

## 30V N-Channel MOSFET

### MOSFET Product Summary

| $V_{DS}$ | $R_{DS(ON)}$ (Typ.)          | $I_D$ |
|----------|------------------------------|-------|
| 30V      | 29m $\Omega$ @ $V_{GS}=4.5V$ | 6A    |
|          | 36m $\Omega$ @ $V_{GS}=2.5V$ |       |

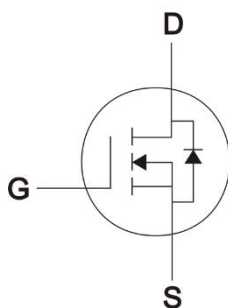
### Description

The PM3400BL 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.

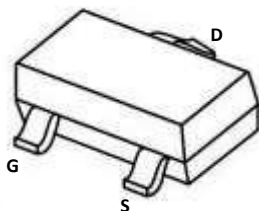
### Features

- Surface Mount Package
- N-Channel Switch with Low  $R_{DS(ON)}$
- Operated at Low Logic Level Gate Drive

### Dimensions and Pin configuration



Circuit diagram



SOT-23

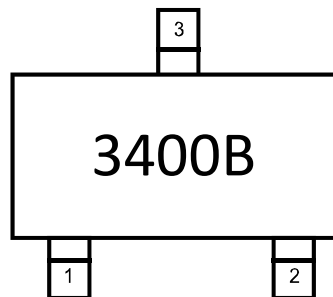
### Mechanical Characteristics

- Package: SOT-23
- Case Material: "Green" Molding Compound
- Marking Information: See Below

### Applications

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

### Marking Information



**3400B** = Device Marking Code

### Ordering Information

| Part Number | Shipping         | Reel Size |
|-------------|------------------|-----------|
| PM3400BL    | 3000/Tape & Reel | 7 inch    |

### Absolute Maximum Ratings ( $T_A=25^{\circ}C$ unless otherwise specified)

| Parameter                                   | Symbol   | Value    | Unit |
|---------------------------------------------|----------|----------|------|
| Drain-Source Voltage                        | $V_{DS}$ | 30       | V    |
| Gate-Source Voltage                         | $V_{GS}$ | $\pm 12$ | V    |
| Continuous Drain Current <sup>(Note1)</sup> | $I_D$    | 6        | A    |
| Pulsed Drain Current <sup>(Note2)</sup>     | $I_{DM}$ | 30       | A    |
| Power Dissipation                           | $P_D$    | 1.5      | W    |

|                                                                |                 |           |      |
|----------------------------------------------------------------|-----------------|-----------|------|
| Thermal Resistance from Junction to Ambient <sup>(Note3)</sup> | $R_{\theta JA}$ | 82        | °C/W |
| Junction Temperature                                           | $T_J$           | -50~ +150 | °C   |
| Storage Temperature                                            | $T_{STG}$       | -50~ +150 | °C   |

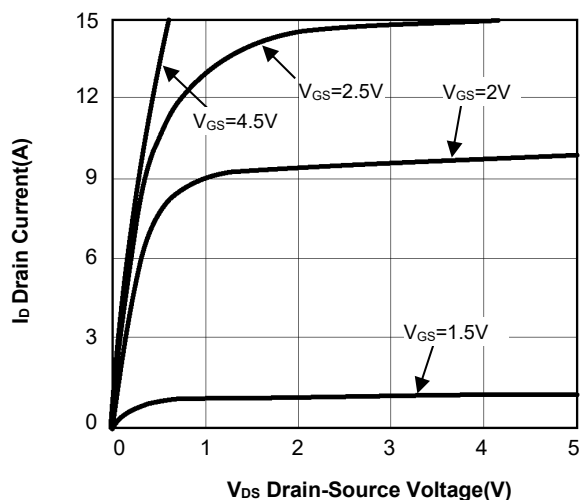
**Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter                         | Symbol              | Test Condition                                                                           | Min. | Typ. | Max. | Unit |
|-----------------------------------|---------------------|------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics            |                     |                                                                                          |      |      |      |      |
| Drain-to-Source Breakdown Voltage | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                               | 30   | -    | -    | V    |
| Zero Gate voltage Drain Current   | I <sub>DSS</sub>    | V <sub>DS</sub> =30V,V <sub>GS</sub> =0V                                                 | -    | -    | 1    | μA   |
| Gate-to-Source Leakage Current    | I <sub>GSS</sub>    | V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V                                               | -    | -    | ±100 | nA   |
| Gate Threshold Voltage            | V <sub>GS(TH)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                 | 0.5  | 1.0  | 1.4  | V    |
| Drain-to-Source On-Resistance     | R <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =4.8A                                               | -    | 28   | 38   | mΩ   |
|                                   |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A                                                | -    | 29   | 40   |      |
|                                   |                     | V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A                                                | -    | 36   | 49   |      |
| Diode Forward Voltage             | V <sub>SD</sub>     | I <sub>S</sub> =6A,V <sub>GS</sub> =0V                                                   | -    | 0.9  | 1.25 | V    |
| Dynamic Characteristics           |                     |                                                                                          |      |      |      |      |
| Input Capacitance                 | C <sub>iss</sub>    | V <sub>DS</sub> =15V,V <sub>GS</sub> =0V,<br>f=1MHz                                      | -    | 866  | -    | pF   |
| Output Capacitance                | C <sub>oss</sub>    |                                                                                          | -    | 182  | -    |      |
| Reverse Transfer Capacitance      | C <sub>rss</sub>    |                                                                                          | -    | 47   | -    |      |
| Switching Characteristics         |                     |                                                                                          |      |      |      |      |
| Turn-On Delay Time                | t <sub>d(on)</sub>  | V <sub>DS</sub> =15V,V <sub>GS</sub> =10V,<br>R <sub>GEN</sub> =3Ω, R <sub>L</sub> =2.7Ω | -    | 3.7  | -    | ns   |
| Turn-On Rise Time                 | t <sub>r</sub>      |                                                                                          | -    | 4.8  | -    |      |
| Turn-Off Delay Time               | t <sub>d(off)</sub> |                                                                                          | -    | 26   | -    |      |
| Turn-Off Fall Time                | t <sub>f</sub>      |                                                                                          | -    | 4    | -    |      |

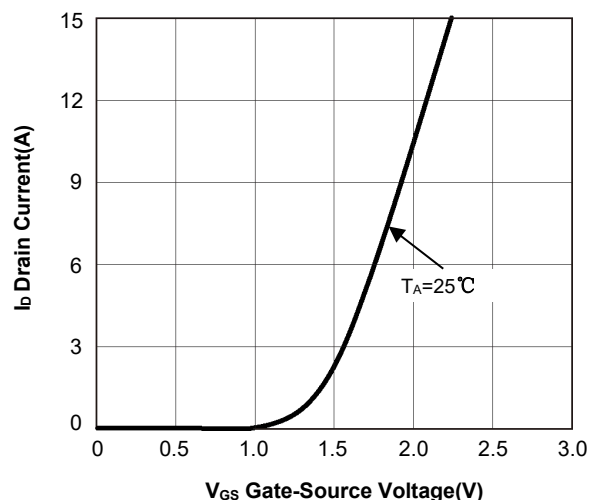
**Notes:**

1. This current is chip limited, which is calculated based on  $R_{\theta JA}$ .
2. This current is calculated on single pulse with 10 $\mu$ s Pulse & Duty Cycle = 1%.
3. The value of  $R_{\theta JA}$ , which is steady state, is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, with  $T_A=25^{\circ}\text{C}$ .

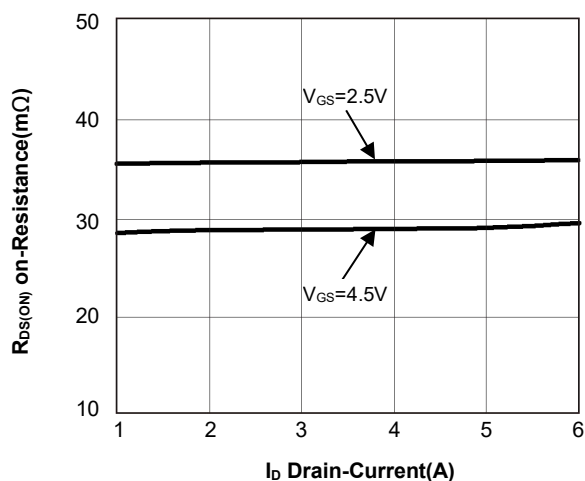
**Typical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise specified)**



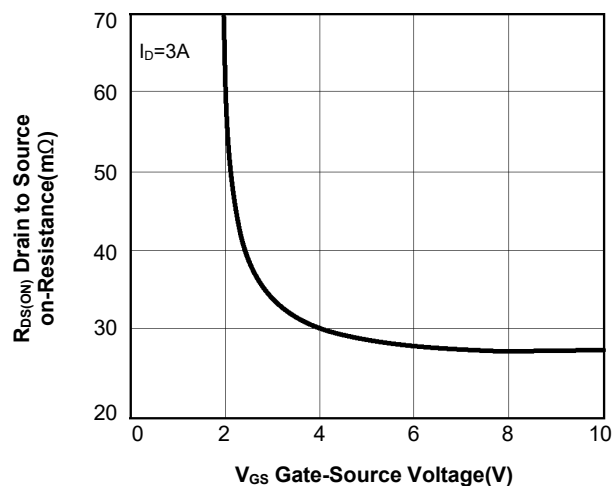
Drain Current vs. Drain-Source Voltage



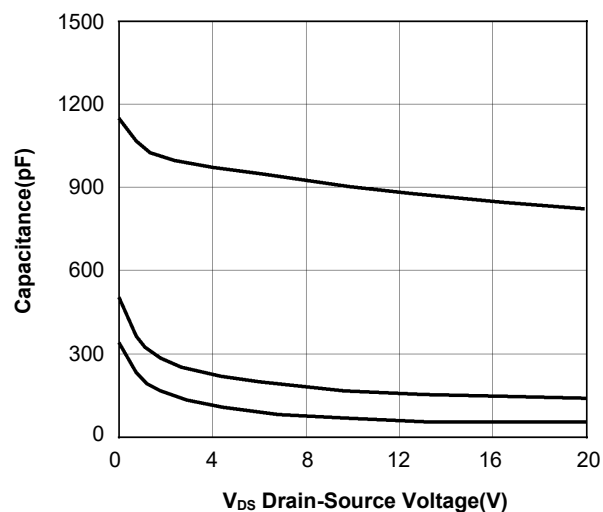
Drain Current vs. Gate-Source Voltage



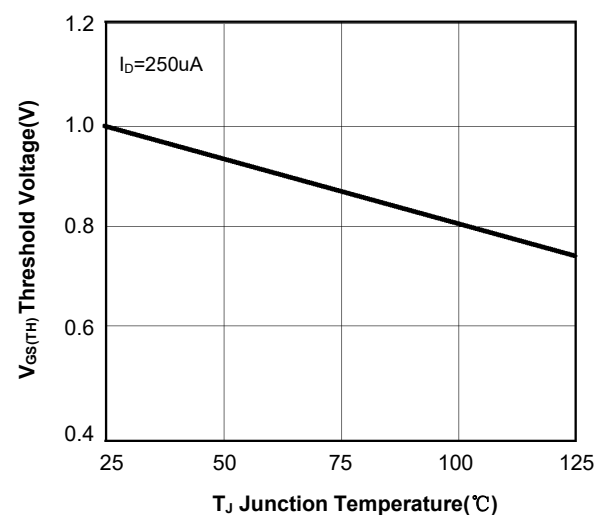
$R_{DS(ON)}$  On-Resistance vs. Drain-Current



On-Resistance vs. Gate-Source Voltage

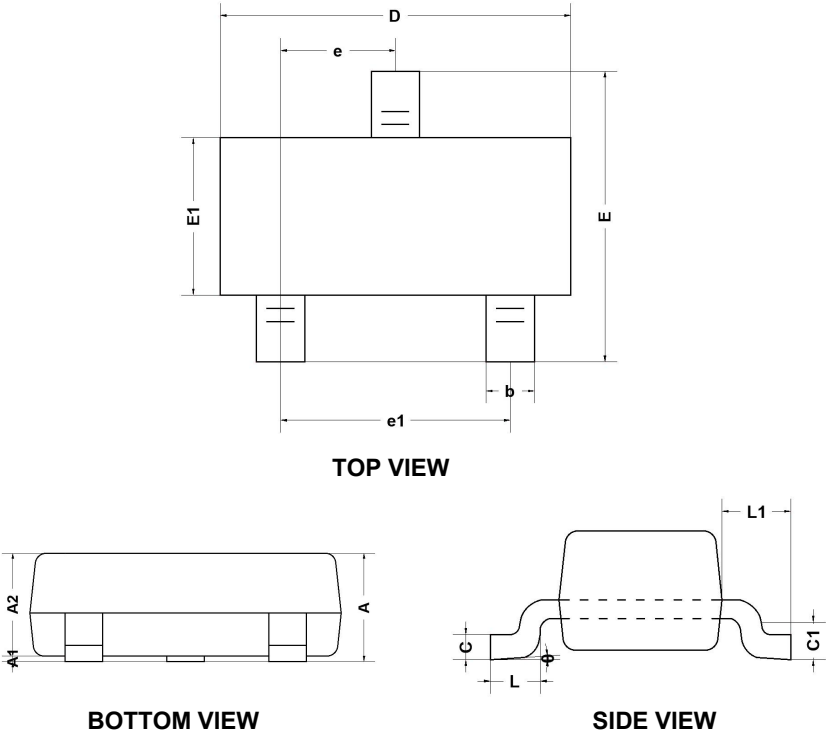


Capacitance vs. Drain-Source Voltage



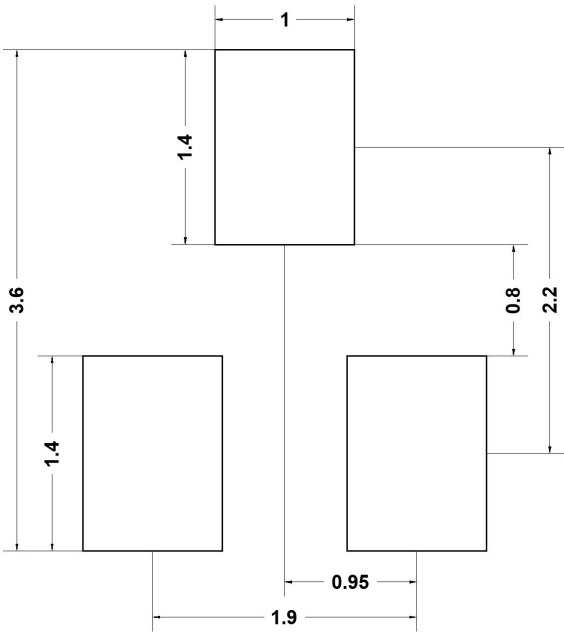
Threshold Voltage vs. Temperature

**SOT-23 Package Outline Drawing**



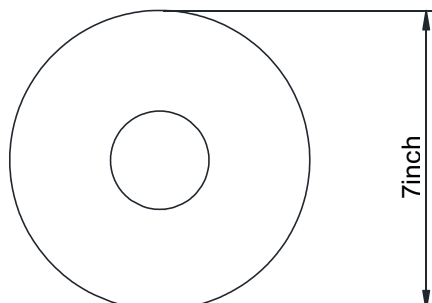
| SYM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN         | NOM  | MAX  |
| A   | 0.90        | -    | 1.15 |
| A1  | 0.01        | -    | 0.10 |
| A2  | 0.85        | -    | 1.00 |
| b   | 0.30        | -    | 0.50 |
| C   | 0.10        | -    | 0.25 |
| C1  | 0.25REF     |      |      |
| D   | 2.80        | 2.90 | 3.00 |
| E   | 2.25        | 2.40 | 2.55 |
| E1  | 1.20        | 1.30 | 1.40 |
| e   | 0.95BSC     |      |      |
| e1  | 1.80        | 1.90 | 2.00 |
| L   | 0.30        | -    | 0.50 |
| L1  | 0.55REF     |      |      |
| θ   | 0°          | -    | 8°   |

**Suggested Land Pattern (Unit: mm)**

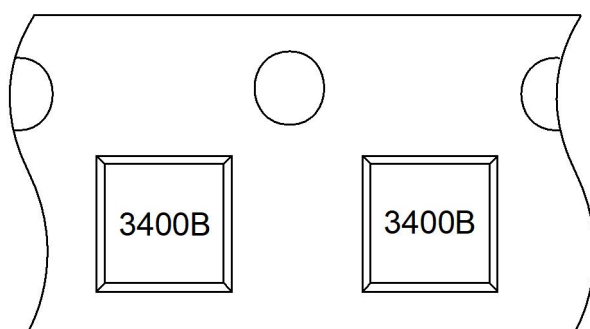
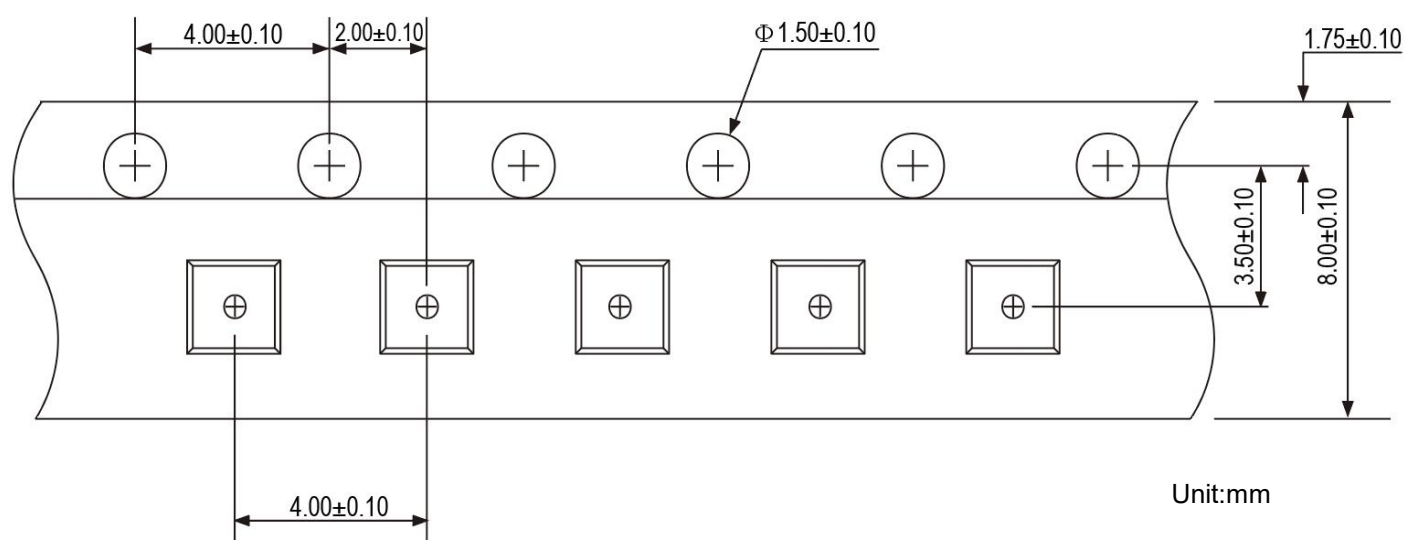


## TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



**→**  
User Direction of Feed

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