

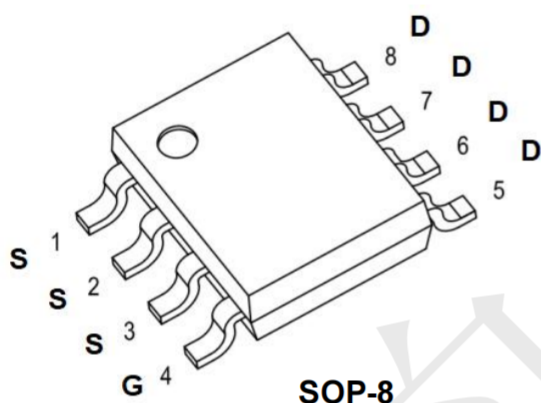
### Product Summary

- $V_{DS}$  30 V
- $I_{DS}$  (@  $V_{GS}=10V$ ) 25A
- $R_{DS(ON)}$  (@  $V_{GS}=10V$ ) < 3.0m $\Omega$ (Typ)

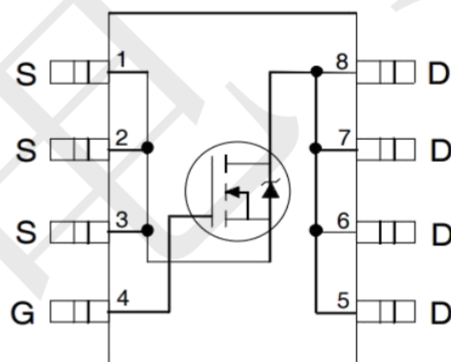
### Application

- LED applications
- Synchronous Rectifiers for SMPS
- 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                       | $I_D$     | 25          | A    |
| Continuous Drain Current                       | $I_D$     | 20          | A    |
| Pulsed Drain Current (note1)                   | $I_{DM}$  | 70          | A    |
| Maximum Power Dissipation T <sub>C</sub> =25°C | $P_D$     | 3.5         | 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 Junction-ambient | $R_{\theta JA}$ | 67    | °C/W |
| Thermal Resistance Junction-Case    | $R_{\theta JC}$ | 13    | °C/W |

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

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

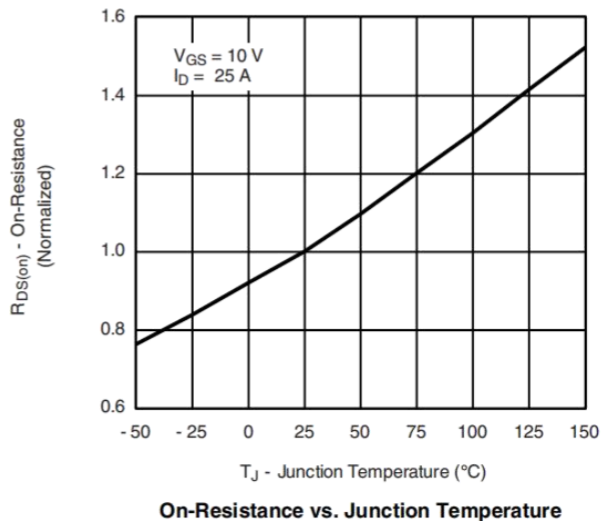
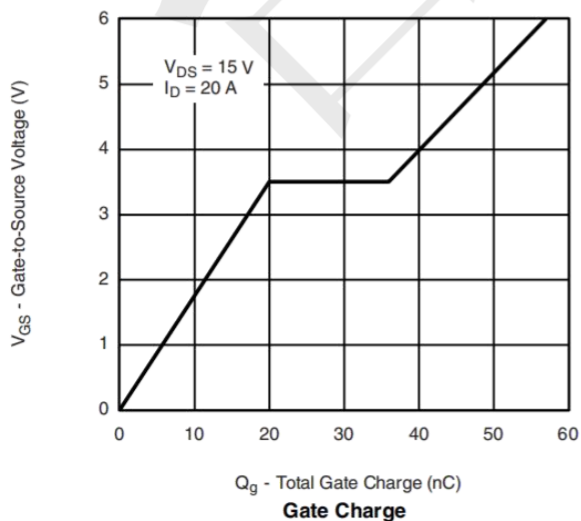
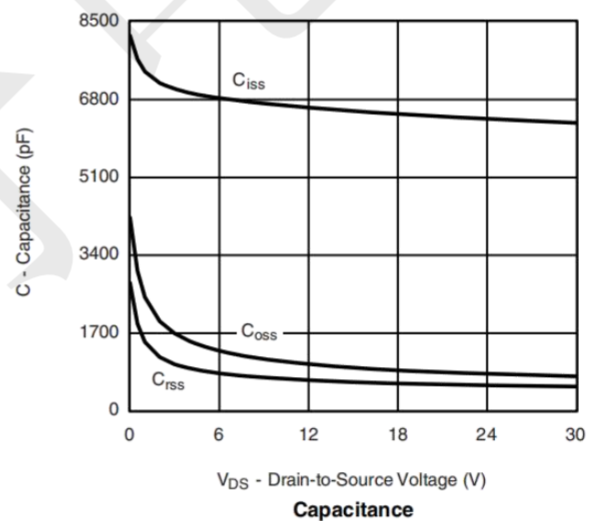
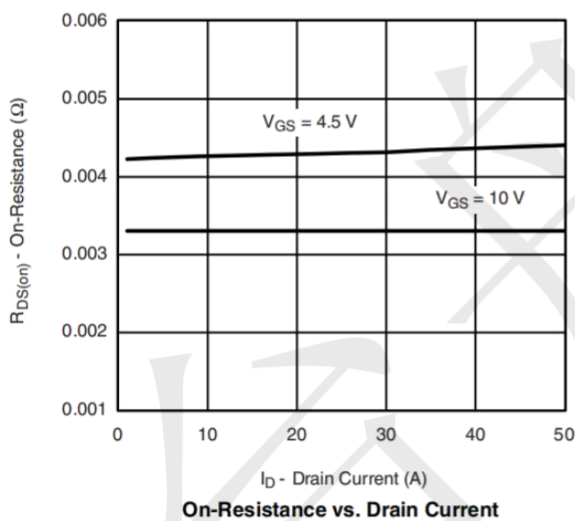
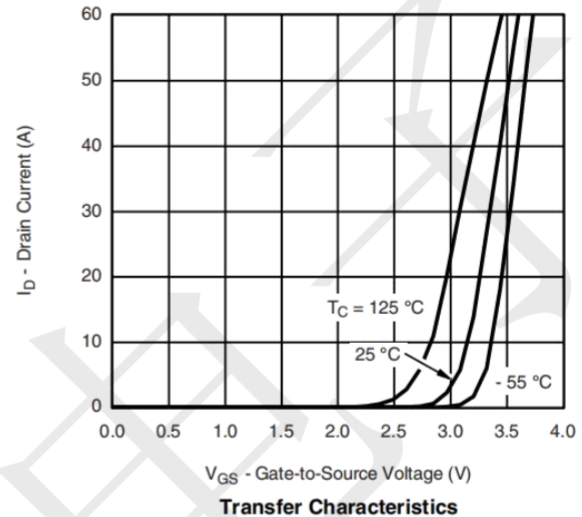
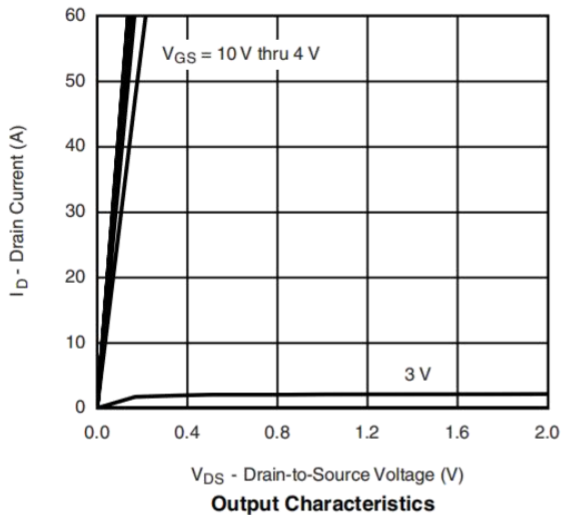
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| 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  | 2.2       | V          |
| Gate-Source Leakage                                     | $V_{DS}=0V, V_{GS}=\pm 20V$                                   | $I_{GSS}$    | --  | --   | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                         | $V_{DS}=30V, V_{GS}=0V$                                       | $I_{DSS}$    | --  | --   | 1         | $\mu A$    |
|                                                         | $V_{DS}=30V, T_J=85^{\circ}C$                                 |              | --  | --   | 10        | $\mu A$    |
| Drain-Source On-State Resistance (Note 1)               | $V_{GS}=10V, I_D=20A$                                         | $R_{DS(on)}$ | --  | 3.0  | 4.0       | m $\Omega$ |
|                                                         | $V_{GS}=4.5V, I_D=15A$                                        |              | --  | 5.5  | 7.7       | m $\Omega$ |
| Forward Transconductance (Note 2)                       | $V_{DS}=10V, I_D=10A$                                         | $g_{fs}$     | --  | 50   | --        | S          |
| Dynamic (Note 2)                                        |                                                               |              |     |      |           |            |
| Total Gate Charge (Note 3)                              | $V_{DS}=15V,$<br>$I_D=20A,$<br>$V_{GS}=4.5V$                  | $Q_g$        | --  | 45   | --        | nC         |
| Gate-Source Charge (Note 3)                             |                                                               | $Q_{gs}$     | --  | 20   | --        |            |
| Gate-Drain Charge (Note 3)                              |                                                               | $Q_{gd}$     | --  | 16   | --        |            |
| Input Capacitance                                       | $V_{DS}=15V,$<br>$V_{GS}=4.5V,$<br>$F=1.0MHz$                 | $C_{iss}$    | --  | 6500 | --        | pF         |
| Output Capacitance                                      |                                                               | $C_{oss}$    | --  | 930  | --        |            |
| Reverse Transfer Capacitance                            |                                                               | $C_{rss}$    | --  | 610  | --        |            |
| Switching                                               |                                                               |              |     |      |           |            |
| Turn-On Delay Time (Note 3)                             | $V_{DD}=15V,$<br>$I_D=1A,$<br>$V_{GS}=4.5V,$<br>$R_G=6\Omega$ | $t_{d(on)}$  | --  | 27   | --        | nS         |
| Rise Time (Note 3)                                      |                                                               | $t_r$        | --  | 21   | --        |            |
| Turn-Off Delay Time (Note 3)                            |                                                               | $t_{d(off)}$ | --  | 105  | --        |            |
| Fall Time (Note 3)                                      |                                                               | $t_f$        | --  | 40   | --        |            |
| Source-Drain Diode Ratings and Characteristics (Note 2) |                                                               |              |     |      |           |            |
| Forward Voltage                                         | $V_{GS}=0V, I_{SD}=10A$                                       | $V_{SD}$     | --  | 0.7  | 1.2       | V          |
| Continuous Source Current                               | Integral reverse diode in the MOSFET                          | $I_S$        | --  | --   | 25        | A          |
| Pulsed Current (Note 1)                                 |                                                               | $I_{SM}$     | --  | --   | 70        | A          |

Notes:

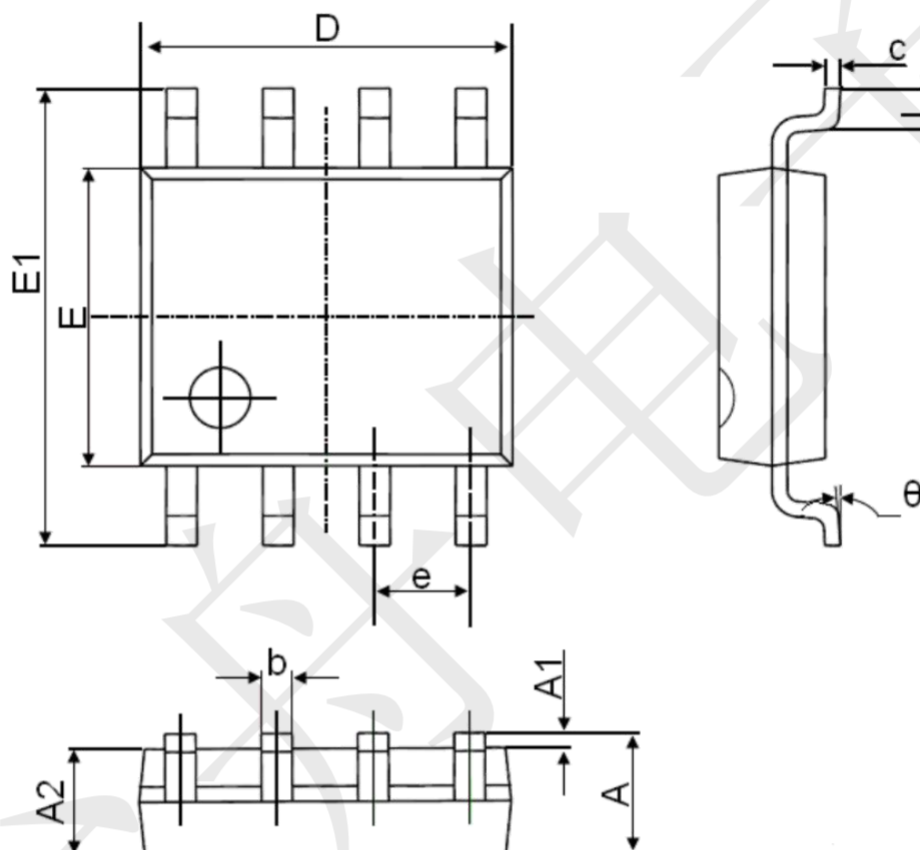
1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

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



## Package Information

### SOP-8



| 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 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |