

**30V N-Channel MOSFET**

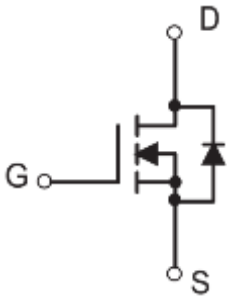
**Description**

The PM3400 uses advanced Trench technology and designs to provide excellent  $R_{DS(ON)}$  with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

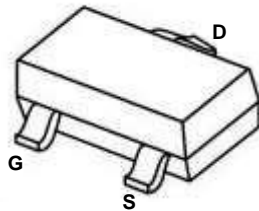
**Features**

- Trench Power MOSFET
- Excellent  $R_{DS(on)}$  and Low Gate Charge

**Dimensions and Pin Configuration**



Circuit diagram

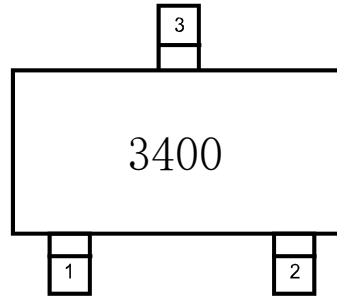


SOT-23

**Applications**

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

**Marking Information**



Device Marking Code

**MOSFET Product Summary**

| $V_{DSS}$ | $R_{DS(ON)}$                  | $I_D$ |
|-----------|-------------------------------|-------|
| 30V       | 35m $\Omega$ @ $V_{GS}=10V$   | 5.8A  |
|           | 40m $\Omega$ @ $V_{GS}= 4.5V$ |       |
|           | 50m $\Omega$ @ $V_{GS}= 2.5V$ |       |

**Absolute Maximum Ratings ( $T_A=25^\circ C$  unless otherwise noted)**

| Parameter   | Symbol          | Value      | Unit         |
|---|-----------------|------------|--------------|
| Drain-Source Voltage                                      | $V_{DS}$        | 30         | V            |
| Gate-Source Voltage                                       | $V_{GS}$        | $\pm 12$   | V            |
| Continuous Drain Current                                  | $I_D$           | 5.8        | A            |
| Pulsed Drain Current <sup>1)</sup>                        | $I_{DM}$        | 30         | A            |
| Power Dissipation   | $P_D$           | 0.35       | W            |
| Thermal Resistance from Junction to Ambient <sup>2)</sup> | $R_{\theta JA}$ | 357        | $^\circ C/W$ |
| Junction Temperature                                      | $T_J$           | 150        | $^\circ C$   |
| Storage Temperature                                       | $T_{STG}$       | -55 ~ +150 | $^\circ C$   |

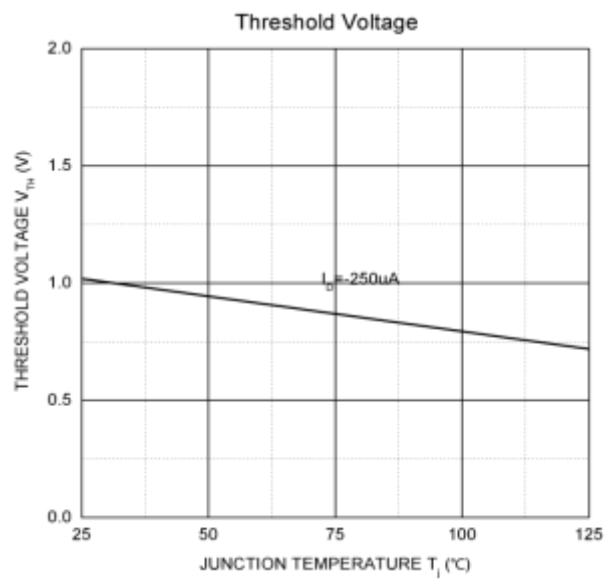
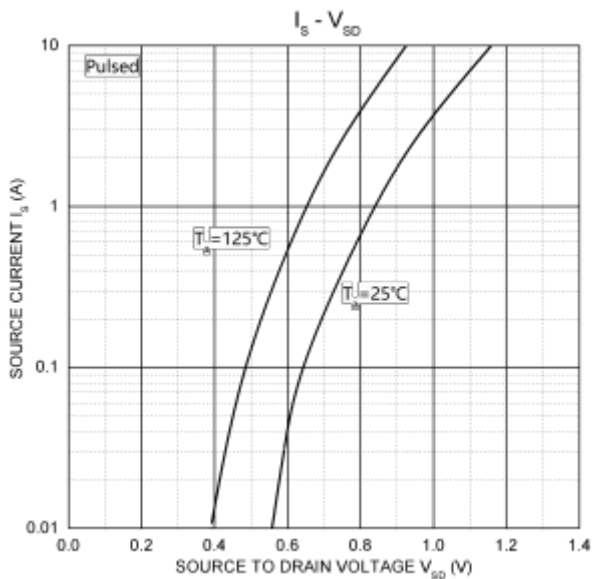
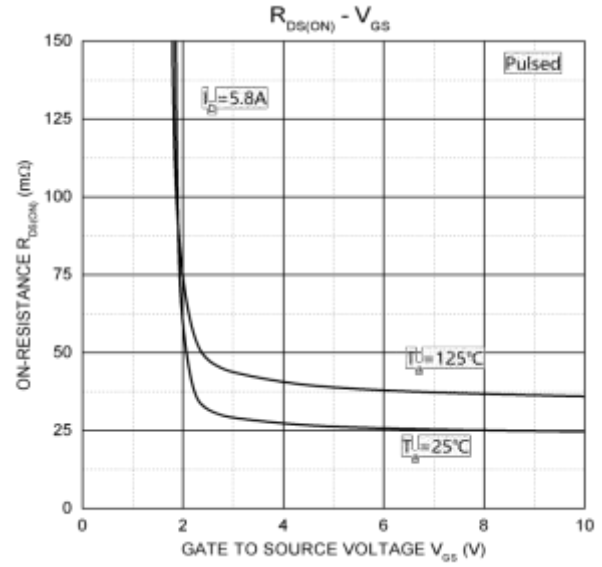
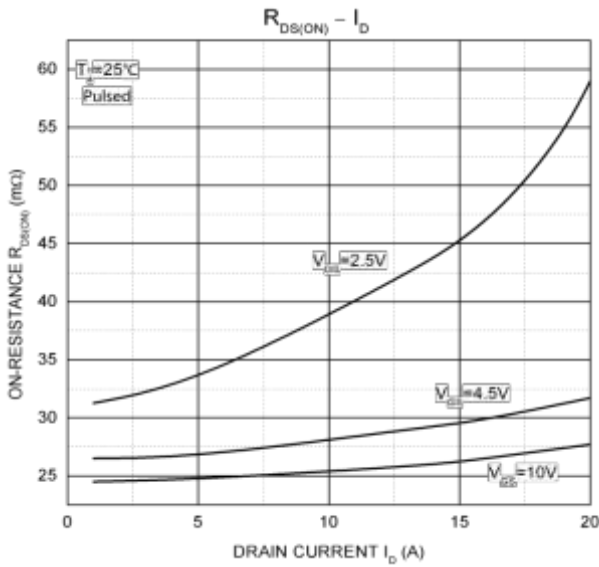
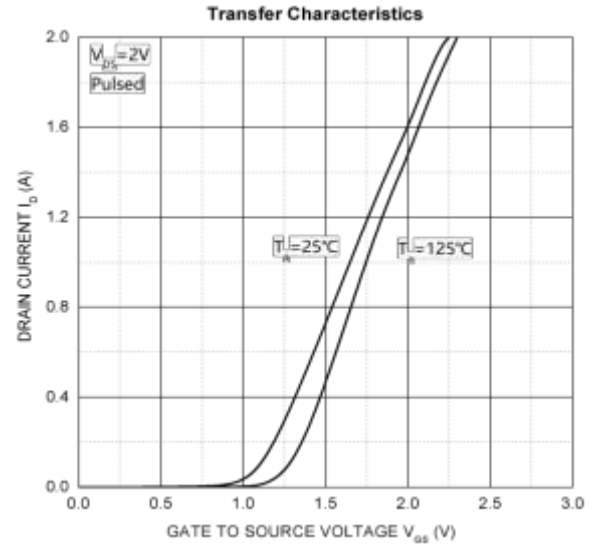
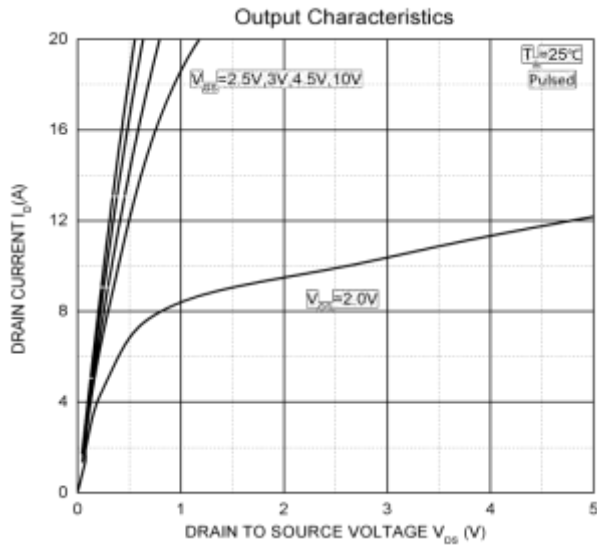
**Electrical Characteristics (  $T_A = 25^\circ\text{C}$  unless otherwise noted )**

| Parameter                                     | Symbol        | Test Condition  | Min. | Typ. | Max.      | Unit       |
|---|---------------|---|------|------|-----------|------------|
| <b>Static Characteristics</b>                 |               |   |      |      |           |            |
| Drain-source breakdown voltage                | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$   | 30   |      |           | V          |
| Zero gate voltage drain current               | $I_{DSS}$     | $V_{DS} = 24V, V_{GS} = 0V$   |      |      | 1         | $\mu A$    |
| Gate-body leakage current                     | $I_{GSS}$     | $V_{GS} = \pm 12V, V_{DS} = 0V$                                       |      |      | $\pm 0.1$ | $\mu A$    |
| Gate threshold voltage                        | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                                     | 0.7  |      | 1.4       | V          |
| Drain-source on-resistance <sup>3)</sup>      | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 5.8A$  |      | 27   | 35        | m $\Omega$ |
|   |               | $V_{GS} = 4.5V, I_D = 5A$   |      | 30   | 40        |            |
|   |               | $V_{GS} = 2.5V, I_D = 4A$   |      | 40   | 50        |            |
| <b>Dynamic characteristics<sup>4)</sup></b>   |               |   |      |      |           |            |
| Input Capacitance                             | $C_{ISS}$     | $V_{DS} = 15V, V_{GS} = 0V, f = 1MHz$                                 |      |      | 1050      | pF         |
| Output Capacitance                            | $C_{OSS}$     |   |      | 99   |           |            |
| Reverse Transfer Capacitance                  | $C_{RSS}$     |   |      | 77   |           |            |
| Gate resistance                               | $R_G$         | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$                                  |      |      | 3.6       | $\Omega$   |
| <b>Switching Characteristics<sup>4)</sup></b> |               |   |      |      |           |            |
| Turn-on delay time                            | $t_{d(on)}$   | $V_{GS} = 10V, V_{DS} = 15V,$<br>$R_L = 2.7\Omega, R_{GEN} = 3\Omega$ |      |      | 5         | ns         |
| Turn-on rise time                             | $t_r$         |   |      |      | 7         |            |
| Turn-off delay time                           | $t_{d(off)}$  |   |      |      | 40        |            |
| Turn-off fall time                            | $t_f$         |   |      |      | 6         |            |
| <b>Source-Drain Diode characteristics</b>     |               |   |      |      |           |            |
| Diode Forward voltage <sup>3)</sup>           | $V_{DS}$      | $V_{GS} = 0V, I_S = 1A$   |      | 0.7  | 1.3       | V          |

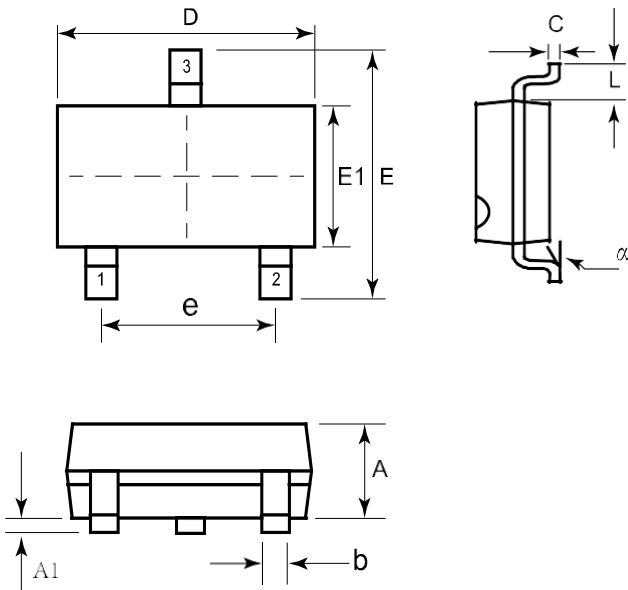
**Notes:**

- 1) Repetitive Rating : Pulse width limited by maximum junction temperature.
- 2) Surface Mounted on FR4 Board,  $t < 5$  sec.
- 3) Pulse Test : Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2\%$ .
- 4) Guaranteed by design, not subject to production testing.

**Typical Characteristics**

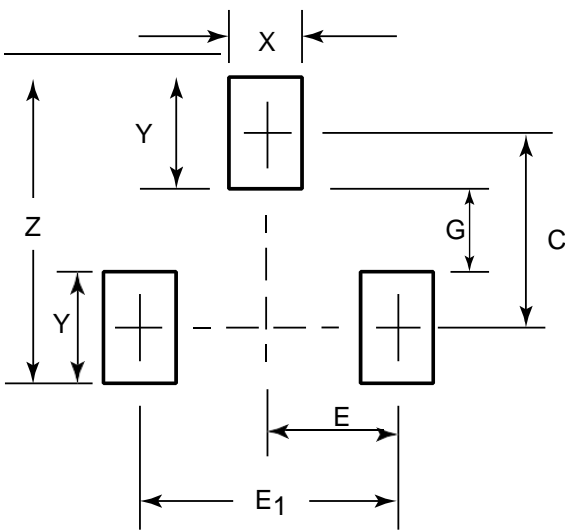


**SOT-23 Package Outline Drawing**



| SYM      | DIMENSIONS |       |       |             |      |      |
|----------|------------|-------|-------|-------------|------|------|
|          | INCHES     |       |       | MILLIMETERS |      |      |
|          | MIN        | NOM   | MAX   | MIN         | NOM  | MAX  |
| A        | 0.035      | 0.037 | 0.040 | 0.88        | 0.95 | 1.02 |
| A1       | 0.000      | -     | 0.004 | 0.01        | -    | 0.10 |
| b        | 0.012      | -     | 0.020 | 0.30        | -    | 0.51 |
| C        | 0.003      | -     | 0.007 | 0.08        | -    | 0.18 |
| D        | 0.110      | 0.114 | 0.120 | 2.80        | 2.90 | 3.04 |
| E        | 0.082      | 0.093 | 0.104 | 2.10        | 2.37 | 2.64 |
| E1       | 0.047      | 0.051 | 0.055 | 1.20        | 1.30 | 1.40 |
| e        | 0.075 BSC  |       |       | 1.90 BSC    |      |      |
| L        | 0.022 BSC  |       |       | 0.55 BSC    |      |      |
| $\alpha$ | 0°         |       | 8°    | 0°          |      | 8°   |

**Suggested Land Pattern**



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| C   | 2.20        | 0.087  |
| E   | 0.95        | 0.037  |
| E1  | 1.90        | 0.075  |
| G   | 0.80        | 0.031  |
| X   | 1.00        | 0.039  |
| Y   | 1.40        | 0.055  |
| Z   | 3.60        | 0.141  |

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