



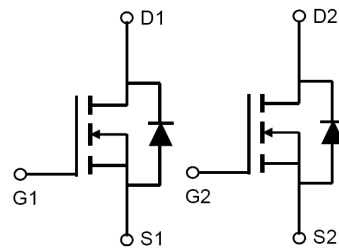
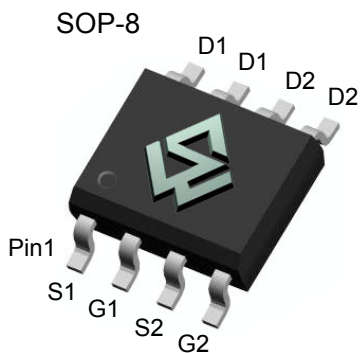
## 30V Dual N-Channel Enhancement-Mode MOSFET

### General Description

- Low gate charge.
- Use as a load switch.
- Use in PWM applications

### Product Summary

- $BV_{DSS}$  30V
- $R_{DS(on)}$  @VGS = 10V < 28mΩ
- $R_{DS(on)}$  @VGS = 4.5V < 35mΩ



### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                 | Symbol         | Maximum    | Units            |
|-----------------------------------------------------------|----------------|------------|------------------|
| Drain-Source Voltage                                      | $V_{DS}$       | 30         | V                |
| Gate-Source Voltage                                       | $V_{GS}$       | $\pm 20$   | V                |
| Drain Current ( $T_A=25^\circ\text{C}$ )                  | $I_D$          | 6.0        | A                |
| Drain Current ( $T_A=75^\circ\text{C}$ )                  |                | 4.8        | A                |
| Pulsed Drain Current <sup>a</sup>                         | $I_{DM}$       | 30         | A                |
| Power Dissipation <sup>b</sup> ( $T_A=25^\circ\text{C}$ ) | $P_D$          | 2.0        | W                |
| Power Dissipation <sup>b</sup> ( $T_A=75^\circ\text{C}$ ) |                | 1.4        | W                |
| Junction and Storage Temperature Range                    | $T_J, T_{STG}$ | -55 ~ +150 | $^\circ\text{C}$ |

### Thermal Characteristics

| Parameter                                                | Symbol          | Maximum | Units              |
|----------------------------------------------------------|-----------------|---------|--------------------|
| Junction-to-Ambient <sup>a</sup> ( $t \leq 10\text{s}$ ) | $R_{\theta JA}$ | 50      | $^\circ\text{C/W}$ |
| Junction-to-Ambient <sup>a,d</sup> (Steady-State)        |                 | 90      | $^\circ\text{C/W}$ |
| Junction-to-Lead (Steady-State)                          | $R_{\theta JL}$ | 25      | $^\circ\text{C/W}$ |

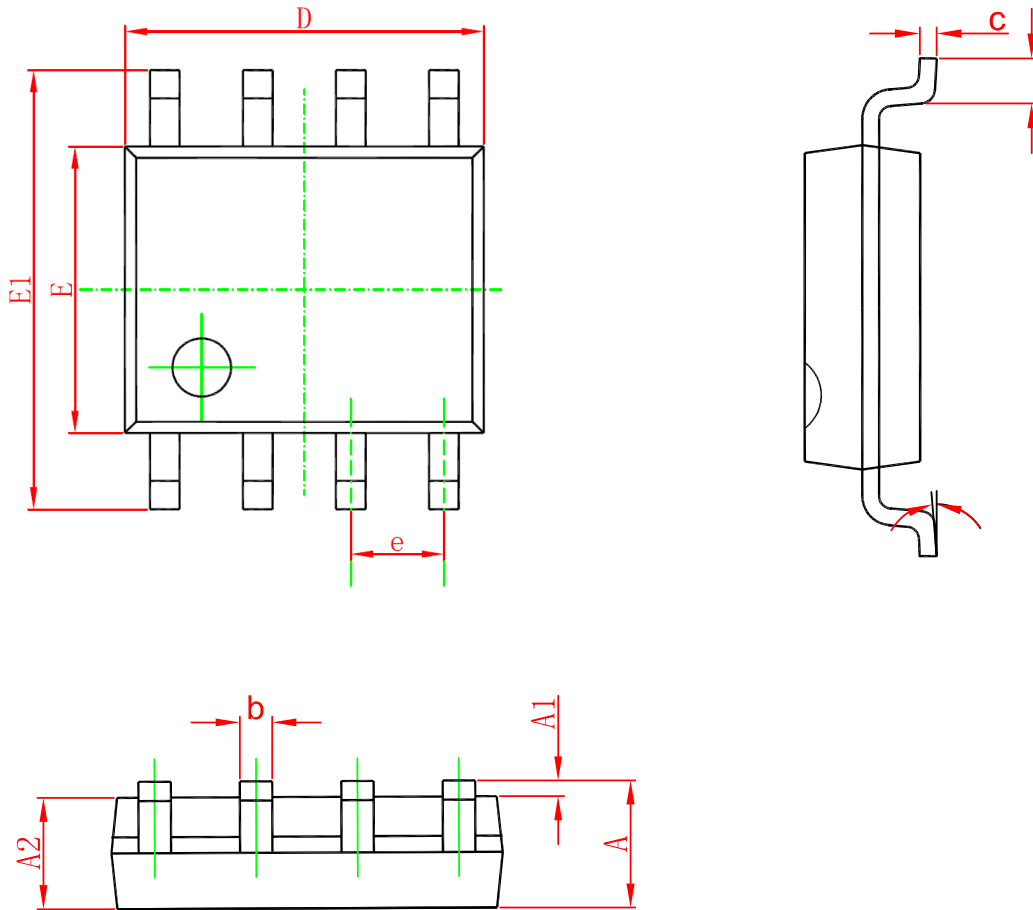


| Electrical Characteristics (T <sub>A</sub> = 25°C unless otherwise noted) |                                       |                                                                                                  |     |      |      |       |
|---------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------|-----|------|------|-------|
| Symbol                                                                    | Parameter                             | Conditions                                                                                       | Min | Typ  | Max  | Units |
| <b>Off Characteristics</b>                                                |                                       |                                                                                                  |     |      |      |       |
| BV <sub>DSS</sub>                                                         | Drain-Source Breakdown Voltage        | V <sub>GS</sub> = 0V , I <sub>D</sub> = 250uA                                                    | 30  |      |      | V     |
| I <sub>DSS</sub>                                                          | Zero Gate Voltage Drain Current       | V <sub>DS</sub> = 30V , V <sub>GS</sub> = 0V                                                     |     |      | 1    | uA    |
| I <sub>GSS</sub>                                                          | Gate-Body Leakage Current             | V <sub>GS</sub> = ±20V , V <sub>DS</sub> = 0V                                                    |     |      | ±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> = 250uA                                       | 1   |      | 2.5  | V     |
| R <sub>DS(ON)</sub>                                                       | Drain-Source On-State Resistance      | V <sub>GS</sub> = 10V , I <sub>D</sub> = 6.0A                                                    |     | 18   | 28   | mΩ    |
|                                                                           |                                       | V <sub>GS</sub> = 4.5V , I <sub>D</sub> = 5.0A                                                   |     | 22   | 35   | mΩ    |
| g <sub>FS</sub>                                                           | Forward Transconductance              | V <sub>DS</sub> = 5.0V , I <sub>D</sub> = 6.0A                                                   |     | 20   |      | S     |
| <b>Drain-Source Diode Characteristics</b>                                 |                                       |                                                                                                  |     |      |      |       |
| V <sub>SD</sub>                                                           | Diode Forward Voltage                 | V <sub>GS</sub> = 0V , I <sub>S</sub> = 1.0A                                                     |     |      | 1.1  | V     |
| I <sub>S</sub>                                                            | Maximum Body-Diode Continuous Current |                                                                                                  |     |      | 2.5  | A     |
| <b>Dynamic Characteristics</b>                                            |                                       |                                                                                                  |     |      |      |       |
| C <sub>iss</sub>                                                          | Input Capacitance                     | V <sub>DS</sub> = 15V , V <sub>GS</sub> = 0V<br>f = 1.0MHz                                       |     | 802  |      | pF    |
| C <sub>oss</sub>                                                          | Output Capacitance                    |                                                                                                  |     | 105  |      | pF    |
| C <sub>rss</sub>                                                          | Reverse Transfer Capacitance          |                                                                                                  |     | 85   |      | pF    |
| <b>Switching Characteristics</b>                                          |                                       |                                                                                                  |     |      |      |       |
| Q <sub>g</sub>                                                            | Total Gate Charge                     | V <sub>DS</sub> = 15V , I <sub>D</sub> = 6.0A<br>V <sub>GS</sub> = 10V                           |     | 12.8 |      | nC    |
| Q <sub>gs</sub>                                                           | Gate-Source Charge                    |                                                                                                  |     | 4.5  |      | nC    |
| Q <sub>gd</sub>                                                           | Gate-Drain Charge                     |                                                                                                  |     | 3.8  |      | nC    |
| t <sub>D(ON)</sub>                                                        | Turn-On Delay Time                    | V <sub>DD</sub> = 15V , I <sub>D</sub> = 1A<br>V <sub>GS</sub> = 10 V<br>R <sub>GEN</sub> = 3ohm |     | 6.2  |      | ns    |
| t <sub>r</sub>                                                            | Turn-On Rise Time                     |                                                                                                  |     | 4.8  |      | ns    |
| t <sub>D(OFF)</sub>                                                       | Turn-Off Delay Time                   |                                                                                                  |     | 14.5 |      | ns    |
| t <sub>f</sub>                                                            | Turn-Off Fall Time                    |                                                                                                  |     | 3.5  |      | ns    |

- a. Repetitive rating, Pulse width limited by junction temperature T<sub>J(MAX)</sub>=150 °C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25 °C
- b. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150 °C , using ≤10s junction-to-ambient thermal resistance.
- c. The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C. The value in any given application depends on the user's specific board design.
- d. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.



## SOP-8 Package Outline



| Symbol    | Dimensions In Millimeters |       | Dimensions In Inches |       |
|-----------|---------------------------|-------|----------------------|-------|
|           | Min.                      | Max.  | Min.                 | Max.  |
| <b>A</b>  | 1.350                     | 1.750 | 0.053                | 0.069 |
| <b>A1</b> | 0.100                     | 0.250 | 0.004                | 0.010 |
| <b>A2</b> | 1.350                     | 1.550 | 0.053                | 0.061 |
| <b>b</b>  | 0.330                     | 0.510 | 0.013                | 0.020 |
| <b>c</b>  | 0.170                     | 0.250 | 0.006                | 0.010 |
| <b>D</b>  | 4.700                     | 5.100 | 0.185                | 0.200 |
| <b>E</b>  | 3.800                     | 4.000 | 0.150                | 0.157 |
| <b>E1</b> | 5.800                     | 6.200 | 0.228                | 0.244 |
| <b>e</b>  | 1.270(BSC)                |       | 0.050(BSC)           |       |
| <b>L</b>  | 0.400                     | 1.270 | 0.016                | 0.050 |
| <b>θ</b>  | 0°                        | 8°    | 0°                   | 8°    |

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