# P－Channel Enhancement Mode MOSFET

## Features

- Lead free product is acquired
- Surface mount package
- P-Channel switch with low $R_{DS(on)}$
- Operated at low logic level gate drive
- ESD protected gate
- Complementary to FTK2008SOT883

## Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

## Package and Pin Configuration

**DFN1006-3L**

**Circuit diagram**



Gate Protection Diode
Equivalent Circuit
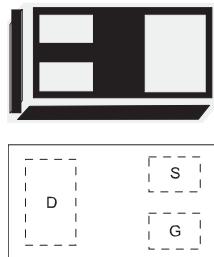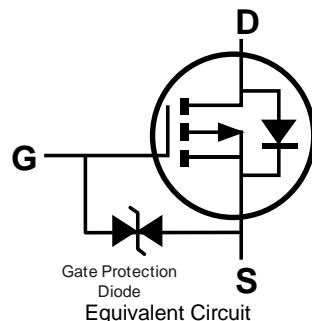
## Absolute Maximum Ratings ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-source voltage | $V_{DS}$ | -20 | V |
| Typical gate-source voltage | $V_{GS}$ | ±12 | V |
| Continuous drain current (note 1) | $I_D$ | -0.66 | A |
| Pulsed drain current ($t_p$=10μs) | $I_{DM}$ | -1.2 | A |
| Power dissipation (note 2) | $P_D$ | 100 | mW |
| Thermal resistance from junction to ambient (note 1) | $R_{\theta JA}$ | 1250 | ℃/W |
| Junction temperature range | $T_J$ | 150 | ℃ |
| Storage temperature range | $T_{STG}$ | -55 ~ +150 | ℃ |
| Lead temperature for soldering purposes (1/8" from case for 10s) | $T_L$ | 260 | ℃ |

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## Electrical Characteristics ( $T_A$ = 25℃ unless otherwise noted )

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V , $I_D$ = -250μA | -20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ = -20V , $V_{GS}$ = 0V | | | -1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ = ±10V , $V_{DS}$ = 0V | | | ±20 | uA |
| Gate threshold voltage (note 2) | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$ , $I_D$ = -250μA | -0.35 | | -1.1 | V |
| Drain-source on-resistance (note 2) | $R_{DS(on)}$ | $V_{GS}$ = -4.5V , $I_D$ = -1A | | | 520 | mΩ |
| | | $V_{GS}$ = -2.5V , $I_D$ = -0.8A | | | 700 | |
| | | $V_{GS}$ = -1.8V , $I_D$ = -0.5A | | 950 | | |
| Forward tranconductance (note 2) | $g_{FS}$ | $V_{DS}$ = -10V , $I_D$ = -0.54A | | 1.2 | | S |
| Diode forward voltage | $V_{SD}$ | $I_S$ = -0.5A , $V_{GS}$ = 0V | | | -1.2 | V |
| **DYNAMIC PARAMETERS (note 4)** | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ = -16V , $V_{GS}$ = 0V, f = 1MHz | | 113 | 170 | pF |
| Output capacitance | $C_{oss}$ | | | 15 | 25 | |
| Reverse transfer capacitance | $C_{rss}$ | | | 9 | 15 | |
| **SWITCHING PARAMETERS (note 4)** | | | | | | |
| Turn-on delay time (note 3) | $t_{d(on)}$ | $V_{GS}$ = -4.5V , $V_{DS}$ = -10V , $I_D$ = -200mA , $R_{GEN}$ = 10Ω | | 9 | | ns |
| Turn-on rise time (note 3) | $t_r$ | | | 5.8 | | |
| Turn-off delay time (note 3) | $t_{d(off)}$ | | | 32.7 | | |
| Turn-off fall time (note 3) | $t_f$ | | | 20.3 | | |

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## DFN1006-3L Package Outline Drawing
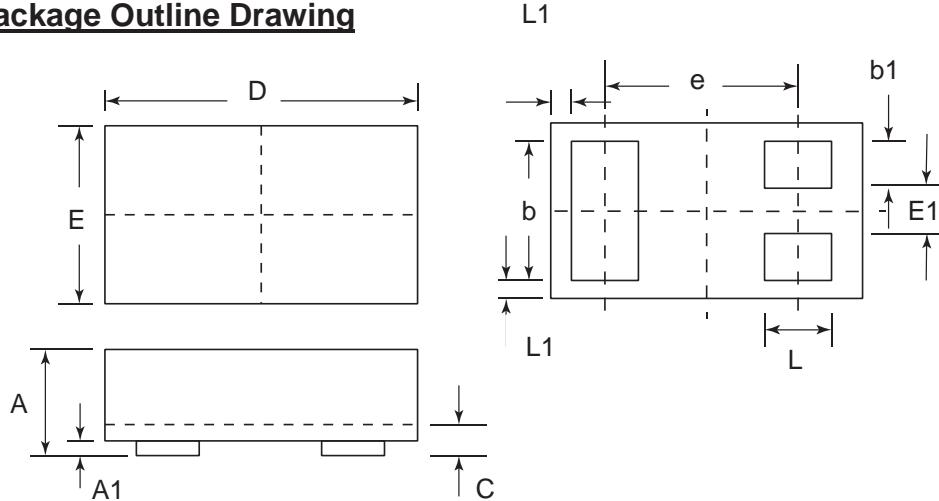


| SYM | DIMENSIONS | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| b | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| b1 | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| C | 0.12 | 0.15 | 0.18 | 0.005 | 0.006 | 0.007 |
| D | 0.95 | 1.00 | 1.05 | 0.037 | 0.039 | 0.041 |
| e | 0.65 BSC | | | 0.026 BSC | | |
| E | 0.55 | 0.60 | 0.65 | 0.022 | 0.024 | 0.026 |
| E1 | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |
| L | 0.20 | 0.25 | 0.30 | 0.008 | 0.010 | 0.012 |
| L1 | 0.05 REF | | | 0.0002 REF | | |

## Suggested Land Pattern
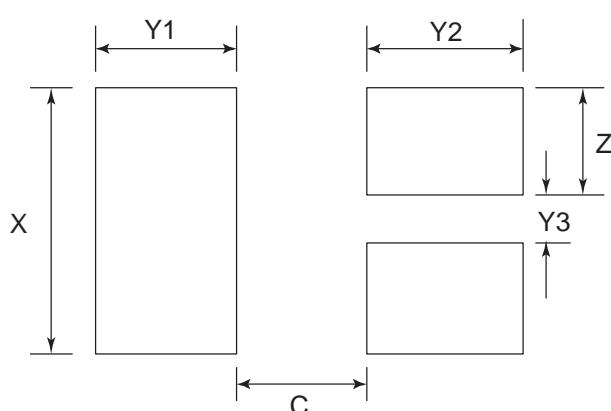


| SYM | DIMENSIONS | |
|-----|-----|-----|
| | MILLIMETERS | INCHES |
| C | 0.25 | 0.010 |
| X | 0.65 | 0.024 |
| Y1 | 0.50 | 0.020 |
| Y2 | 0.50 | 0.020 |
| Y3 | 0.25 | 0.010 |
| Z | 0.20 | 0.008 |