

## Features

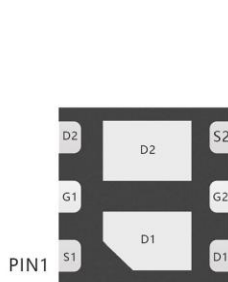
- Dual N-Channel
- TrenchFET Power MOSFET
- Low Gate Charge
- Low On-resistance
- Surface Mount Package

## Application

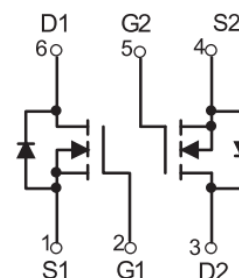
- Battery protection
- Load switch
- Power management

## Product Summary

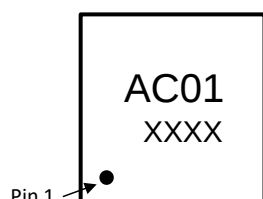
| $V_{DS}$ | $R_{DS(ON)}$ TYP | $I_D$ |
|----------|------------------|-------|
| 20V      | 360mΩ@4.5V       | 0.7A  |
|          | 540mΩ@2.5V       |       |



DFN2X2-6L view



Schematic diagram



Pin 1

AC01 : Device code  
 XXXX : Code

Marking and pin assignment



Pb-Free



Halogen-Free

## Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Symbol | Parameter | Rating | Unit |
|--------|-----------|--------|------|
|--------|-----------|--------|------|

### Common Ratings (TC=25°C Unless Otherwise Noted)

|           |                                  |                          |    |
|-----------|----------------------------------|--------------------------|----|
| $V_{DS}$  | Drain-Source Breakdown Voltage   | 20                       | V  |
| $V_{GS}$  | Gate-Source Voltage              | ±12                      | V  |
| $T_J$     | Maximum Junction Temperature     | 150                      | °C |
| $T_{STG}$ | Storage Temperature Range        | -50 to 155               | °C |
| $I_S$     | Diode Continuous Forward Current | $T_c=25^{\circ}C$<br>0.7 | A  |

### Mounted on Large Heat Sink

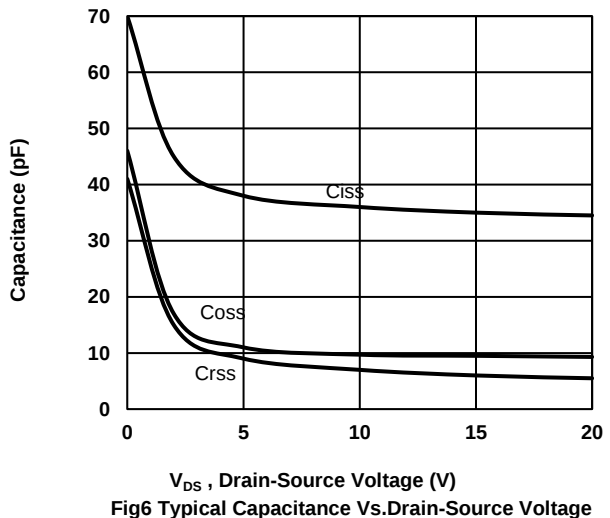
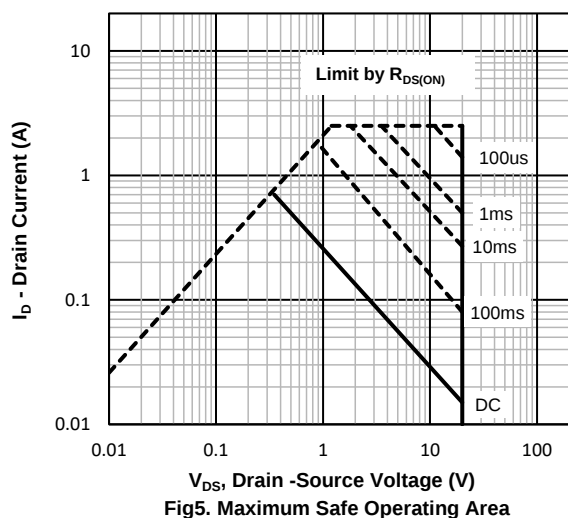
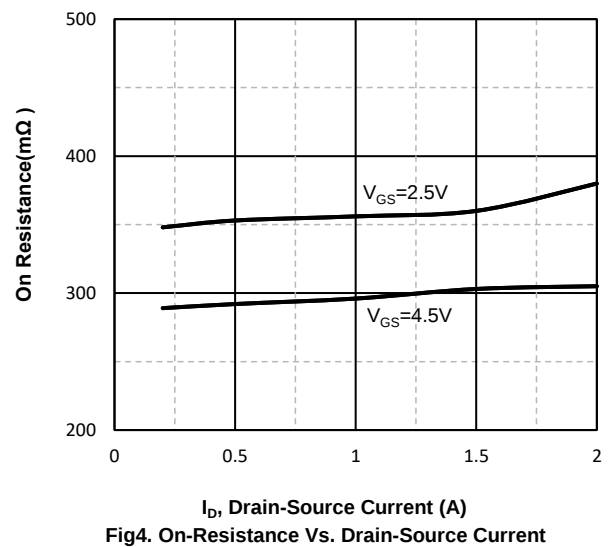
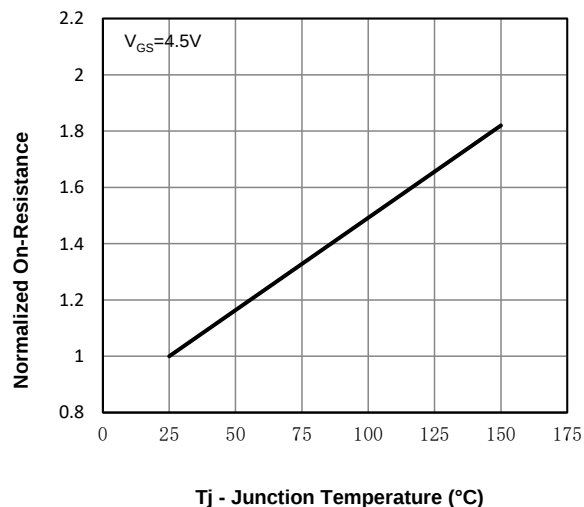
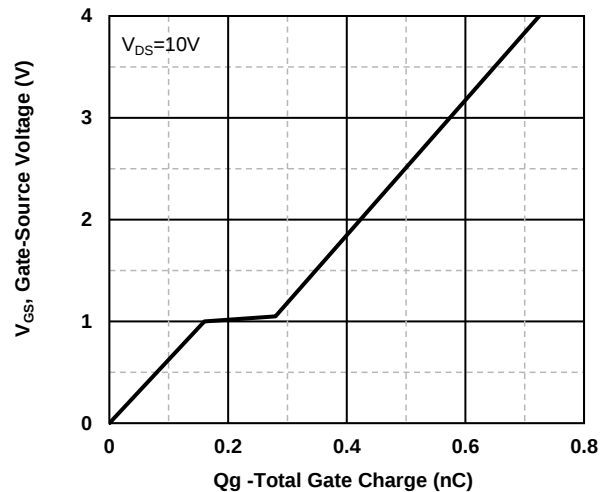
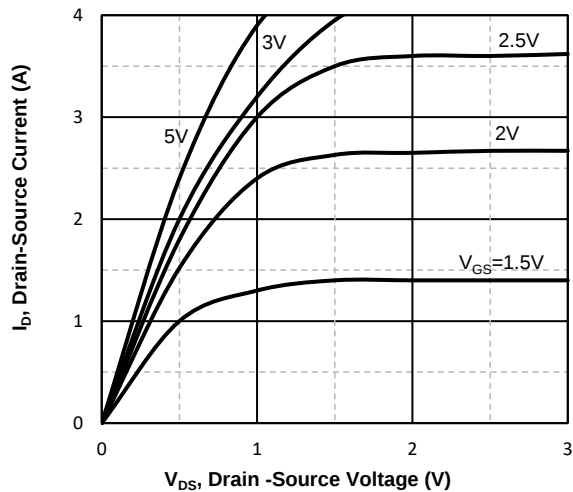
|                 |                                     |                           |      |
|-----------------|-------------------------------------|---------------------------|------|
| $I_{DM}$        | Pulse Drain Current Tested          | $T_c=25^{\circ}C$<br>2.5  | A    |
| $I_D$           | Continuous Drain Current            | $T_c=25^{\circ}C$<br>0.7  | A    |
| $P_D$           | Maximum Power Dissipation           | $T_c=25^{\circ}C$<br>0.75 | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient | 100                       | °C/W |

## Ordering Information (Example)

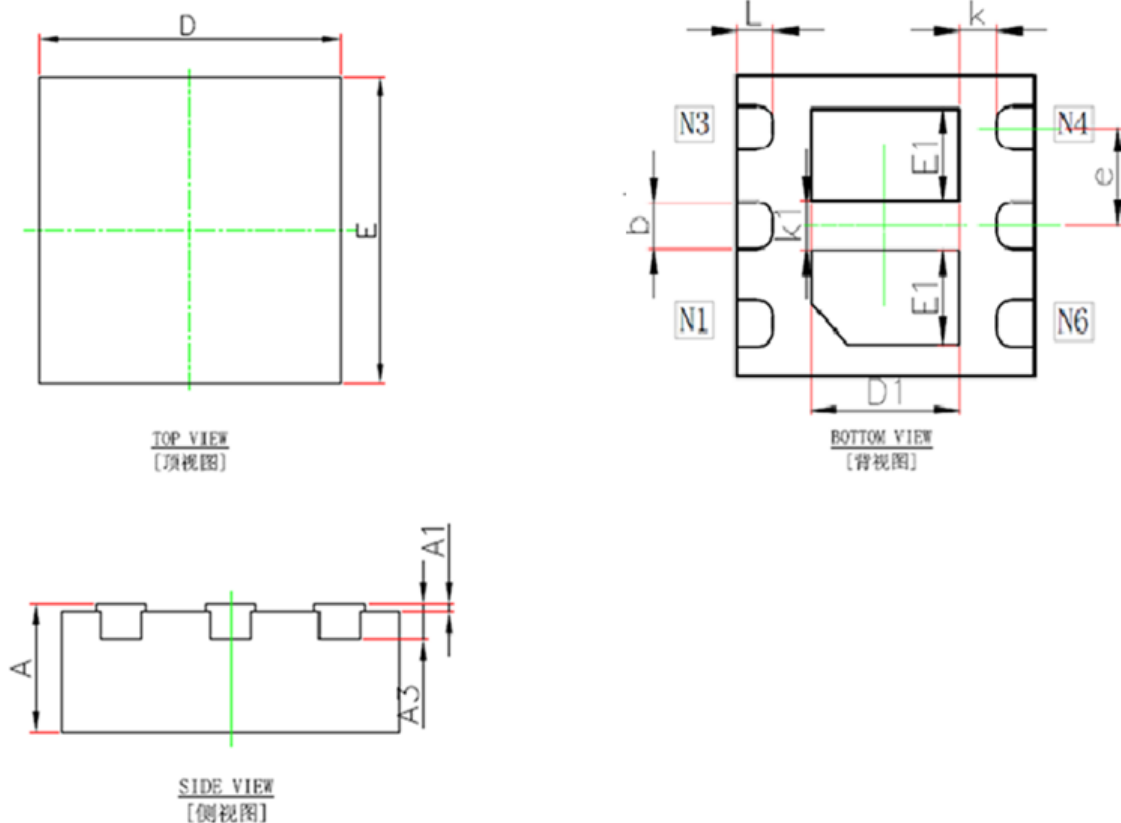
| Type     | Package   | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|----------|-----------|---------|----------------------|-------------------------|----------------------------|---------------|
| MLSMAC01 | DFN2X2-6L | AC01    | 3,000                | 45,000                  | 180,000                    | 7"reel        |

| Electrical Characteristics (T <sub>J</sub> =25℃ unless otherwise noted)             |                                  |                                                                                       |     |     |      |      |
|-------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|-----|-----|------|------|
| Symbol                                                                              | Parameter                        | Condition                                                                             | Min | Typ | Max  | Unit |
| Static Electrical Characteristics @ T <sub>J</sub> = 25℃ (unless otherwise stated)  |                                  |                                                                                       |     |     |      |      |
| BV <sub>(BR)DSS</sub>                                                               | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                            | 20  | --  | --   | V    |
| I <sub>DSS</sub>                                                                    | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V                                             | --  | --  | 1    | μA   |
| I <sub>GSS</sub>                                                                    | Gate-Body Leakage Current        | V <sub>GS</sub> =±12V, 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                              | 0.5 | 1.0 | 1.5  | V    |
| R <sub>DS(on)</sub>                                                                 | Drain-Source On-State Resistance | V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A                                           | --  | 360 | 450  | mΩ   |
|                                                                                     |                                  | V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.4A                                           | --  | 540 | 650  | mΩ   |
| Dynamic Electrical Characteristics @ T <sub>J</sub> = 25℃ (unless otherwise stated) |                                  |                                                                                       |     |     |      |      |
| C <sub>ISS</sub>                                                                    | Input Capacitance                | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz                                     | --  | 35  | --   | pF   |
| C <sub>OSS</sub>                                                                    | Output Capacitance               |                                                                                       | --  | 9.5 | --   | pF   |
| C <sub>RSS</sub>                                                                    | Reverse Transfer Capacitance     |                                                                                       | --  | 8.8 | --   | pF   |
| Switching Characteristics                                                           |                                  |                                                                                       |     |     |      |      |
| Q <sub>g</sub>                                                                      | Total Gate Charge                | V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A, V <sub>GS</sub> =4.5V                     | --  | 0.8 | --   | nC   |
| Q <sub>gs</sub>                                                                     | Gate Source Charge               |                                                                                       | --  | 0.1 | --   | nC   |
| Q <sub>gd</sub>                                                                     | Gate Drain Charge                |                                                                                       | --  | 0.2 | --   | nC   |
| t <sub>d(on)</sub>                                                                  | Turn-on Delay Time               | V <sub>DD</sub> =10V, I <sub>D</sub> =0.5A, V <sub>GS</sub> =4.5V, R <sub>G</sub> =3Ω | --  | 7   | --   | nS   |
| t <sub>r</sub>                                                                      | Turn-on Rise Time                |                                                                                       | --  | 10  | --   | nS   |
| t <sub>d(off)</sub>                                                                 | Turn-Off Delay Time              |                                                                                       | --  | 35  | --   | nS   |
| t <sub>f</sub>                                                                      | Turn-Off Fall Time               |                                                                                       | --  | 15  | --   | nS   |
| Source- Drain Diode Characteristics                                                 |                                  |                                                                                       |     |     |      |      |
| V <sub>SD</sub>                                                                     | Forward on voltage               | T <sub>J</sub> =25℃, I <sub>S</sub> =0.3A                                             | --  | 0.8 | 1.2  | V    |

## Typical Operating Characteristics



DFN2X2-6L Package information



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 0.600                         | 0.700 | 0.024                | 0.027 |
| A1     | 0.000                         | 0.050 | 0.000                | 0.001 |
| A3     | 0.203REF                      |       | 0.007REF             |       |
| b      | 0.230                         | 0.330 | 0.009                | 0.012 |
| D      | 1.924                         | 2.076 | 0.075                | 0.081 |
| E      | 1.924                         | 2.076 | 0.075                | 0.081 |
| e      | 0.650TYP                      |       | 0.025TYP             |       |
| L      | 0.224                         | 0.376 | 0.008                | 0.014 |
| k      | 0.200                         | -     | 0.007                | -     |
| E1     | 0.520                         | 0.720 | 0.020                | 0.028 |
| D1     | 0.800                         | 1.000 | 0.031                | 0.039 |
| K1     | 0.320TYP                      |       | 0.012TYP             |       |