

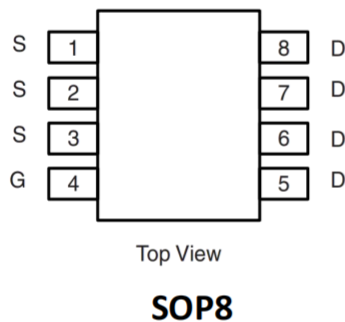
### Product Summary

- $V_{DS}$  -30 V
- $I_{DS}$  -8 A
- $R_{DS(ON)}$  (at  $V_{GS} = -10V$ ) <30m $\Omega$

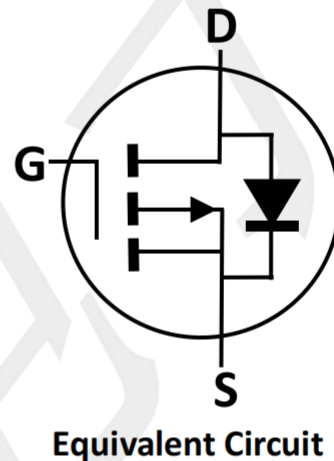
### Application

- Reverse Battery protection
- Load switch
- Power management
- PWM Application

### Package and Pin Configuration



### Circuit diagram



### Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                            | SYMBOL    | LIMIT       | UNIT |
|--------------------------------------|-----------|-------------|------|
| Drain-Source Voltage                 | $V_{DS}$  | -30         | V    |
| Gate-Source Voltage                  | $V_{GS}$  | ±20         | V    |
| Continuous Drain Current             | $I_D$     | -8          | A    |
| Pulsed Drain Current (note1)         | $I_{DM}$  | -40         | A    |
| Maximum Power Dissipation            | $P_D$     | 5           | W    |
| Operating Junction Temperature Range | $T_J$     | -55 to +150 | °C   |
| Storage Temperature Range            | $T_{stg}$ | -55 to +150 | °C   |

### Thermal Characteristic

| PARAMETER                                           | Symbol          | Value | Unit |
|-----------------------------------------------------|-----------------|-------|------|
| Thermal Resistance from Junction to Ambient (t≤10s) | $R_{\theta JA}$ | 50    | °C/W |

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. When mounted on 1" square PCB (FR4 material).

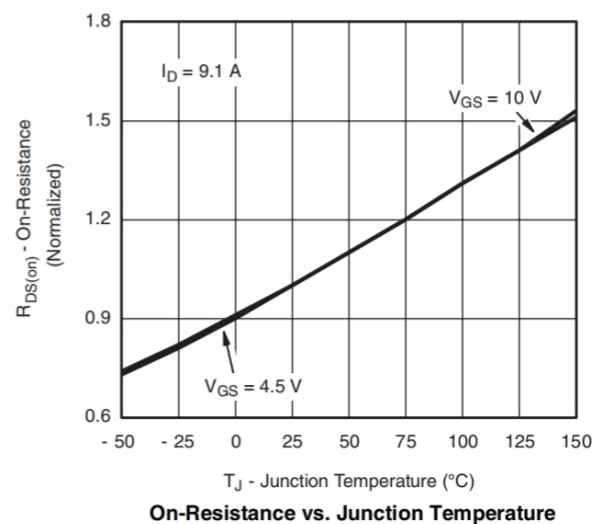
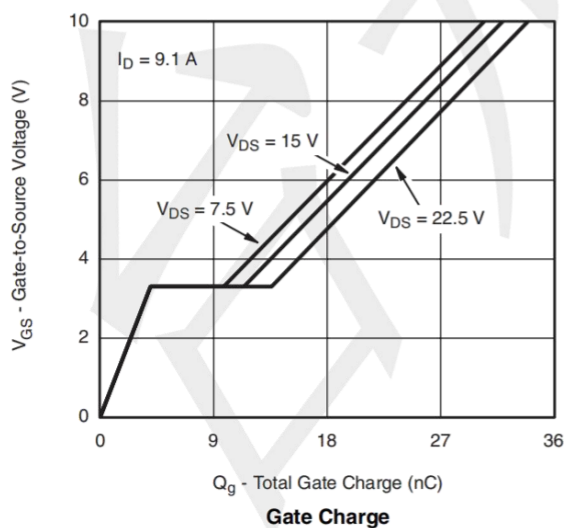
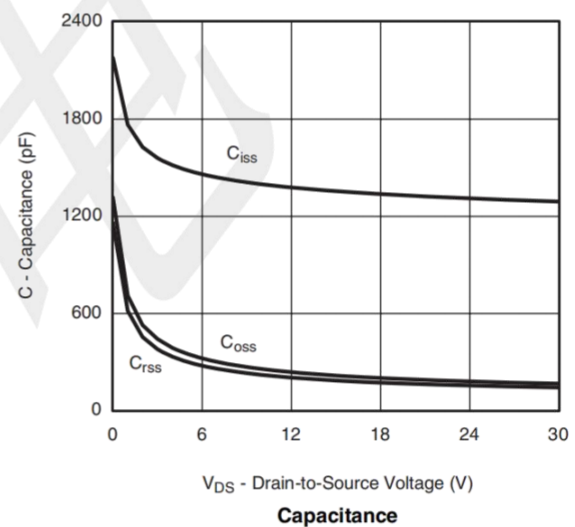
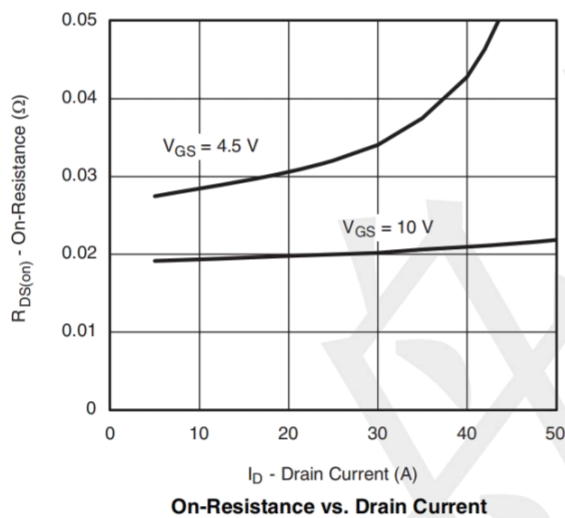
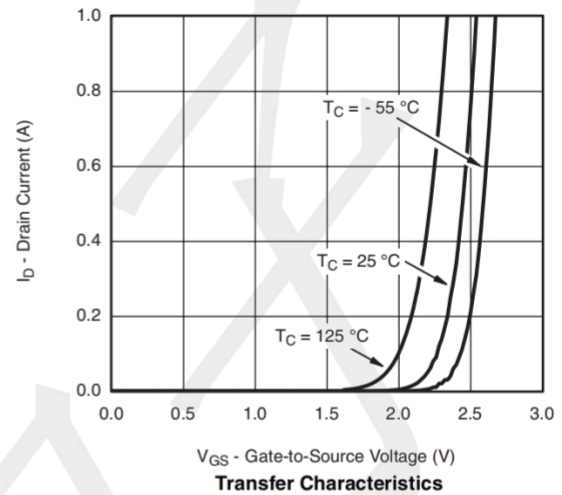
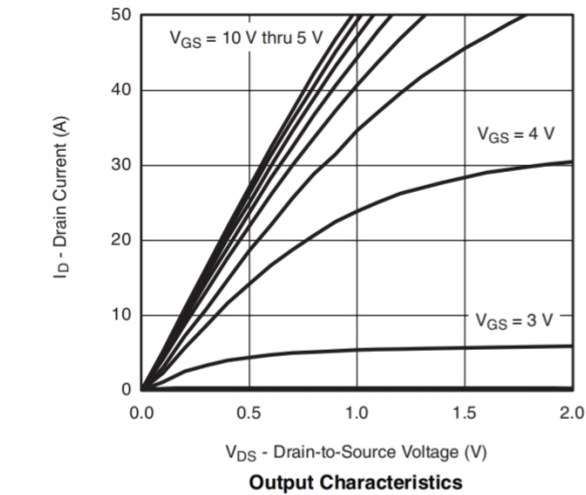
### Electrical Characteristics (T<sub>A</sub>=25 °C unless otherwise noted)

| PARAMETER                                               | CONDITIONS                                                                 | SYMBOL       | MIN  | TYP   | MAX       | UNIT       |
|---------------------------------------------------------|----------------------------------------------------------------------------|--------------|------|-------|-----------|------------|
| Static                                                  |                                                                            |              |      |       |           |            |
| Drain-Source Breakdown Voltage                          | $V_{GS}=0V, I_D=-250\mu A$                                                 | $BV_{DSS}$   | -30  | --    | --        | V          |
| Gate-Source Threshold Voltage                           | $V_{DS}=V_{GS}, I_D = -250\mu A$                                           | $V_{GS(th)}$ | -1.0 | -1.5  | -2.5      | V          |
| Gate-Source Leakage                                     | $V_{DS}=0V, V_{GS}= \pm 20V$                                               | $I_{GSS}$    | --   | --    | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                         | $V_{DS}= -30V, V_{GS}=0V$                                                  | $I_{DSS}$    | --   | -0.1  | -1        | $\mu A$    |
|                                                         | $V_{DS}= -30V, T_J=125^{\circ}C$                                           |              | --   | -10   | -50       | $\mu A$    |
| On-State<br>Drain-Source Resistance (Note 1)            | $V_{GS}= -10V, I_D= -7A$                                                   | $R_{DS(on)}$ | --   | 22    | 30        | m $\Omega$ |
|                                                         | $V_{GS}= -4.5V, I_D= -4A$                                                  |              | --   | 31    | 37        |            |
| Forward Transconductance (Note 2)                       | $V_{DS}= -10V, I_D= -7A$                                                   | $g_{fs}$     | --   | 23    | --        | S          |
| Dynamic (Note 2)                                        |                                                                            |              |      |       |           |            |
| Total Gate Charge (Note 3)                              | $V_{DS} = -15V,$<br>$I_D = -8A,$<br>$V_{GS} = -10V$                        | $Q_g$        | --   | 15    | --        | nC         |
| Gate-Source Charge (Note 3)                             |                                                                            | $Q_{gs}$     | --   | 4     | --        |            |
| Gate-Drain Charge (Note 3)                              |                                                                            | $Q_{gd}$     | --   | 7.5   | --        |            |
| Input Capacitance                                       | $V_{DS} = -15V,$<br>$V_{GS} = 0V,$<br>$F = 1.0MHz$                         | $C_{iss}$    | --   | 890   | --        | pF         |
| Output Capacitance                                      |                                                                            | $C_{oss}$    | --   | 111   | --        |            |
| Reverse Transfer Capacitance                            |                                                                            | $C_{rss}$    | --   | 90    | --        |            |
| Switching                                               |                                                                            |              |      |       |           |            |
| Turn-On Delay Time (Note 3)                             | $V_{DD} = -15V,$<br>$I_D= -8A,$<br>$V_{GS} = -10V,$<br>$R_{GEN} = 1\Omega$ | $t_{d(on)}$  | --   | 10    | --        | nS         |
| Rise Time (Note 3)                                      |                                                                            | $t_r$        | --   | 8     | --        |            |
| Turn-Off Delay Time (Note 3)                            |                                                                            | $t_{d(off)}$ | --   | 45    | --        |            |
| Fall Time (Note 3)                                      |                                                                            | $t_f$        | --   | 12    | --        |            |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                                            |              |      |       |           |            |
| Forward Voltage                                         | $V_{GS} = 0V, I_{SD} = -8A$                                                | $V_{SD}$     | --   | -0.96 | -1.5      | V          |
| Continuous Source Current                               | Integral reverse diode<br>in the MOSFET                                    | $I_S$        | --   | --    | -8        | A          |
| Pulsed Current (Note 1)                                 |                                                                            | $I_{SM}$     | --   | --    | -40       | A          |

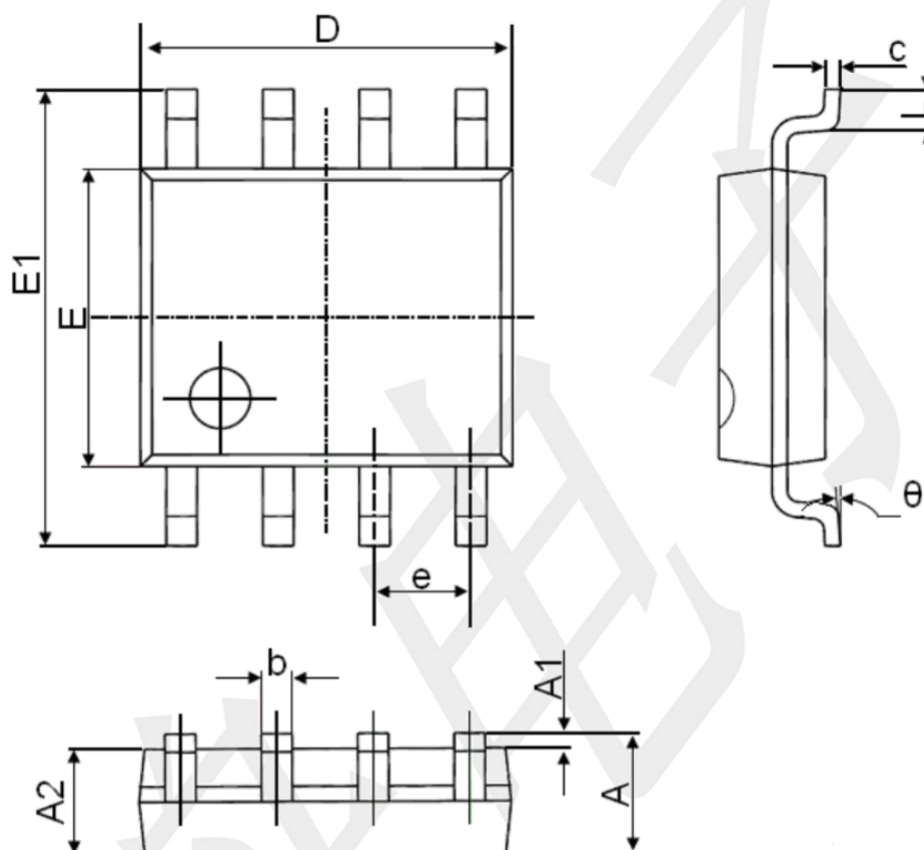
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

### TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



**Package Information SOP8**



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