

## Features

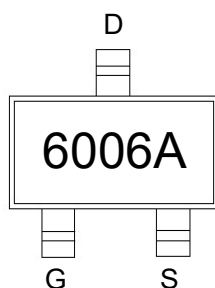
- Excellent package for good heat dissipation
- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified

## Application

- Power switching application

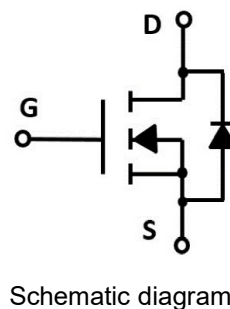
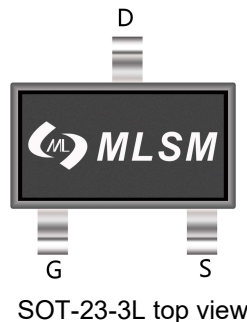
## Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ MAX   | $I_D$ MAX |
|----------|--------------------|-----------|
| 60V      | 32m $\Omega$ @10V  | 6A        |
|          | 48m $\Omega$ @4.5V |           |



6006A: Device code

Marking and pin assignment



Halogen-Free

## 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   |         | 60         | 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 | 6          | A  |

## Mounted on Large Heat Sink

|                 |                                     |                        |      |      |
|-----------------|-------------------------------------|------------------------|------|------|
| $I_{DM}$        | Pulse Drain Current Tested          | $T_c=25^\circ\text{C}$ | 28.3 | A    |
| $I_D$           | Continuous Drain Current            | $T_c=25^\circ\text{C}$ | 6    | A    |
| $P_D$           | Maximum Power Dissipation           | $T_c=25^\circ\text{C}$ | 2.2  | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient |                        | 83.5 | °C/W |

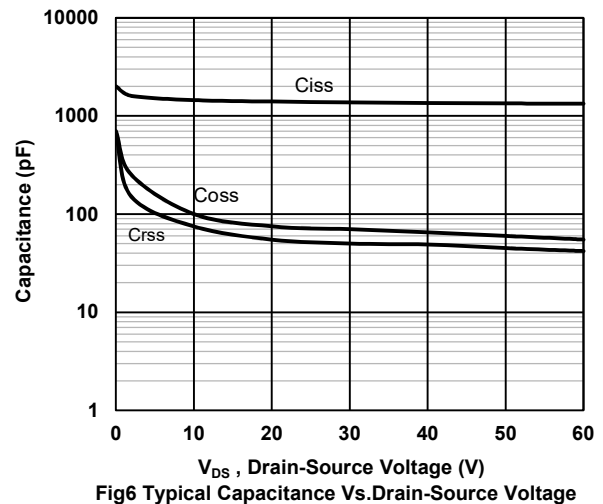
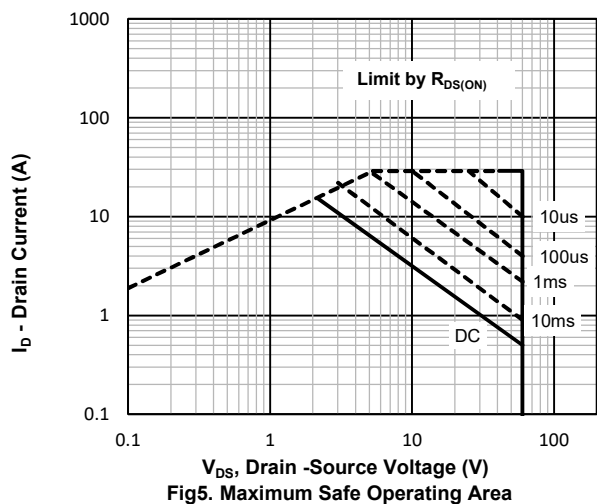
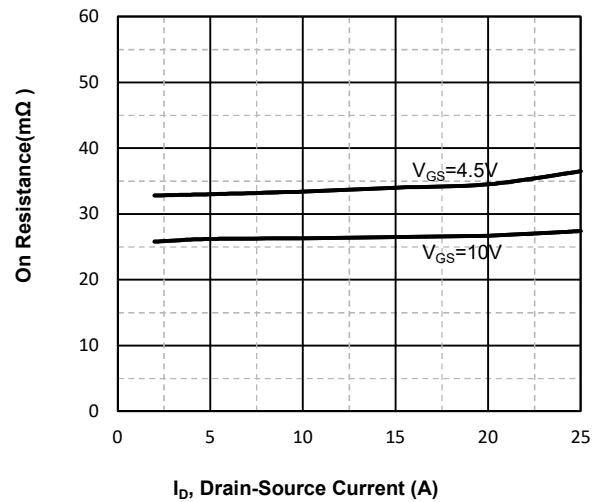
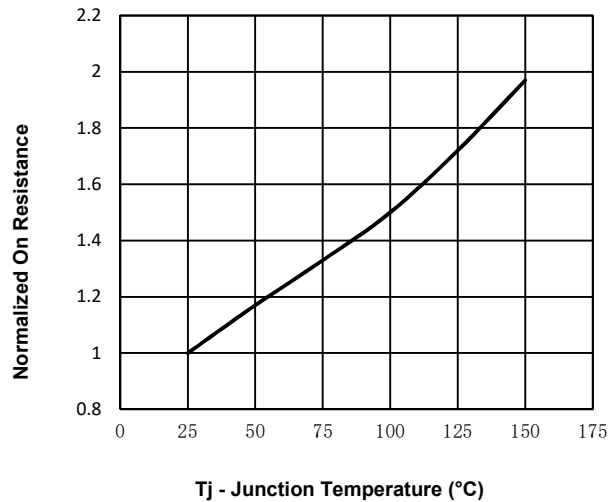
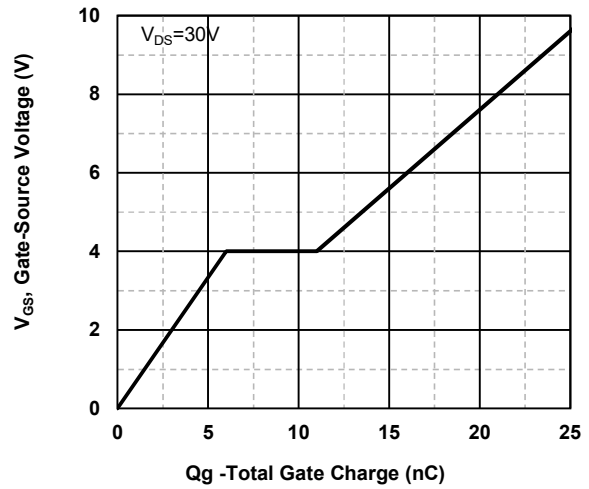
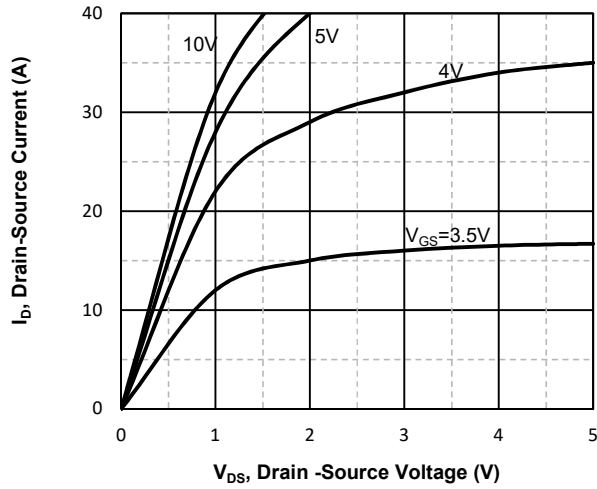
## Ordering Information (Example)

| Type      | Package   | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|-----------|-----------|---------|----------------------|-------------------------|----------------------------|---------------|
| MLSK6006A | SOT-23-3L | 6006A   | 3,000                | 45,000                  | 180,000                    | 7"reel        |

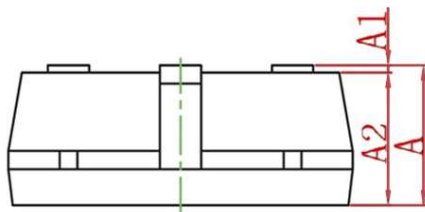
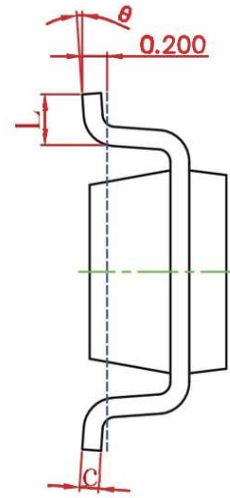
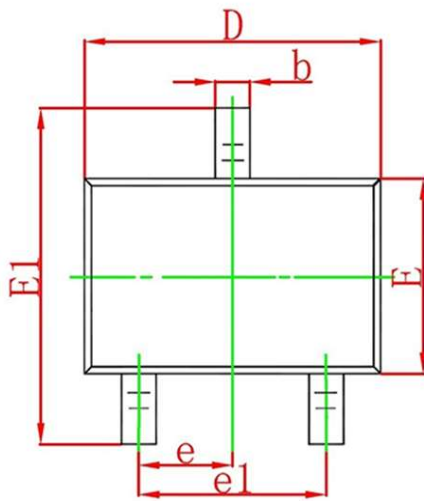
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

| Symbol                                                                   | Parameter                        | Condition                      | Min | Typ  | Max  | Unit |
|--------------------------------------------------------------------------|----------------------------------|--------------------------------|-----|------|------|------|
| Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)  |                                  |                                |     |      |      |      |
| BV(BR)DSS                                                                | Drain-Source Breakdown Voltage   | VGS=0V, ID=250μA               | 60  | –    | –    | V    |
| IDSS                                                                     | Zero Gate Voltage Drain Current  | VDS=60V, VGS=0V                | –   | –    | 1    | μA   |
| IGSS                                                                     | Gate-Body Leakage Current        | VGS=±20V, VDS=0V               | –   | –    | ±100 | nA   |
| VGS(th)                                                                  | Gate Threshold Voltage           | VDS=VGS, ID=250μA              | 1.0 | 1.7  | 2.5  | V    |
| RDS(on)                                                                  | Drain-Source On-State Resistance | VGS=10V, ID=6A                 | –   | 25   | 32   | mΩ   |
|                                                                          |                                  | VGS=4.5V, ID=5A                | –   | 32   | 48   | mΩ   |
| Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated) |                                  |                                |     |      |      |      |
| CISS                                                                     | Input Capacitance                | VDS=30V, VGS=0V, f=1MHz        | –   | 1050 | –    | pF   |
| COSS                                                                     | Output Capacitance               |                                | –   | 65   | –    | pF   |
| CRSS                                                                     | Reverse Transfer Capacitance     |                                | –   | 55   | –    | pF   |
| Switching Characteristics                                                |                                  |                                |     |      |      |      |
| Qg                                                                       | Total Gate Charge                | VDD=30V, ID=6A, VGS=10V        | –   | 26   | –    | nC   |
| Qgs                                                                      | Gate Source Charge               |                                | –   | 5.7  | –    | nC   |
| Qgd                                                                      | Gate Drain Charge                |                                | –   | 5.2  | –    | nC   |
| td(on)                                                                   | Turn-on Delay Time               | VDD=30V, ID=6A, VGS=10V, RG=3Ω | –   | 8.4  | –    | nS   |
| tr                                                                       | Turn-on Rise Time                |                                | –   | 8.5  | –    | nS   |
| td(off)                                                                  | Turn-Off Delay Time              |                                | –   | 36   | –    | nS   |
| tf                                                                       | Turn-Off Fall Time               |                                | –   | 5    | –    | nS   |
| Source- Drain Diode Characteristics                                      |                                  |                                |     |      |      |      |
| VSD                                                                      | Forward on voltage               | TJ=25°C, IS=6A                 | –   | –    | 1.2  | V    |

## Typical Operating Characteristics



SOT-23-3L Package information



| Symbol   | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|----------|-------------------------------|-------|----------------------|-------|
|          | Min                           | Max   | Min                  | Max   |
| A        | 1.050                         | 1.250 | 0.042                | 0.050 |
| A1       | 0.000                         | 0.100 | 0.000                | 0.004 |
| A2       | 1.050                         | 1.150 | 0.042                | 0.046 |
| b        | 0.300                         | 0.500 | 0.012                | 0.020 |
| c        | 0.100                         | 0.200 | 0.004                | 0.008 |
| D        | 2.820                         | 3.020 | 0.112                | 0.120 |
| E        | 1.500                         | 1.700 | 0.060                | 0.068 |
| E1       | 2.650                         | 2.950 | 0.106                | 0.118 |
| e        | 0.950TYP                      |       | 0.037TYP             |       |
| e1       | 1.800                         | 2.000 | 0.071                | 0.079 |
| L        | 0.300                         | 0.600 | 0.012                | 0.024 |
| $\theta$ | 0°                            | 8°    | 0°                   | 8°    |