

## Features

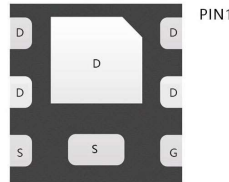
- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$
- High Speed switching

## Product Summary

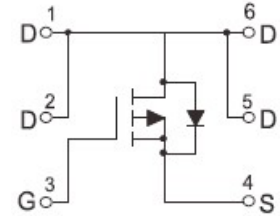
| $V_{DS}$ | $R_{DS(ON)}$ MAX | $I_D$ MAX |
|----------|------------------|-----------|
| -30      | 45mΩ@-10V        | -7A       |
|          | 55mΩ@-4.5V       |           |

## Application

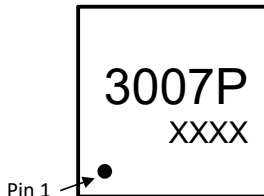
- Battery protection
- Load switch
- Power management



DFN2X2-6L view



Schematic diagram



Pin 1

3007P: Device code  
 XXXX: Code  
 Solid dot: Pin1 indicator

Marking and pin assignment



Pb-Free



Halogen-Free

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

| Symbol                                                 | Parameter                        | Rating                  | Unit |
|--------------------------------------------------------|----------------------------------|-------------------------|------|
| <b>Common Ratings (TC=25°C Unless Otherwise Noted)</b> |                                  |                         |      |
| $V_{DS}$                                               | Drain-Source Breakdown Voltage   | -30                     | V    |
| $V_{GS}$                                               | Gate-Source Voltage              | ±12                     | V    |
| $T_J$                                                  | Maximum Junction Temperature     | 150                     | °C   |
| $T_{STG}$                                              | Storage Temperature Range        | -55~150                 | °C   |
| $I_S$                                                  | Diode Continuous Forward Current | $T_C=25^{\circ}C$<br>-7 | A    |

## Mounted on Large Heat Sink

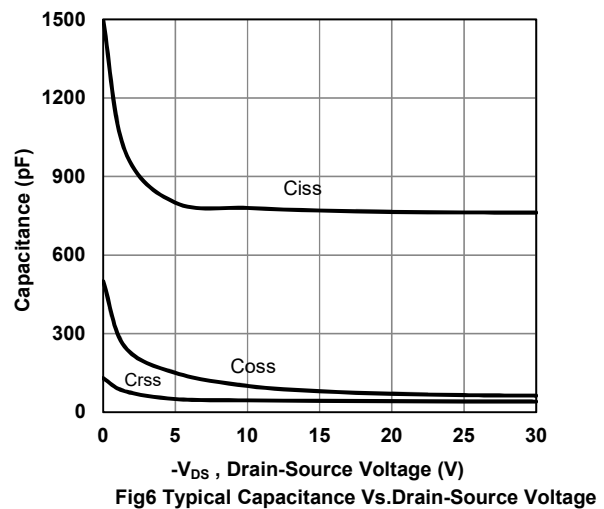
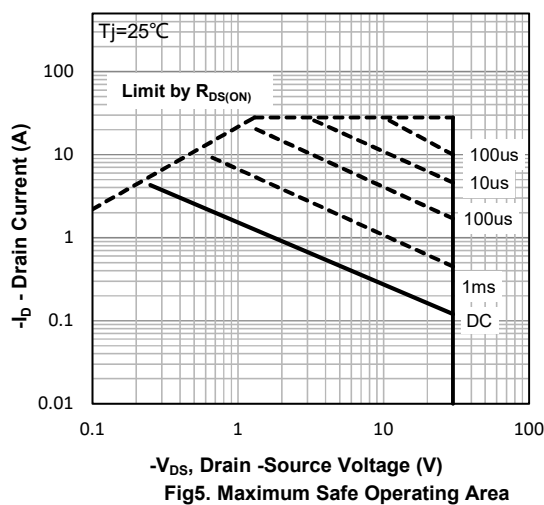
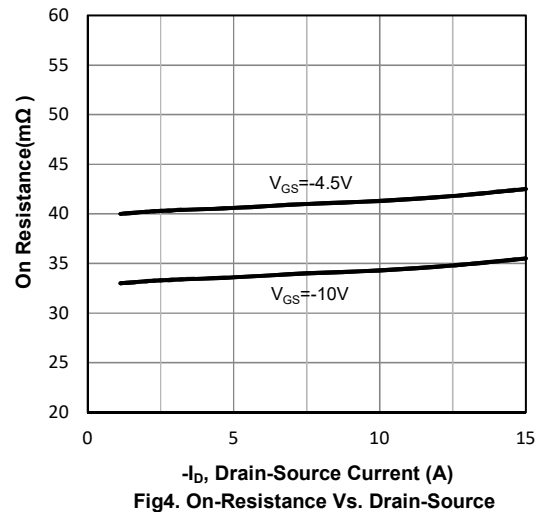
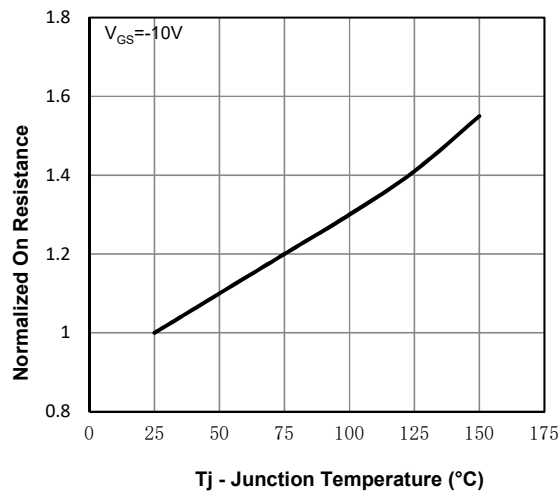
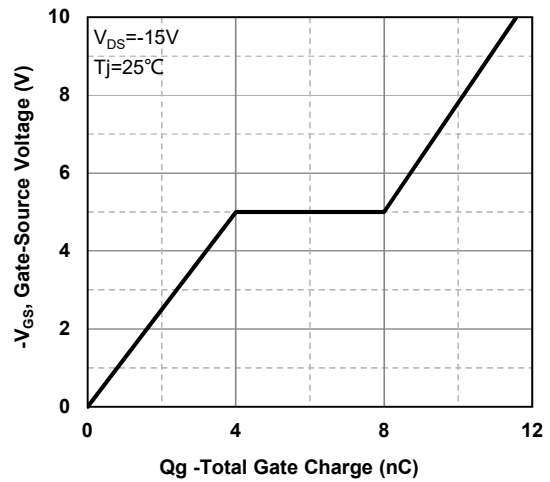
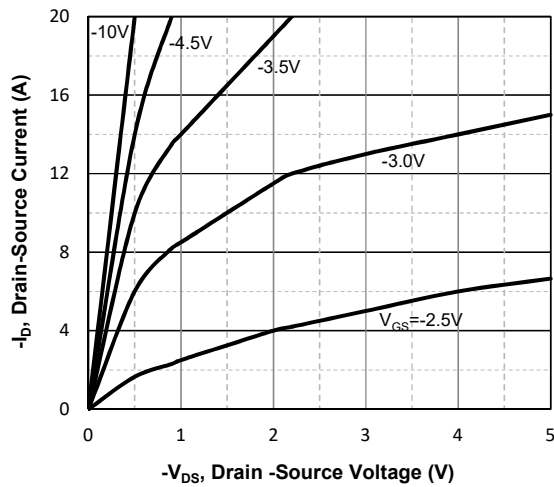
|                 |                                     |                           |      |
|-----------------|-------------------------------------|---------------------------|------|
| $I_{DM}$        | Pulse Drain Current Tested          | $T_C=25^{\circ}C$<br>-28  | A    |
| $I_D$           | Continuous Drain Current            | $T_C=25^{\circ}C$<br>-7   | A    |
| $P_D$           | Maximum Power Dissipation           | $T_C=25^{\circ}C$<br>1.66 | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient | 100                       | °C/W |

## Ordering Information (Example)

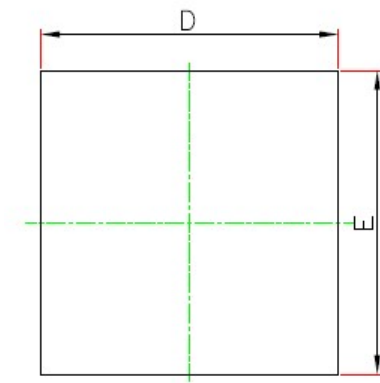
| Type      | Package   | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|-----------|-----------|---------|----------------------|-------------------------|----------------------------|---------------|
| MLSM3007P | DFN2X2-6L | 3007P   | 3,000                | 45,000                  | 180,000                    | 7"reel        |

| 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> =±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                              | -0.6 | -0.9 | -1.3 | V    |
| R <sub>DS(on)</sub>                                                      | Drain-Source On-State Resistance | V <sub>GS</sub> =-10V, I <sub>D</sub> =-7A                                             | --   | 33   | 45   | mΩ   |
|                                                                          |                                  | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4A                                            | --   | 40   | 55   | 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                                     | --   | 730  | --   | pF   |
| C <sub>OSS</sub>                                                         | Output Capacitance               |                                                                                        | --   | 65   | --   | pF   |
| C <sub>RSS</sub>                                                         | Reverse Transfer Capacitance     |                                                                                        | --   | 52   | --   | pF   |
| Switching Characteristics                                                |                                  |                                                                                        |      |      |      |      |
| Q <sub>g</sub>                                                           | Total Gate Charge                | V <sub>DS</sub> =-15V, I <sub>D</sub> =-5A, V <sub>GS</sub> =-4.5V                     | --   | 8    | --   | nC   |
| Q <sub>gs</sub>                                                          | Gate Source Charge               |                                                                                        | --   | 2    | --   | nC   |
| Q <sub>gd</sub>                                                          | Gate Drain Charge                |                                                                                        | --   | 2    | --   | nC   |
| t <sub>d(on)</sub>                                                       | Turn-on Delay Time               | V <sub>DD</sub> =-15V, I <sub>D</sub> =-5A, V <sub>GS</sub> =-4.5V, R <sub>G</sub> =3Ω | --   | 8    | --   | nS   |
| t <sub>r</sub>                                                           | Turn-on Rise Time                |                                                                                        | --   | 16   | --   | nS   |
| t <sub>d(off)</sub>                                                      | Turn-Off Delay Time              |                                                                                        | --   | 46   | --   | nS   |
| t <sub>f</sub>                                                           | Turn-Off Fall Time               |                                                                                        | --   | 34   | --   | nS   |
| Source- Drain Diode Characteristics                                      |                                  |                                                                                        |      |      |      |      |
| V <sub>SD</sub>                                                          | Forward on voltage               | Tj=25°C, Is=-7A                                                                        | --   | --   | -1.2 | V    |

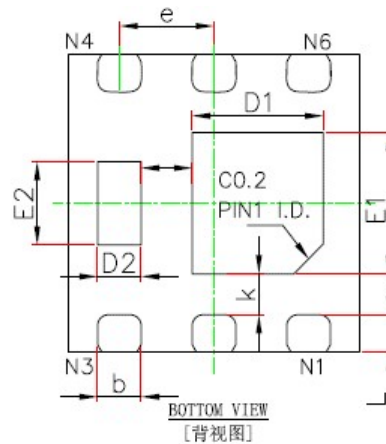
## Typical Operating Characteristics



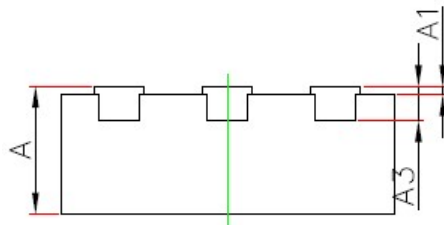
**DFN2X2-6L Package information**



TOP VIEW  
[顶视图]



BOTTOM VIEW  
[背视图]



SIDE VIEW  
[侧视图]

| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 0.600                         | 0.700 | 0.023                | 0.027 |
| A1     | 0.000                         | 0.050 | 0.000                | 0.001 |
| A3     | 0.203REF                      |       | 0.007REF             |       |
| b      | 0.315                         | 0.415 | 0.012                | 0.016 |
| D      | 1.924                         | 2.076 | 0.075                | 0.081 |
| E      | 1.924                         | 2.076 | 0.075                | 0.081 |
| e      | 0.650TYP                      |       | 0.225TYP             |       |
| L      | 0.224                         | 0.376 | 0.008                | 0.014 |
| k      | 0.200                         | -     | 0.007                | -     |
| E1     | 1.000                         | 1.200 | 0.039                | 0.047 |
| D1     | 0.900                         | 1.100 | 0.035                | 0.043 |
| E2     | 0.700                         | 0.900 | 0.027                | 0.035 |
| D2     | 0.150                         | 0.350 | 0.005                | 0.013 |