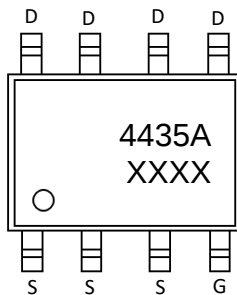


### Features

- Trench Power LV MOSFET technology
- High density cell design for Low  $R_{DS(ON)}$
- High Speed switching

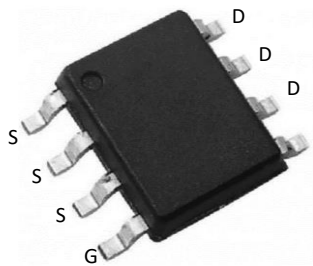
### Application

- Battery protection
- Power management
- Load switch

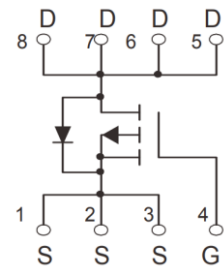


Marking and pin assignment

4435A : Device code  
XXXX : Code



SOP-8 top view



Schematic diagram



| Absolute Maximum Ratings (TA=25°C unless otherwise noted) |                                     |         |            |      |
|-----------------------------------------------------------|-------------------------------------|---------|------------|------|
| Symbol                                                    | Parameter                           |         | Rating     | Unit |
| Common Ratings (TC=25°C Unless Otherwise Noted)           |                                     |         |            |      |
| V <sub>DS</sub>                                           | Drain-Source Breakdown Voltage      |         | -30        | V    |
| V <sub>GS</sub>                                           | Gate-Source Voltage                 |         | ±20        | V    |
| T <sub>J</sub>                                            | Maximum Junction Temperature        |         | 150        | °C   |
| T <sub>STG</sub>                                          | Storage Temperature Range           |         | -50 to 155 | °C   |
| I <sub>S</sub>                                            | Diode Continuous Forward Current    | Tc=25°C | -10.5      | A    |
| Mounted on Large Heat Sink                                |                                     |         |            |      |
| I <sub>DM</sub>                                           | Pulse Drain Current Tested          | Tc=25°C | -50        | A    |
| I <sub>D</sub>                                            | Continuous Drain Current            | Tc=25°C | -10.5      | A    |
| P <sub>D</sub>                                            | Maximum Power Dissipation           | Tc=25°C | 3          | W    |
| R <sub>θJA</sub>                                          | Thermal Resistance Junction-Ambient |         | 42         | °C/W |

| Electrical Characteristics (TJ=25°C unless otherwise noted)              |                                  |                                                                                         |     |      |      |      |
|--------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------|-----|------|------|------|
| Symbol                                                                   | Parameter                        | Condition                                                                               | Min | Typ  | Max  | Unit |
| Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)  |                                  |                                                                                         |     |      |      |      |
| BV <sub>(BR)DSS</sub>                                                    | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA                                             | -30 | --   | --   | V    |
| I <sub>DSS</sub>                                                         | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V                                              | --  | --   | -1   | μA   |
| I <sub>GSS</sub>                                                         | Gate-Body Leakage Current        | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                              | --  | --   | ±100 | nA   |
| V <sub>GS(th)</sub>                                                      | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA                               | -1  | -1.5 | -3   | V    |
| R <sub>DS(on)</sub>                                                      | Drain-Source On-State Resistance | V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A                                             | --  | 15   | 18   | mΩ   |
|                                                                          |                                  | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-8A                                             | --  | 22   | 30   | mΩ   |
| Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) |                                  |                                                                                         |     |      |      |      |
| C <sub>ISS</sub>                                                         | Input Capacitance                | V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz                                      | --  | 1500 | --   | pF   |
| C <sub>OSS</sub>                                                         | Output Capacitance               |                                                                                         | --  | 180  | --   | pF   |
| C <sub>RSS</sub>                                                         | Reverse Transfer Capacitance     |                                                                                         | --  | 150  | --   | pF   |
| Switching Characteristics                                                |                                  |                                                                                         |     |      |      |      |
| Q <sub>g</sub>                                                           | Total Gate Charge                | V <sub>DS</sub> =-10V, I <sub>D</sub> =-6A, V <sub>GS</sub> =-15V                       | --  | 29   | --   | nC   |
| Q <sub>gs</sub>                                                          | Gate Source Charge               |                                                                                         | --  | 5.4  | --   | nC   |
| Q <sub>gd</sub>                                                          | Gate Drain Charge                |                                                                                         | --  | 5.4  | --   | nC   |
| t <sub>d(on)</sub>                                                       | Turn-on Delay Time               | V <sub>DD</sub> =-15V, I <sub>D</sub> =-6A, V <sub>GS</sub> =-10V, R <sub>G</sub> =2.5Ω | --  | 10   | --   | nS   |
| t <sub>r</sub>                                                           | Turn-on Rise Time                |                                                                                         | --  | 45   | --   | nS   |
| t <sub>d(off)</sub>                                                      | Turn-Off Delay Time              |                                                                                         | --  | 55   | --   | nS   |
| t <sub>f</sub>                                                           | Turn-Off Fall Time               |                                                                                         | --  | 60   | --   | nS   |
| Source- Drain Diode Characteristics                                      |                                  |                                                                                         |     |      |      |      |
| V <sub>SD</sub>                                                          | Forward on voltage               | Tj=25°C, Is=-10A,                                                                       | --  | -0.8 | -1.2 | V    |

## Typical Operating Characteristics

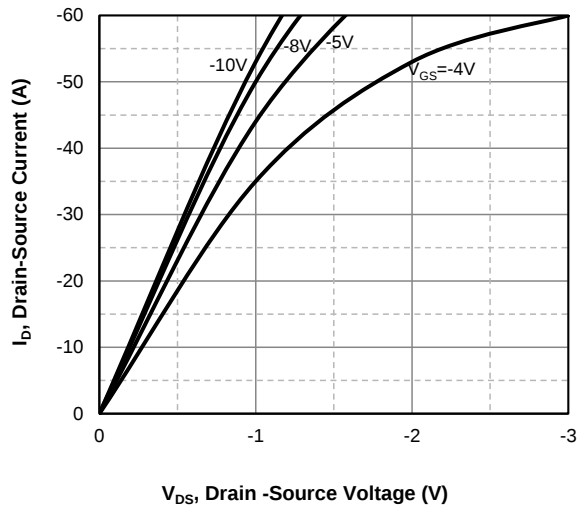


Fig1. Typical Output Characteristics

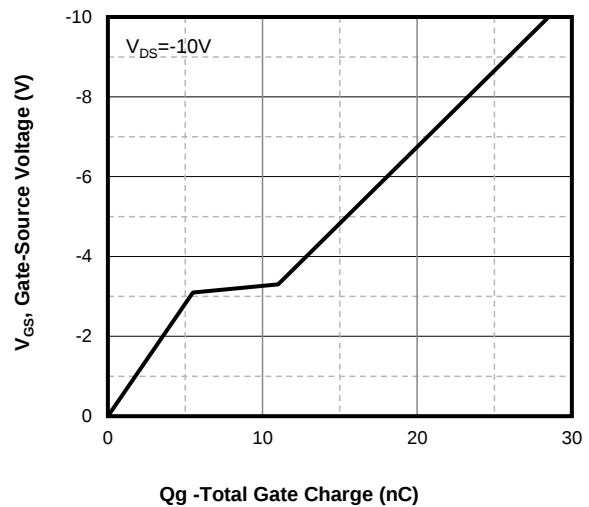


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

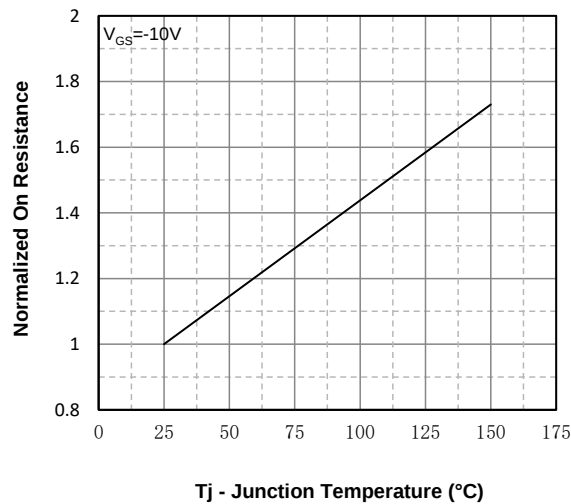


Fig3. Normalized On-Resistance Vs. Temperature

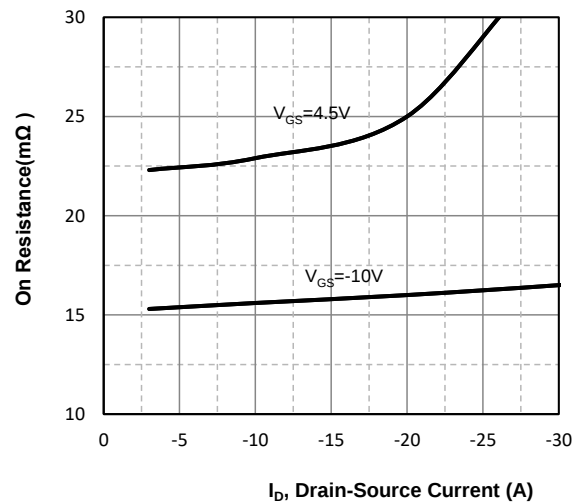


Fig4. On-Resistance Vs. Drain-Source Current

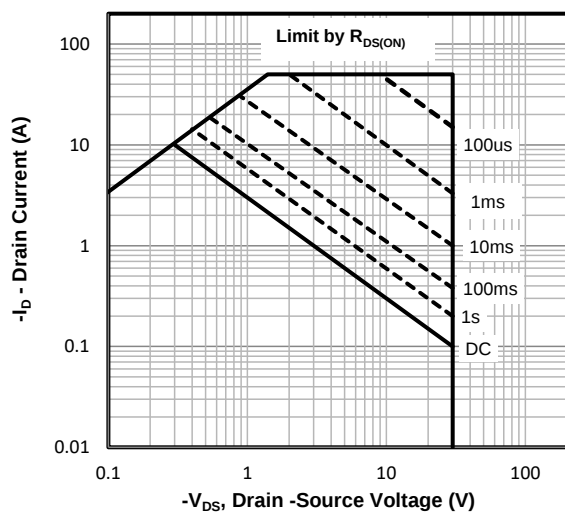


Fig5. Maximum Safe Operating Area

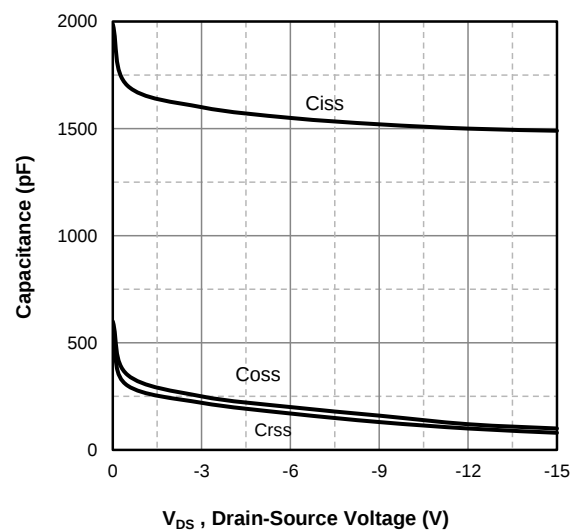
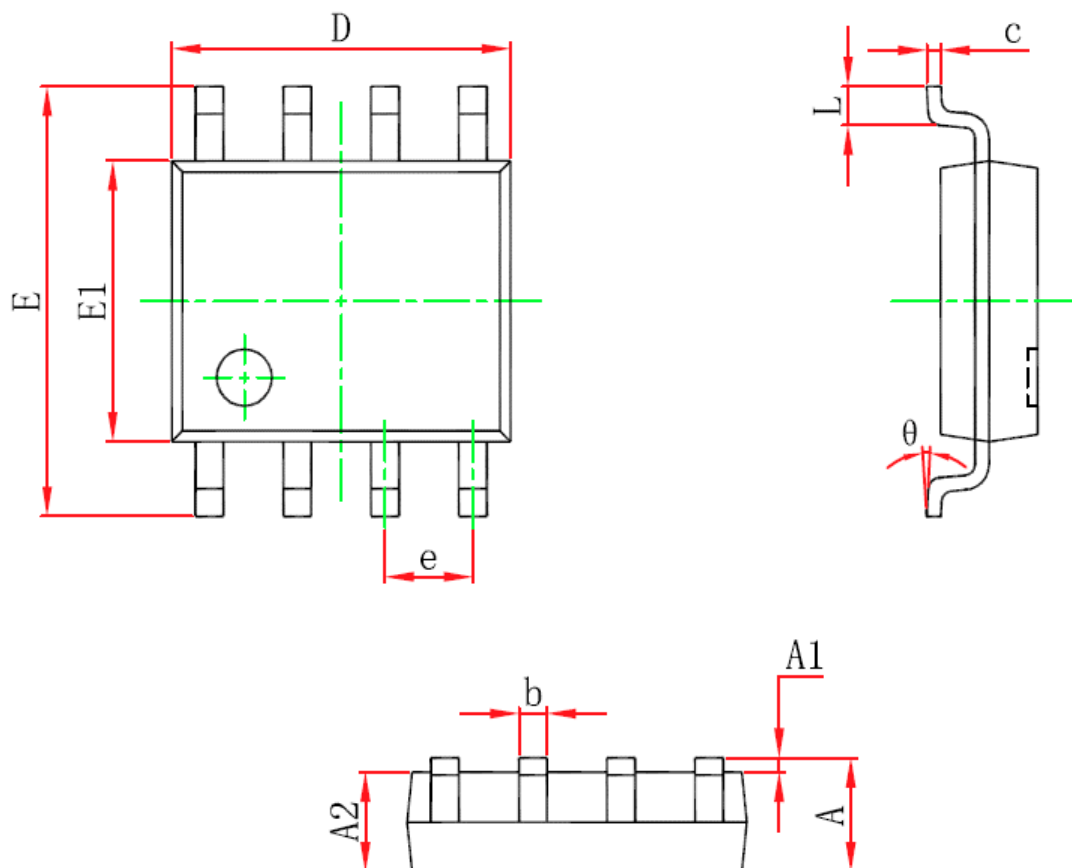


Fig6 Typical Capacitance Vs. Drain-Source Voltage

**SOP-8 Package information**


| Symbol   | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|----------|-------------------------------|-------|----------------------|-------|
|          | Min                           | Max   | Min                  | Max   |
| A        | 1.450                         | 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 | 0.007                | 0.010 |
| D        | 4.700                         | 5.100 | 0.185                | 0.201 |
| e        | 1.270(BSC)                    |       | 0.050(BSC)           |       |
| E        | 5.800                         | 6.200 | 0.028                | 0.035 |
| E1       | 3.800                         | 4.000 | 0.057                | 0.069 |
| L        | 0.400                         | 1.270 | 0.016                | 0.050 |
| $\theta$ | 0°                            | 8°    | 0°                   | 8°    |