# AS6010FL

N-Channel Enhancement Mode MOSFET

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---|---|---|
| 60V | 35mΩ@10V | 10A |
| | 40mΩ@4.5V | |

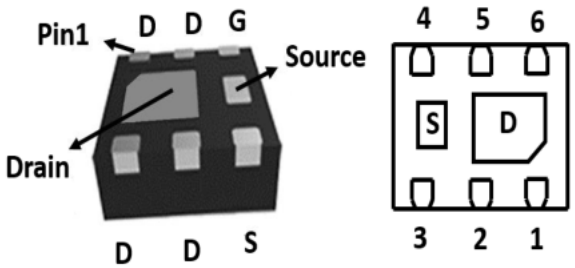
## Feature

- Advanced trench process technology
- High density cell design for ultra low on-resistance
- High Speed switching

## Application

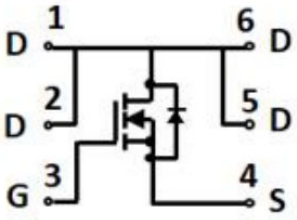
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

## Package

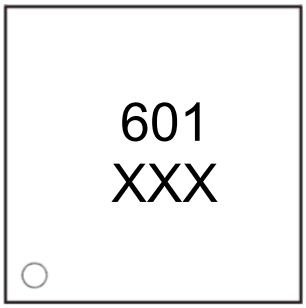



DFN2*2-6L

## Circuit diagram




## Marking



## Absolute maximum ratings (Ta=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 60 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $I_D$ | 10 | A |
| Pulsed Drain Current | $I_{DM}$ | 40 | A |
| Power Dissipation | $P_D$ | 3 | W |
| Thermal Resistance,Junction-to-Ambient | $R_{\theta JA}$ | 42 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | ℃ |

## Electrical characteristics ($T_A$=25 ºC, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 60 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =60V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | | | ±100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 1.2 | 1.6 | 2.5 | V |
| Drain-source on-resistance[1] | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =5A | | 25 | 35 | mΩ |
| | | $V_{GS}$ =4.5V, $I_D$ =5A | | 31 | 40 | |
| **Dynamic characteristics[2]** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =30V,$V_{GS}$ =0V,f =1MHz | | 570 | | pF |
| Output Capacitance | $C_{oss}$ | | | 70 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 64 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ =30V,$V_{GS}$ =10V,$I_D$ =5A | | 25 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 5 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 6 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=30V, $V_{GS}$ =10V, $I_D$ =5A, $R_{GEN}$=3Ω | | 6 | | nS |
| Turn-on rise time | $t_r$ | | | 6 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 17 | | |
| Turn-off fall time | $t_f$ | | | 3 | | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward Current[1] | $I_S$ | | | | 10 | A |
| Diode Forward voltage | $V_{DS}$ | $V_{GS}$ =0V, $I_S$=10A | | | 1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | TJ = 25°C, IF =10A di/dt = 100A/μs | | 30 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 50 | | nC |

Notes:

1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

2) Guaranteed by design, not subject to production testing.

## Typical Characteristics

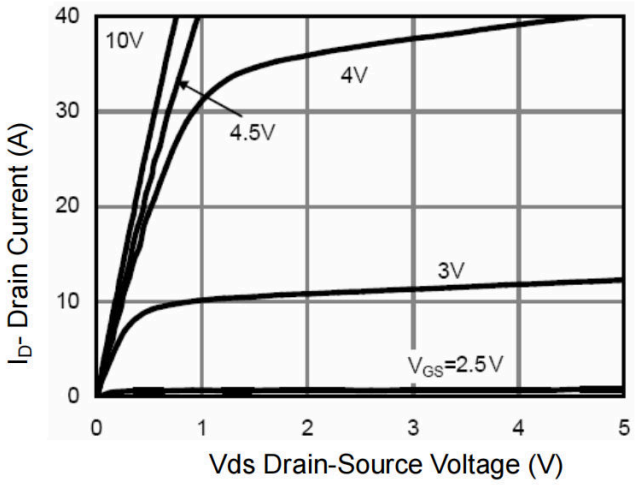



**Figure 1 Output Characteristics**

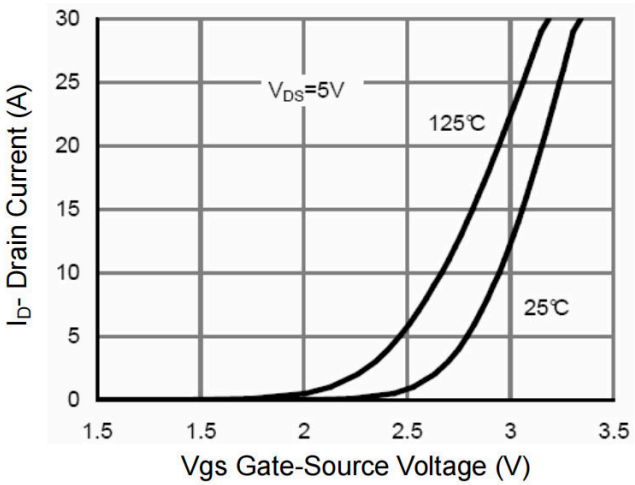



**Figure 2 Transfer Characteristics**

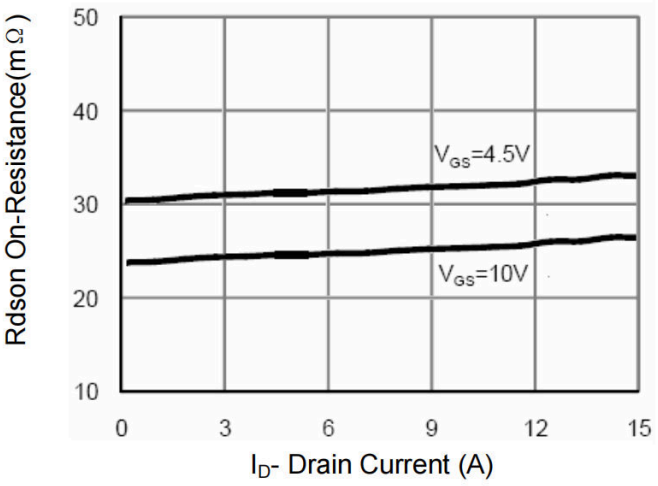



**Figure 3 Rdson- Drain Current**

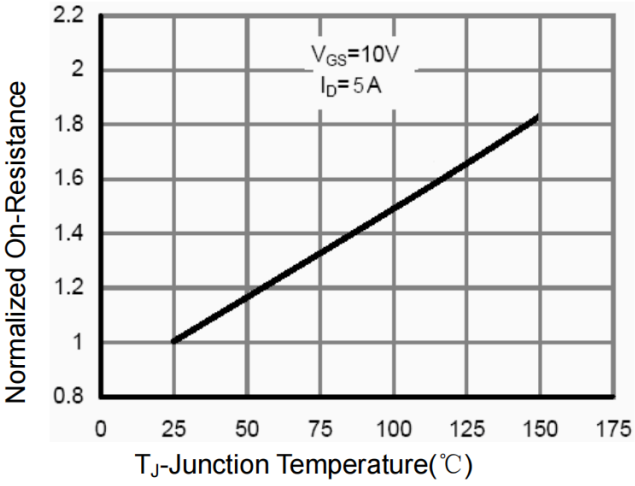



**Figure 4 Rdson-Junction Temperature**

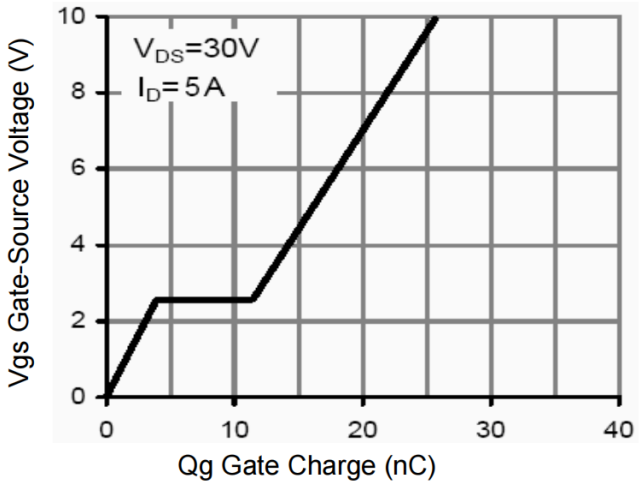



**Figure 5 Gate Charge**

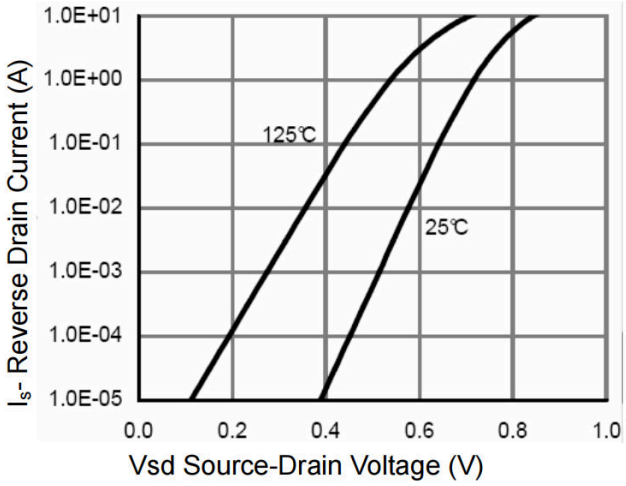



**Figure 6 Source- Drain Diode Forward**

## Typical Characteristics

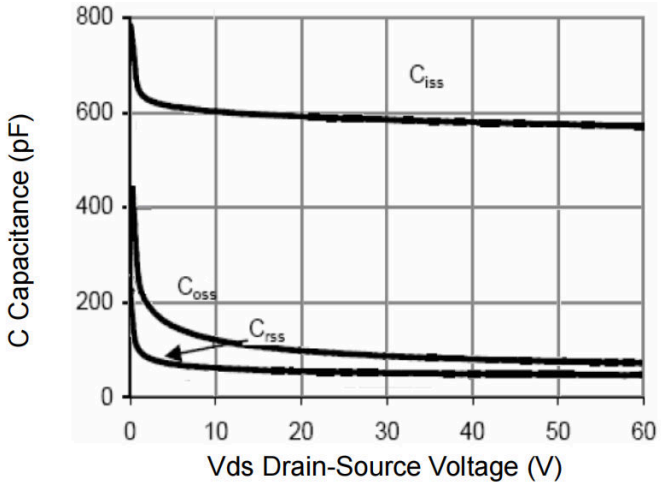



**Figure 7 Capacitance vs Vds**

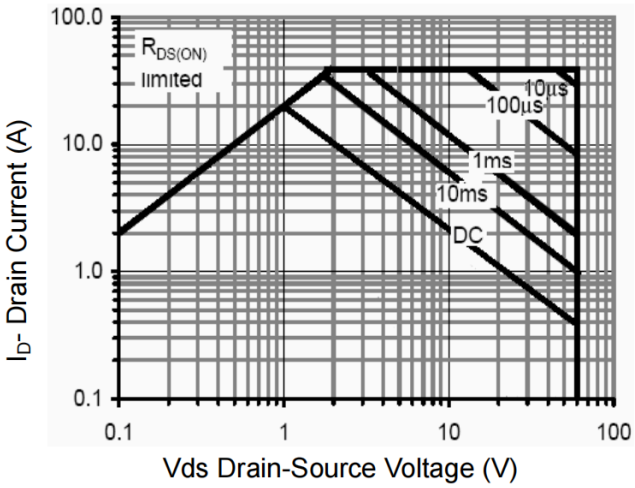



**Figure 8 Safe Operation Area**

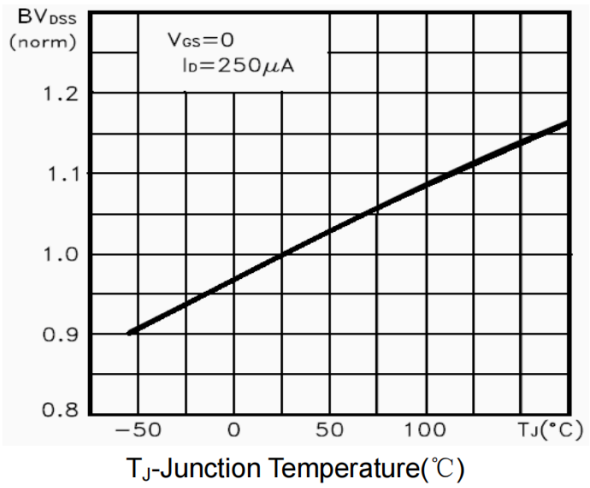



**Figure 9 $BV_{DSS}$ vs Junction Temperature**

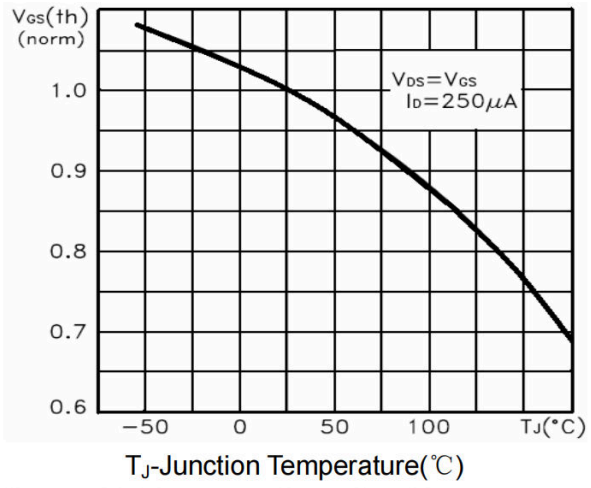



**Figure 10 $V_{GS(th)}$ vs Junction Temperature**

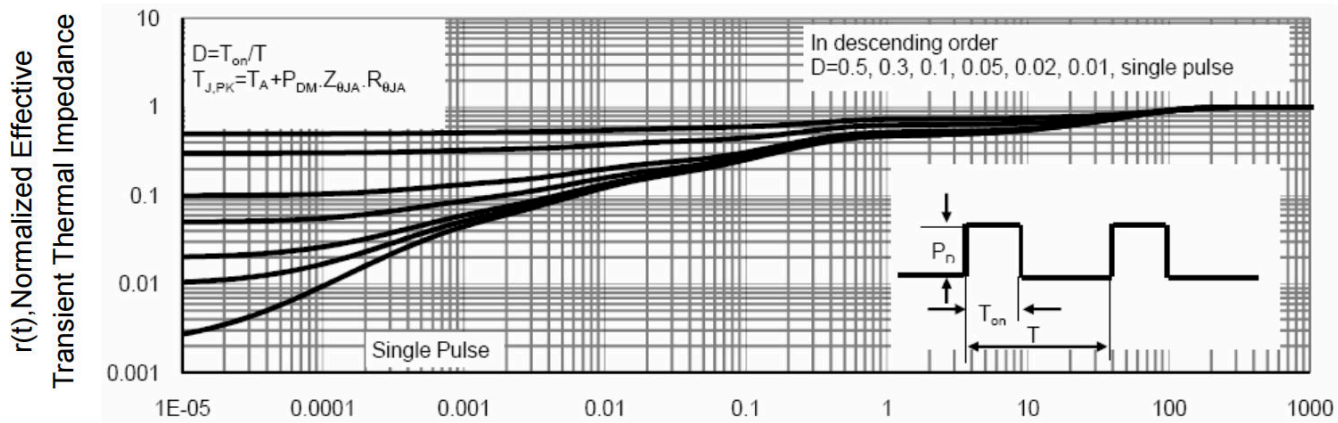
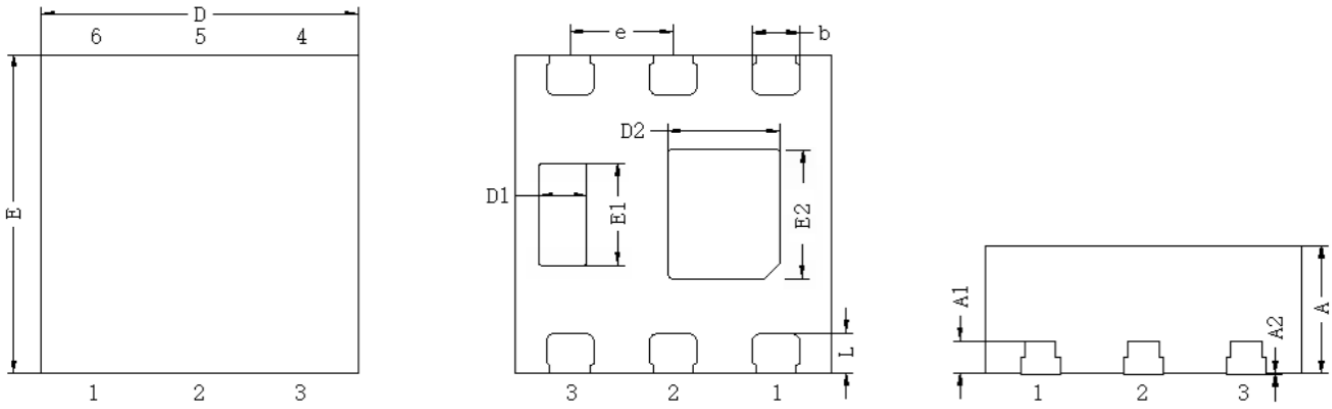



**Figure 11 Normalized Maximum Transient Thermal Impedance**

## DFN2*2-6L Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.850 | 0.028 | 0.033 |
| A1 | 0.200 REF | | 0.008 REF | |
| A2 | 0.000 | 0.050 | 0.000 | 0.002 |
| L | 0.170 | 0.330 | 0.006 | 0.013 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| D | 1.900 | 2.100 | 0.075 | 0.083 |
| E | 1.900 | 2.100 | 0.075 | 0.083 |
| e | 0.650 BSC | | 0.260 BSC | |
| D1 | 0.200 | 0.400 | 0.008 | 0.016 |
| E1 | 0.460 | 0.660 | 0.018 | 0.026 |
| D2 | 0.800 | 1.000 | 0.031 | 0.039 |
| E2 | 0.850 | 1.050 | 0.033 | 0.041 |