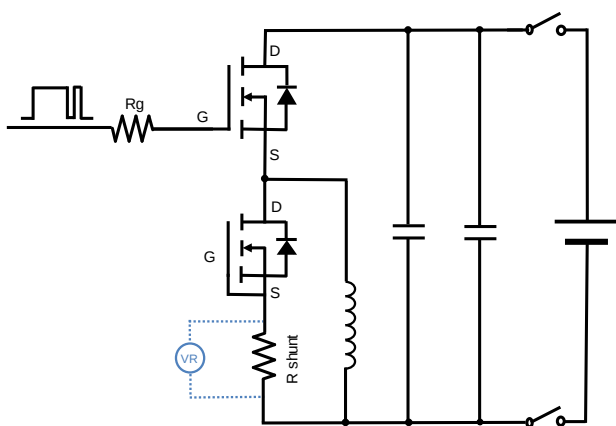


Figure D. Diode Recovery Test Circuit & Waveform



## SOP8 Package information

| SYMBOL | MIN.     |       |  |
|--------|----------|-------|--|
|        | 0        |       |  |
| B      |          |       |  |
|        |          |       |  |
| D      |          | 0.020 |  |
| E      |          |       |  |
| F      |          |       |  |
|        | 0.050BSC |       |  |
| H      |          |       |  |
| J      |          |       |  |
| K      |          |       |  |



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