

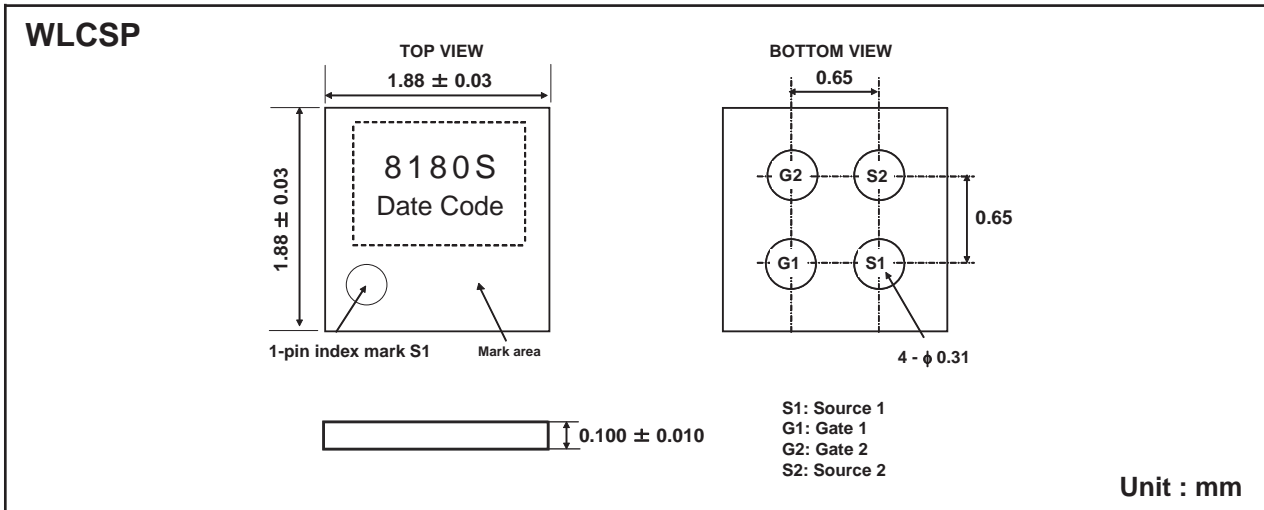


## Dual N-Channel Enhancement Mode Field Effect Transistor

| PRODUCT SUMMARY  |                |                              |
|------------------|----------------|------------------------------|
| V <sub>SSS</sub> | I <sub>S</sub> | R <sub>SS(ON)</sub> (mΩ) Typ |
| 12V              | 5.5A           | 7.9 @ V <sub>GS</sub> =4.5V  |
|                  |                | 8.3 @ V <sub>GS</sub> =4.0V  |
|                  |                | 8.5 @ V <sub>GS</sub> =3.8V  |
|                  |                | 9.7 @ V <sub>GS</sub> =3.1V  |
|                  |                | 11.9 @ V <sub>GS</sub> =2.5V |

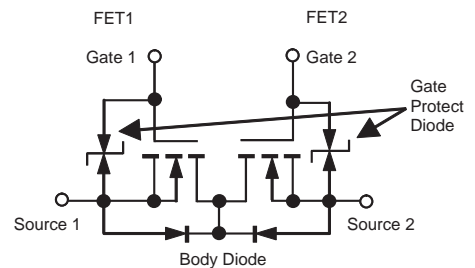
### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- Wafer level CSP.
- ESD Protected.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

| Symbol                            | Parameter  | Limit      | Units |
|-----------------------------------|--|------------|-------|
| V <sub>SSS</sub>                  | Source-Source Voltage                            | 12         | V     |
| V <sub>GSS</sub>                  | Gate-Source Voltage                              | ±8         | V     |
| I <sub>S</sub>                    | Source Current-Continuous <sup>c</sup>           | 5.5        | A     |
| I <sub>SP</sub>                   | -Pulsed <sup>a c</sup>                           | 55         | A     |
| P <sub>T</sub>                    | Total Power Dissipation                          | 1.6        | W     |
| T <sub>J</sub> , T <sub>STG</sub> | Operating Junction and Storage Temperature Range | -55 to 150 | °C    |



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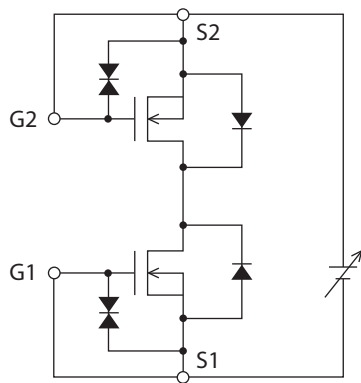
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## ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

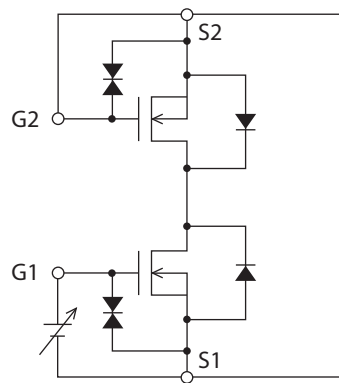
| Symbol   | Parameter                         | Conditions  | Min   | Typ  | Max  | Units |
|--|-----------------------------------|---|---|------|------|-------|
| <b>OFF CHARACTERISTICS</b>   |                                   |   |   |      |      |       |
| BV <sub>SSS</sub>  | Source-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>S</sub> =250uA  | 12  |      |      | V     |
| I <sub>SSS</sub>   | Zero Gate Voltage Source Current  | V <sub>SS</sub> =12V, V <sub>GS</sub> =0V   |   |      | 1    | uA    |
| I <sub>GSS</sub>   | Gate-Body Leakage Current         | V <sub>GS</sub> = ±8V, V <sub>SS</sub> =0V  |   |      | ±10  | uA    |
|  |                                   | V <sub>GS</sub> = ±5V, V <sub>SS</sub> =0V  |   |      | ±1   | uA    |
| <b>ON CHARACTERISTICS</b>  |                                   |   |   |      |      |       |
| V <sub>GS(th)</sub>  | Gate Threshold Voltage            | V <sub>SS</sub> =V <sub>GS</sub> , I <sub>S</sub> =250uA  | 0.5   | 0.7  | 1.5  | V     |
| R <sub>SS(ON)</sub>  | Source-Source On-State Resistance | V <sub>GS</sub> =4.5V, I <sub>S</sub> =2.75A  | 5.9   | 7.9  | 10.0 | m ohm |
|  |                                   | V <sub>GS</sub> =4.0V, I <sub>S</sub> =2.75A  | 6.1   | 8.3  | 10.7 | m ohm |
|  |                                   | V <sub>GS</sub> =3.8V, I <sub>S</sub> =2.75A  | 6.2   | 8.5  | 11.0 | m ohm |
|  |                                   | V <sub>GS</sub> =3.1V, I <sub>S</sub> =2.75A  | 7.1   | 9.7  | 13.8 | m ohm |
|  |                                   | V <sub>GS</sub> =2.5V, I <sub>S</sub> =2.75A  | 7.6   | 11.9 | 20.0 | m ohm |
| g <sub>FS</sub>  | Forward Transconductance          | V <sub>SS</sub> =5V, I <sub>S</sub> =2.75A  |   | 26   |      | S     |
| <b>SWITCHING CHARACTERISTICS <sup>b</sup></b>  |                                   |   |   |      |      |       |
| t <sub>D(ON)</sub>   | Turn-On Delay Time                | V <sub>DD</sub> =12V<br>I <sub>S</sub> =2.75A<br>V <sub>GS</sub> =4.0V<br>R <sub>GEN</sub> =6 ohm |   | 213  |      | ns    |
| t <sub>r</sub>   | Rise Time                         |   |   | 898  |      | ns    |
| t <sub>D(OFF)</sub>  | Turn-Off Delay Time               |   |   | 1920 |      | ns    |
| t <sub>f</sub>   | Fall Time                         |   |   | 1910 |      | ns    |
| Q <sub>g</sub>   | Total Gate Charge                 |   | V <sub>DD</sub> =12V, I <sub>S</sub> =2.75A,<br>V <sub>G1S1</sub> =4.0V |      | 16.8 |       |
| <b>DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS</b>  |                                   |   |   |      |      |       |
| V <sub>FSS</sub>   | Diode Forward Voltage             | V <sub>GS</sub> =0V, I <sub>S</sub> =1.25A  |   | 0.77 | 1.2  | V     |
| <b>Notes</b>   |                                   |   |   |      |      |       |
| <p>a.Pulse Test:Pulse Width &lt; 10us, Duty Cycle &lt; 1%.</p> <p>b.Guaranteed by design, not subject to production testing.</p> <p>c.Drain current limited by maximum junction temperature.</p> |                                   |   |   |      |      |       |

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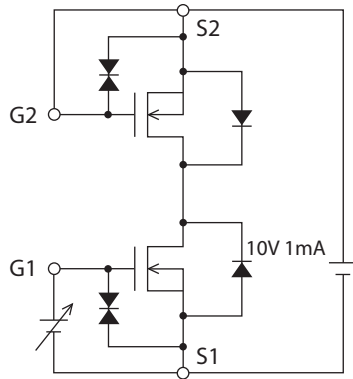
$V_{SSS} / I_{SSS}$



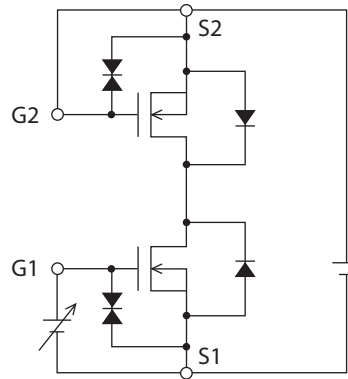
$I_{GSS} (+) / (-)$



$V_{GS} \text{ (off)}$



$|y_{fs}|$

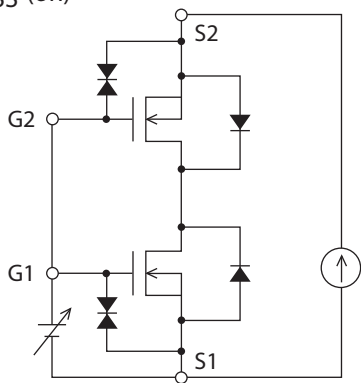


\* Note: Connect the measurement terminal reversely if you want to measure the FET2 side.

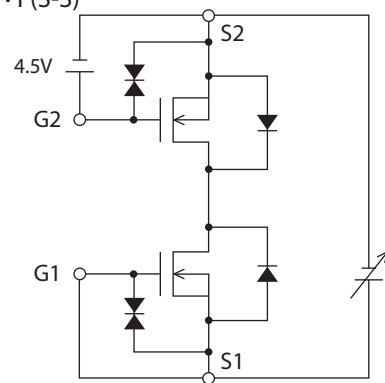
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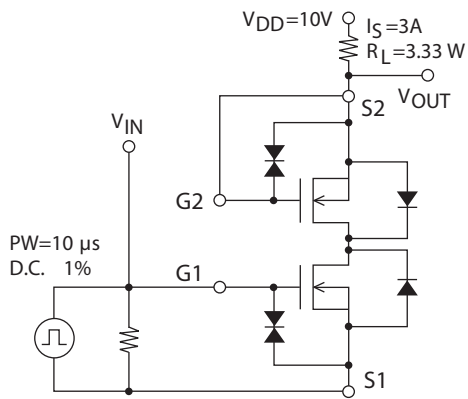
$R_{SS} \text{ (on)}$



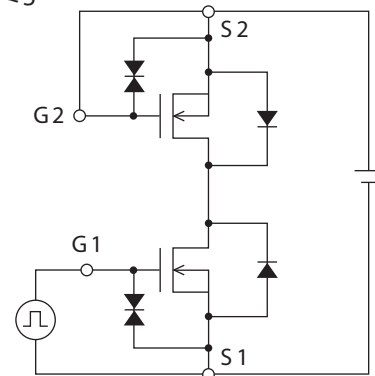
$V_F \text{ (S-S)}$



$t_d \text{ (on)}, t_r, t_d \text{ (off)}, t_f$



$Q_g$

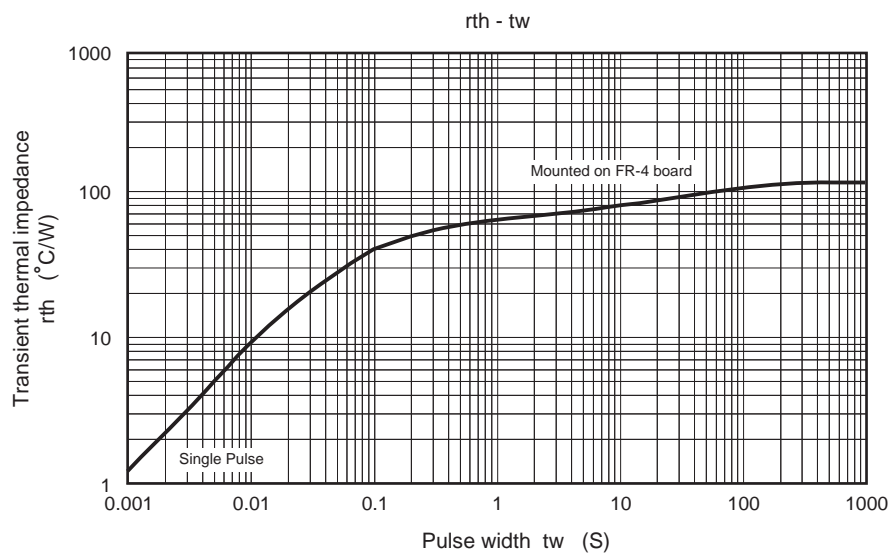
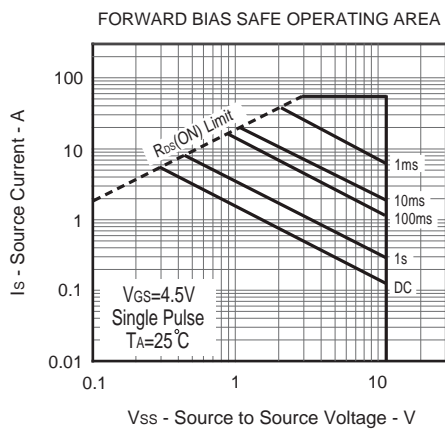
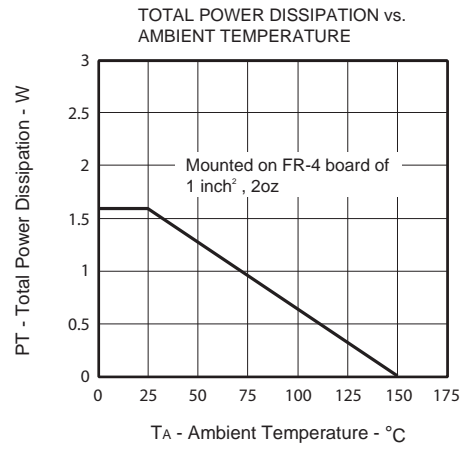
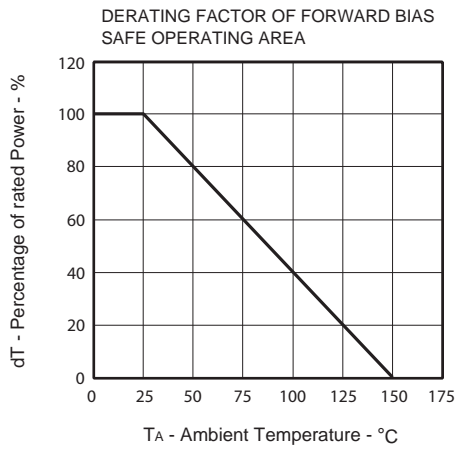


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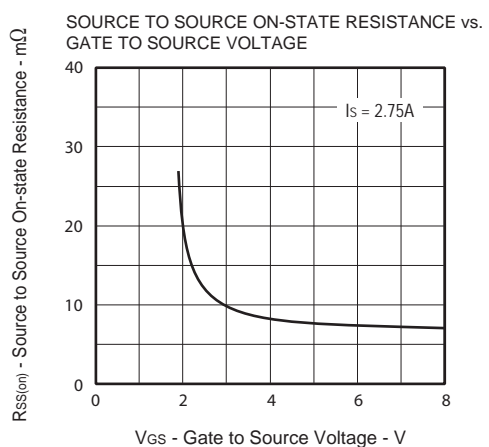
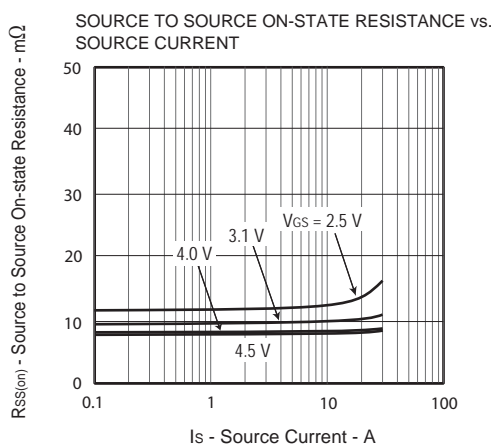
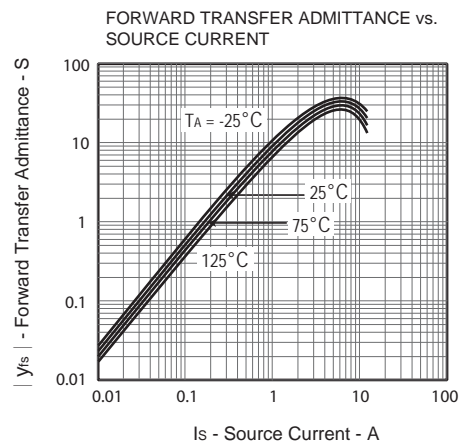
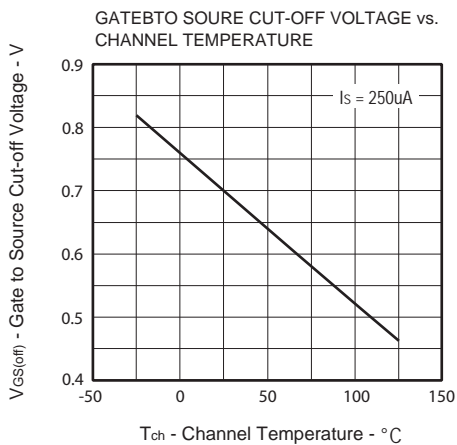
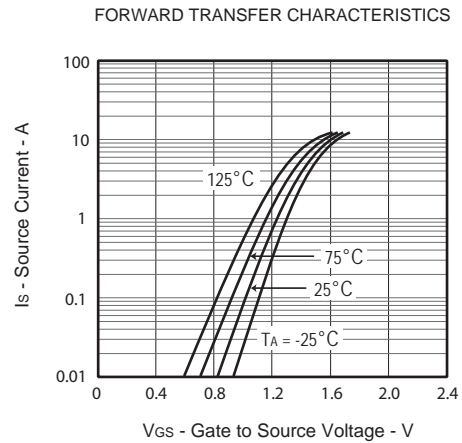
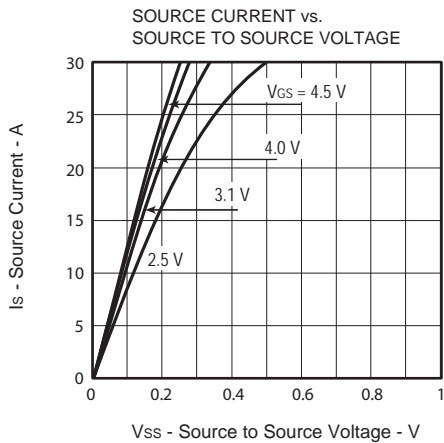
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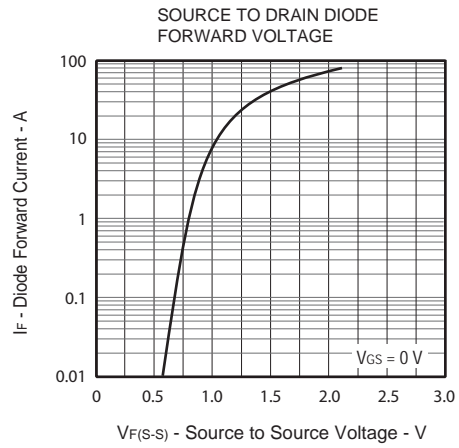
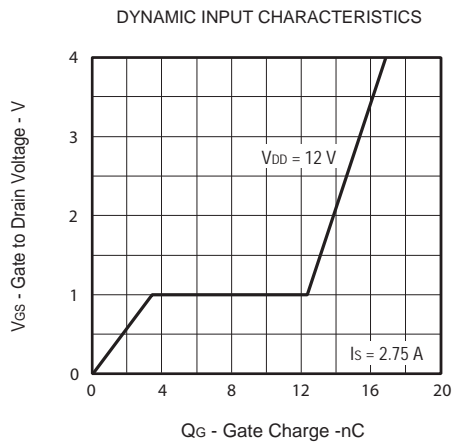
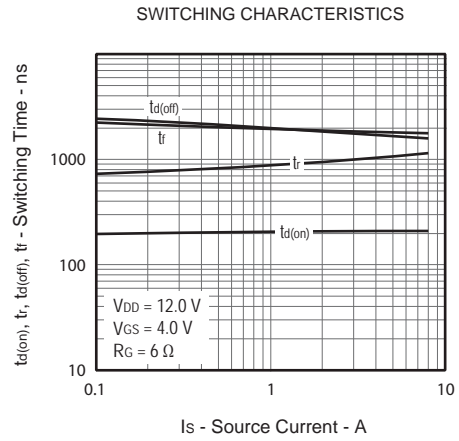
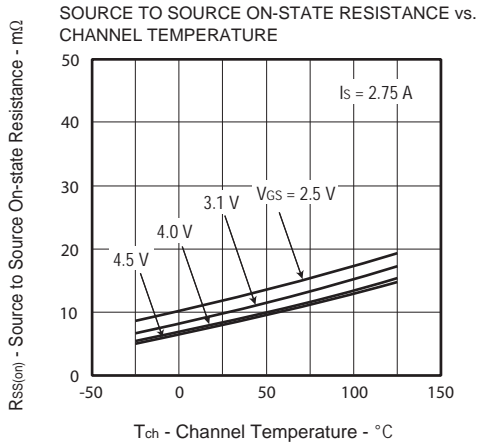
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## TOP MARKING DEFINITION

