

## PW3406

### 30V N-Channel MOSFET

3.3A 30V;  $R_{DS(ON)typ}=37m\Omega@10V$ ,  $R_{DS(ON)typ}=47m\Omega@4.5V$

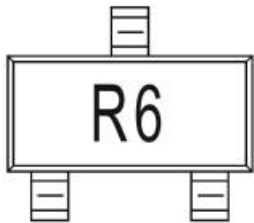
#### FEATURE

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

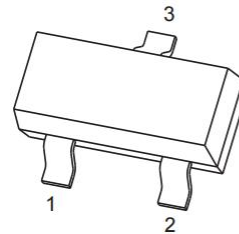
#### Application

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

#### MARKING:

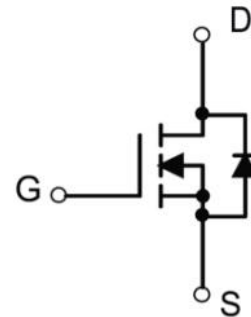


#### SOT-23



1. GATE
2. SOURCE
3. DRAIN

#### Schematic diagram



#### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

| Parameter  | Symbol          | Value    | Unit               |
|--|-----------------|----------|--------------------|
| Drain - Source Voltage                                   | $V_{DS}$        | 30       | V                  |
| Gate - Source Voltage                                    | $V_{GS}$        | $\pm 20$ | V                  |
| Continuous Drain Current <sup>1,5</sup>                  | $I_D$           | 3.3      | A                  |
| Pulsed Drain Current <sup>2</sup>                        | $I_{DM}$        | 14       | A                  |
| Power Dissipation <sup>4,5</sup>                         | $P_D$           | 1.5      | W                  |
| Thermal Resistance from Junction to Ambient <sup>5</sup> | $R_{\theta JA}$ | 83.3     | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range                   | $T_J, T_{STG}$  | -55~+150 | $^\circ\text{C}$   |

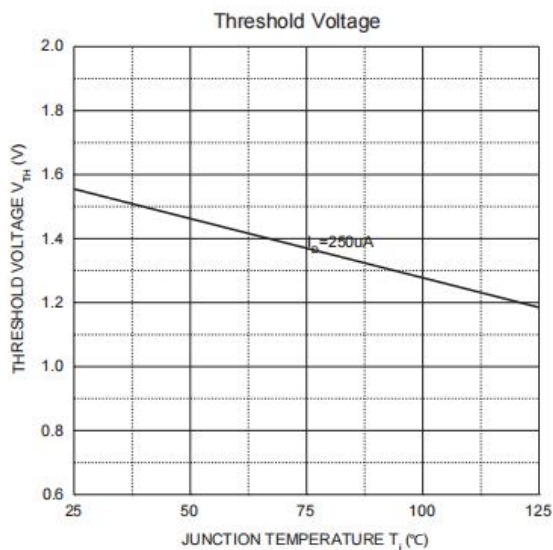
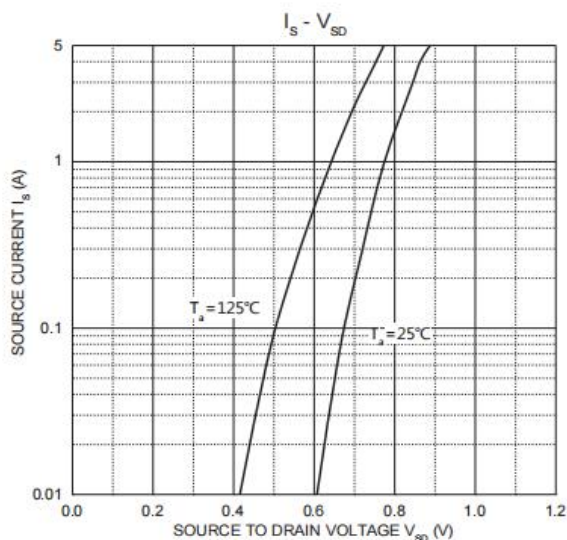
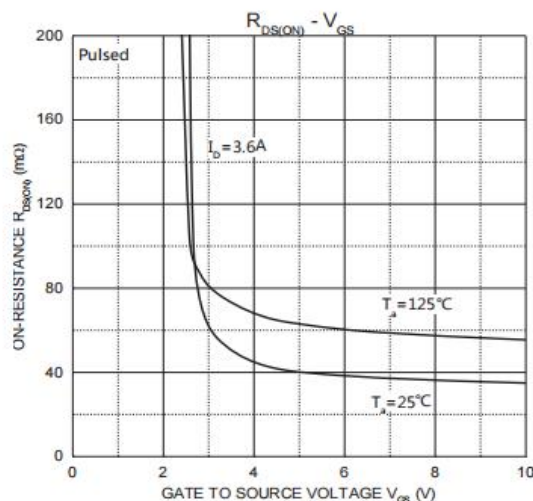
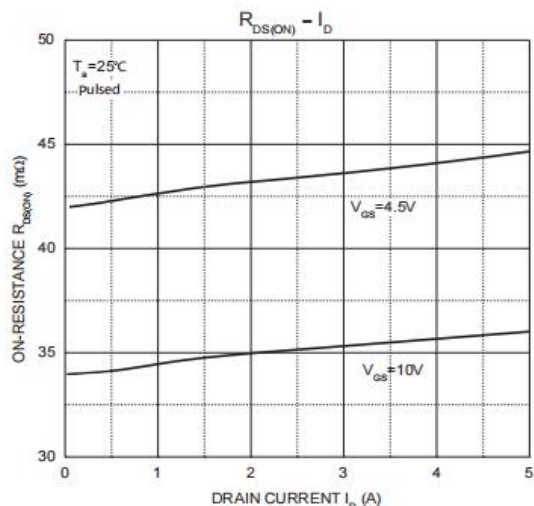
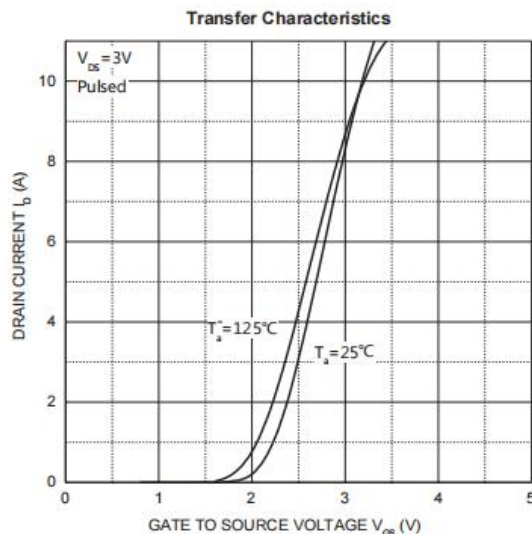
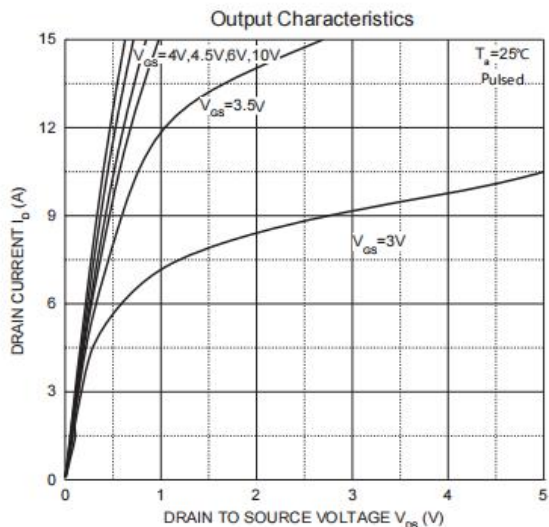
**MOSFET ELECTRICAL CHARACTERISTICS(T<sub>a</sub>=25°C unless otherwise noted)**

| Parameter                               | Symbol               | Test Condition  | Min | Type | Max  | Unit |
|---|----------------------|---|-----|------|------|------|
| <b>STATIC CHARACTERISTICS</b>           |                      |   |     |      |      |      |
| Drain-source breakdown voltage          | V <sub>(BR)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> = 24V, V <sub>GS</sub> = 0V   |     |      | 1    | μA   |
| Gate-body leakage current               | I <sub>GSS</sub>     | V <sub>GS</sub> = ±20V, 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                                    | 1   | 1.6  | 3    | V    |
| Drain-source on-resistance <sup>3</sup> | R <sub>DSON</sub>    | V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.3A  |     | 37   | 65   | mΩ   |
|   |                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 2.8A   |     | 47   | 105  |      |
| Forward transconductance <sup>3</sup>   | g <sub>FS</sub>      | V <sub>DS</sub> = 5V, I <sub>D</sub> = 3.3A   | 3   |      |      | S    |
| Body Diode Voltage <sup>3</sup>         | V <sub>SD</sub>      | I <sub>S</sub> = 1A   |     |      | 1    | V    |
| <b>DYNAMIC CHARACTERISTICS</b>          |                      |   |     |      |      |      |
| Input Capacitance                       | C <sub>iss</sub>     | V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1MHz   |     |      | 375  | pF   |
| Output Capacitance                      | C <sub>oss</sub>     |   |     | 57   |      |      |
| Reverse Transfer Capacitance            | C <sub>rss</sub>     |   |     | 39   |      |      |
| Gate resistance                         | R <sub>g</sub>       | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz  |     |      | 6    | Ω    |
| <b>SWITCHING CHARACTERISTICS</b>        |                      |   |     |      |      |      |
| Turn-on delay time                      | t <sub>d(on)</sub>   | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V,<br>R <sub>L</sub> = 2.2Ω, R <sub>GEN</sub> = 3Ω |     | 4.6  |      | ns   |
| Turn-on rise time                       | t <sub>r</sub>       |   |     | 1.9  |      |      |
| Turn-off delay time                     | t <sub>d(off)</sub>  |   |     | 20.1 |      |      |
| Turn-off fall time                      | t <sub>f</sub>       |   |     | 2.6  |      |      |

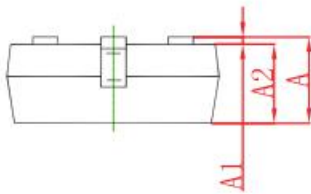
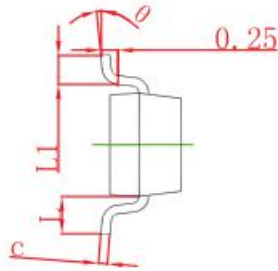
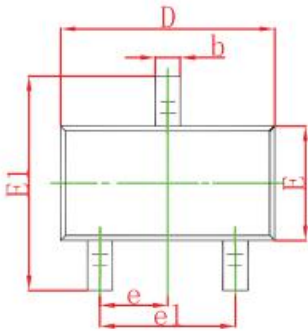
**Notes:**

- The maximum current rating is limited by package.
- Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- The power dissipation P<sub>D</sub> is limited by T<sub>J(MAX)</sub> = 150°C.
- Device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C.

**Typical Electrical and Thermal Characteristics**



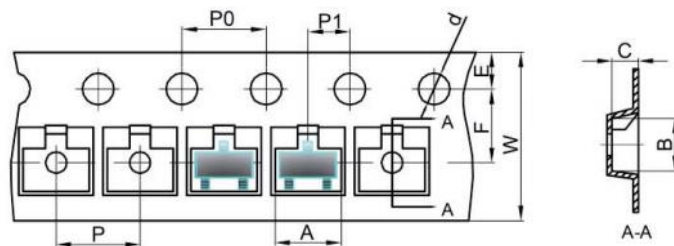
## SOT-23 Package Information



| Symbol   | Dimensions In Millimeters |       | Dimensions In Inches |       |
|----------|---------------------------|-------|----------------------|-------|
|          | Min                       | Max   | Min                  | Max   |
| A        | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1       | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2       | 0.900                     | 1.050 | 0.035                | 0.041 |
| b        | 0.300                     | 0.500 | 0.012                | 0.020 |
| c        | 0.080                     | 0.150 | 0.003                | 0.006 |
| D        | 2.800                     | 3.000 | 0.110                | 0.118 |
| E        | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1       | 2.250                     | 2.550 | 0.089                | 0.100 |
| e        | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1       | 1.800                     | 2.000 | 0.071                | 0.079 |
| L        | 0.550 REF                 |       | 0.022 REF            |       |
| L1       | 0.300                     | 0.500 | 0.012                | 0.020 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |

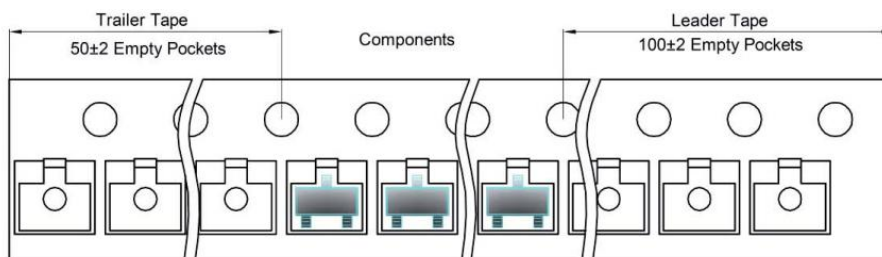
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

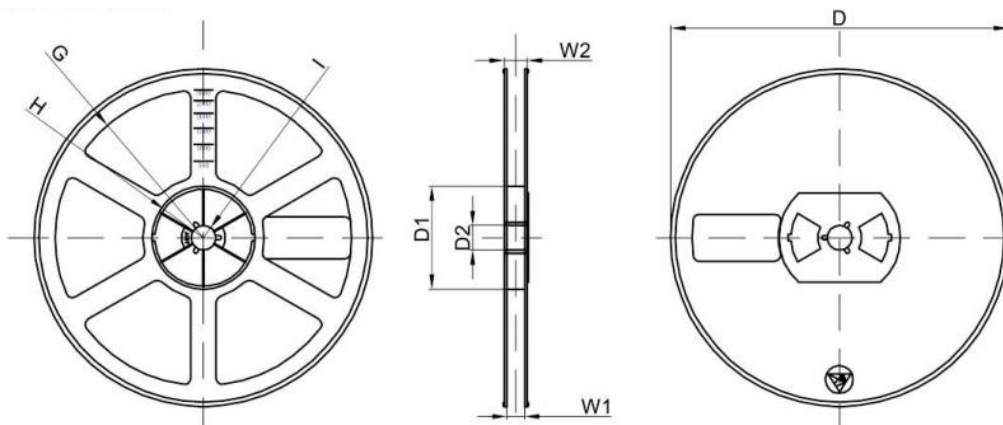


| Dimensions are in millimeter |      |      |      |       |      |      |      |      |      |      |
|------------------------------|------|------|------|-------|------|------|------|------|------|------|
| Pkg type                     | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W    |
| SOT-23                       | 3.15 | 2.77 | 1.22 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

SOT-23 Tape Leader and Trailer



SOT-23 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 30,000 pcs | 203×203×195  | 120,000 pcs | 438×438×220     |          |