

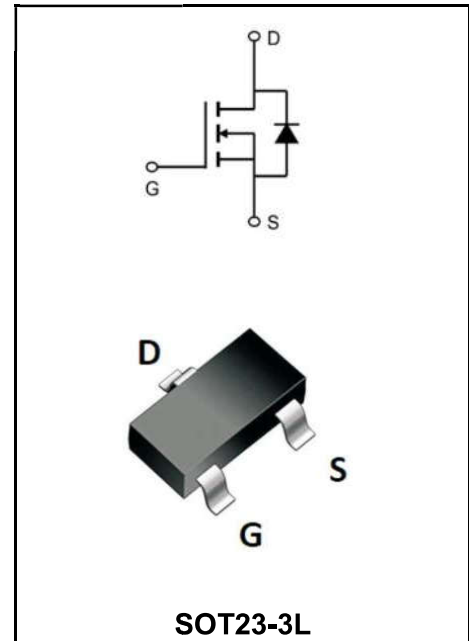
**-30V P-CHANNEL ENHANCEMENT MODE MOSFET**

**MAIN CHARACTERISTICS**

|  |                            |
|--|----------------------------|
| <b>I<sub>D</sub></b>                               | -12A                       |
| <b>V<sub>DSS</sub></b>                             | -30V                       |
| <b>R<sub>DS(on)-typ(@V<sub>GS</sub>=10V)</sub></b> | <30mΩ( <b>Type:25 mΩ</b> ) |

**Application**

- ◆ Boost driver
- ◆ Brushless motor
- ◆ Molded Plastic: UL Flammability Classification Rating 94V-0



**Product Specification Classification**

| Part Number | Package   | Marking | Pack         |
|-------------|-----------|---------|--------------|
| YFW3409MI   | SOT-23-3L | 3409M   | 3000PCS/Tape |

**Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified**

| Characteristics   | Symbols                                 | Value       | Units       |
|---|---|-------------|-------------|
| Drain-Source Voltage  | <b>V<sub>DS</sub></b>                   | -30         | <b>V</b>    |
| Gate-Source Voltage   | <b>V<sub>GS</sub></b>                   | ±20         | <b>V</b>    |
| Continuous Drain Current, V <sub>GS</sub> @ -4.5 V <sup>1</sup> | <b>ID@T<sub>C</sub>=25°C</b>            | -12         | <b>A</b>    |
| Continuous Drain Current, V <sub>GS</sub> @ -4.5V <sup>1</sup>  | <b>ID@T<sub>C</sub>=70°C</b>            | -7.5        | <b>A</b>    |
| Pulsed Drain Current <sup>2</sup>                               | <b>I<sub>DM</sub></b>                   | -36         | <b>A</b>    |
| Total Power Dissipation <sup>3</sup>                            | <b>P<sub>D</sub>@T<sub>C</sub>=25°C</b> | 1.8         | <b>W</b>    |
| Storage Temperature Range                                       | <b>T<sub>STG</sub></b>                  | -55 to +150 | <b>°C</b>   |
| Operating Junction Temperature Range                            | <b>T<sub>J</sub></b>                    | -55 to +150 | <b>°C</b>   |
| Thermal Resistance Junction-Ambient <sup>1</sup>                | <b>R<sub>θJA</sub></b>                  | 125         | <b>°C/W</b> |
| Thermal Resistance Junction-Case <sup>1</sup>                   | <b>R<sub>θJC</sub></b>                  | 110         | <b>°C/W</b> |

**Maximum Ratings at Tc=25°C unless otherwise specified**

| Characteristics                                | Test Condition                                     | Symbols                   | Min  | Typ  | Max  | Units     |
|--|--|---------------------------|------|------|------|-----------|
| Drain-Source Breakdown Voltage                 | $V_{GS} = 0V, I_D = 250 \mu A$                     | <b>BV<sub>DSS</sub></b>   | -30  | -33  | -    | <b>V</b>  |
| Static Drain-Source On-Resistance <sup>2</sup> | $V_{GS}=-10V, I_D=-7A$                             | <b>R<sub>DS(on)</sub></b> | -    | 25   | 32   | <b>mΩ</b> |
|  | $V_{GS}=-4.5V, I_D=-5A$                            |                           | -    | 37   | 54   |           |
| Gate Threshold Voltage                         | $V_{DS} = V_{GS}, I_D = 250 \mu A$                 | <b>V<sub>GS(th)</sub></b> | -1.0 | -1.5 | -2.5 | <b>V</b>  |
| Drain-Source Leakage Current                   | $V_{DS}=-24V, V_{GS}=0V, T_J=25^\circ C$           | <b>I<sub>DSS</sub></b>    | -    | -    | -1   | <b>uA</b> |
|  | $V_{DS}=-24V, V_{GS}=0V, T_J=55^\circ C$           |                           | -    | -    | -5   |           |
| Gate-Source Leakage Current                    | $V_{GS} = \pm 20V, V_{DS} = 0V$                    | <b>I<sub>GSS</sub></b>    | -    | -    | ±100 | <b>nA</b> |
| Forward Transconductance                       | $V_{DS}=-5V, I_D=-7A$                              | <b>G<sub>fs</sub></b>     | -    | 15   | -    | <b>S</b>  |
| Gate Resistance                                | $V_{DS}=0V, V_{GS}=0V, f=1MHz$                     | <b>R<sub>G</sub></b>      | -    | 15   | 30   | <b>Ω</b>  |
| Total Gate Charge (-4.5V)                      | $V_{DS}=-20V, V_{GS}=-4.5V, I_D=-7A$               | <b>Q<sub>g</sub></b>      | -    | 9.8  | -    | <b>nC</b> |
| Gate-Source Charge                             |  | <b>Q<sub>gs</sub></b>     | -    | 2.2  | -    |           |
| Gate-Drain Charge                              |  | <b>Q<sub>gd</sub></b>     | -    | 3.4  | -    |           |
| Turn-on delay time                             | $V_{DD}=-15V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-5A$ | <b>T<sub>d(on)</sub></b>  | -    | 16.4 | -    | <b>nS</b> |
| Rise Time                                      |  | <b>T<sub>r</sub></b>      | -    | 20.2 | -    | <b>nS</b> |
| Turn-Off Delay Time                            |  | <b>td(OFF)</b>            | -    | 55   | -    | <b>nS</b> |
| Fall Time                                      |  | <b>T<sub>f</sub></b>      | -    | 10   | -    | <b>nS</b> |
| Input Capacitance                              | $V_{DS}=-15V, V_{GS}=0V, f=1MHz$                   | <b>C<sub>iss</sub></b>    | -    | 930  | -    | <b>pF</b> |
| Output Capacitance                             |  | <b>C<sub>oss</sub></b>    | -    | 148  | -    |           |
| Reverse Transfer Capacitance                   |  | <b>C<sub>rss</sub></b>    | -    | 115  | -    |           |
| Continuous Source Current <sup>1,5</sup>       | $V_G=V_D=0V, \text{Force Current}$                 | <b>I<sub>S</sub></b>      | -    | -    | -8   | <b>A</b>  |
| Diode Forward Voltage <sup>2</sup>             | $V_{GS}=0V, I_S=-1A, T_J=25^\circ C$               | <b>V<sub>SD</sub></b>     | -    | -    | -1.2 | <b>V</b>  |

Note :

- 1、 The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

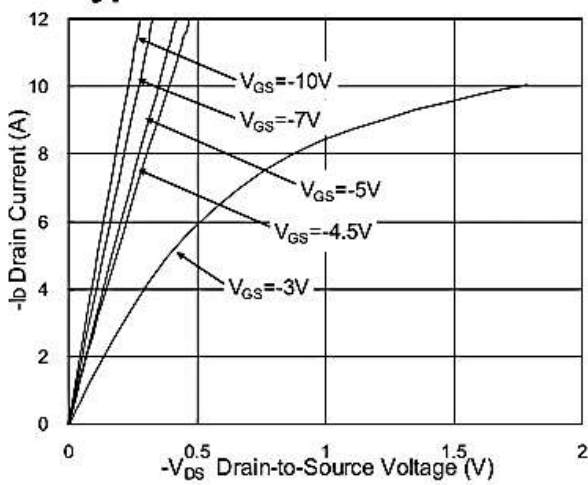


Fig.1 Typical Output Characteristics

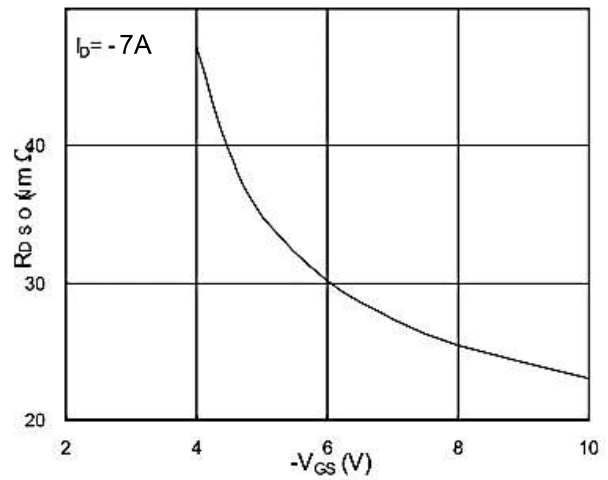


Fig.2 On-Resistance v.s Gate-Source

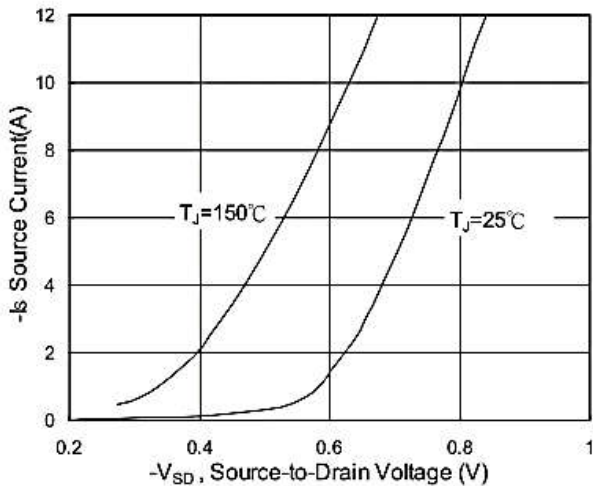


Fig.3 Forward Characteristics Of Reverse

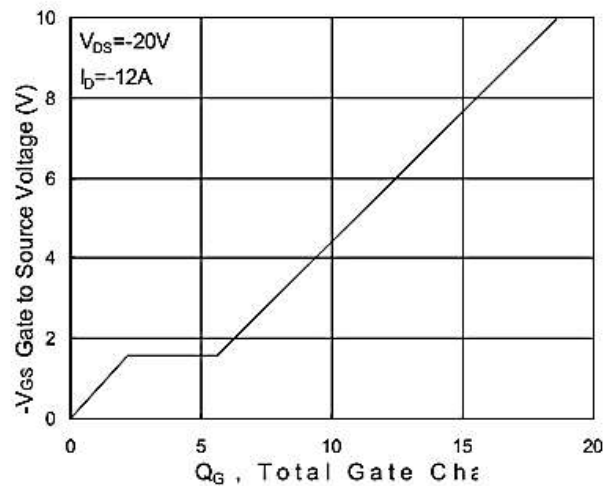


Fig.4 Gate-Charge Characteristics

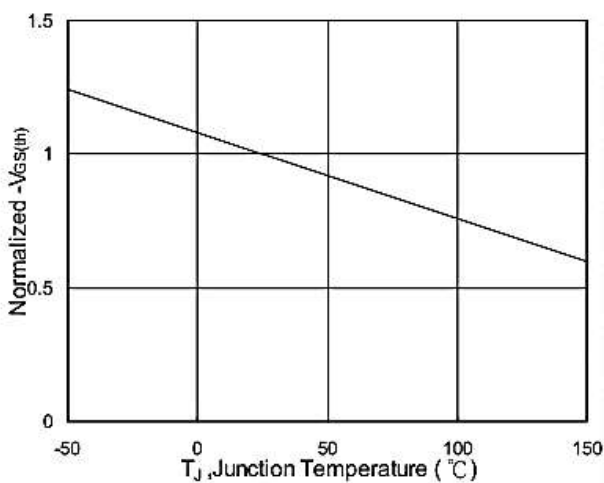


Fig.5 Normalized  $V_{GS(th)}$  v.s  $T_j$

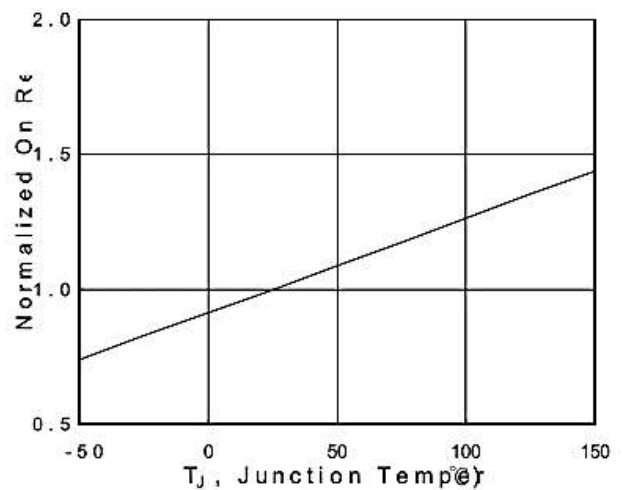


Fig.6 Normalized  $R_{DS(on)}$  v.s  $T_j$

Ratings and Characteristic Curves

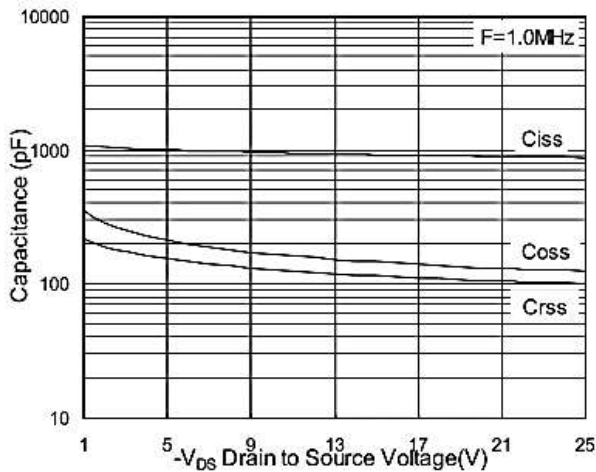


Fig.7 Capacitance

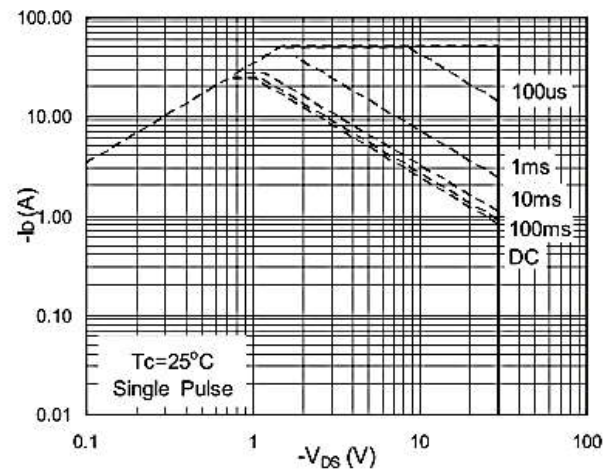


Fig.8 Safe Operating Area

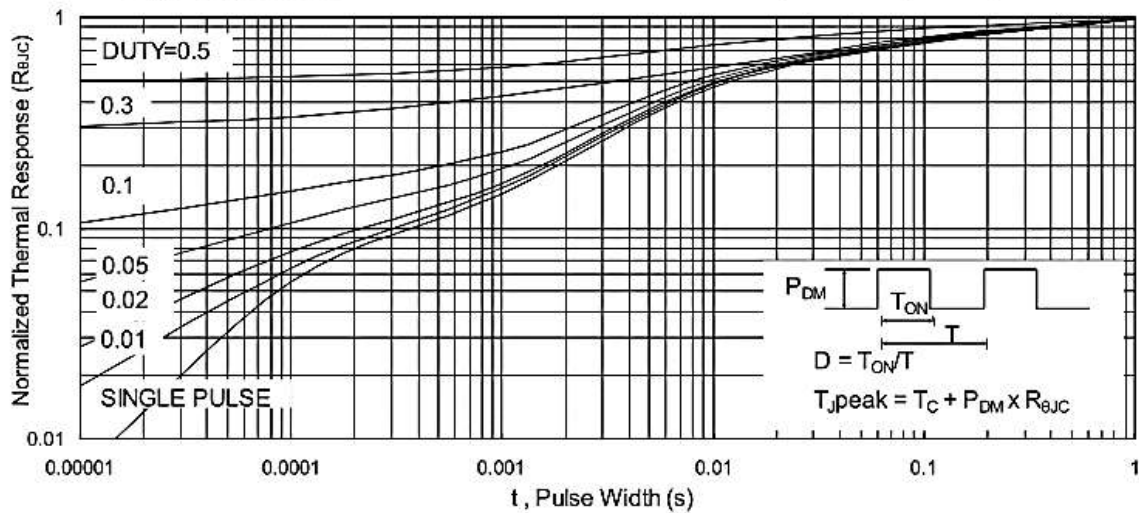


Fig.9 Normalized Maximum Transient Thermal Impedance

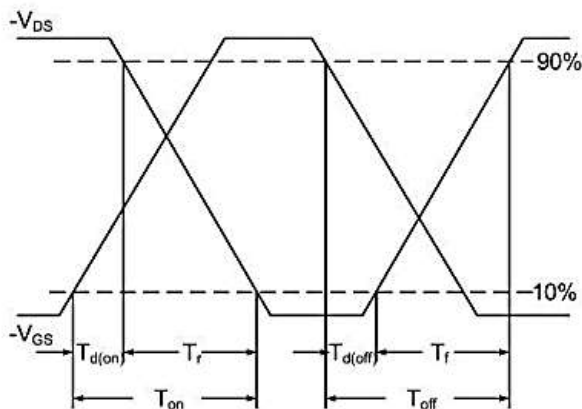


Fig.10 Switching Time Waveform

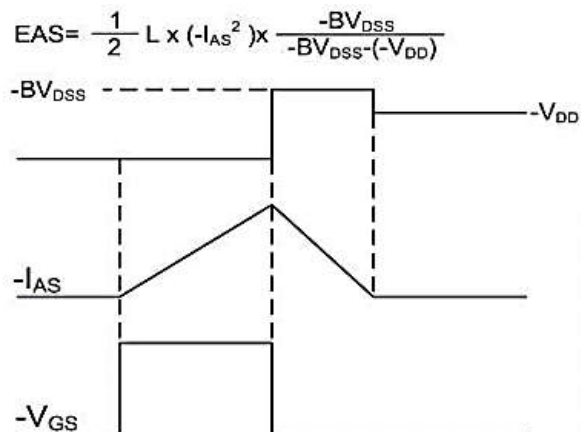
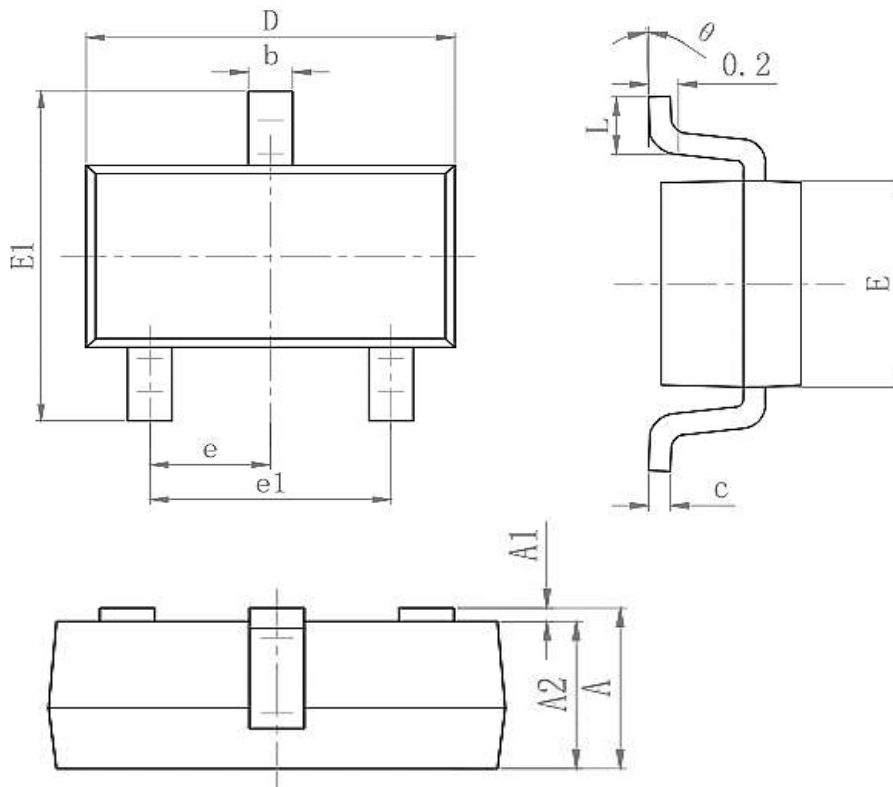


Fig.11 Unclamped Inductive Waveform

**SOT23-3L**



| Symbol | Dimensions In Millimeters |       |
|--------|---------------------------|-------|
|        | Min.                      | Max.  |
| A      | 1.050                     | 1.250 |
| A1     | 0.000                     | 0.100 |
| A2     | 1.050                     | 1.150 |
| b      | 0.25                      | 0.45  |
| c      | 0.100                     | 0.200 |
| D      | 2.820                     | 3.020 |
| E      | 1.5                       | 1.7   |
| E1     | 2.650                     | 2.950 |
| e      | 0.950(BSC)                |       |
| e1     | 1.800                     | 2.000 |
| L      | 0.300                     | 0.500 |
| θ      | 0°                        | 8°    |

单击下面可查看定价，库存，交付和生命周期等信息

[>>YFW\(佑风微\)](#)