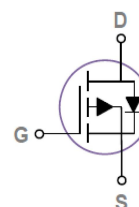
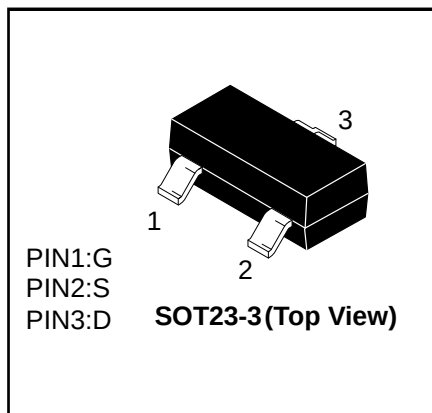


**-30V P-Channel Enhancement Mode MOSFET**
**V<sub>DS</sub> = -30V**
**R<sub>DS(ON)</sub>, V<sub>GS</sub>@ -10.0V, I<sub>DS</sub>@ -4.2A < 60.0mΩ**
**R<sub>DS(ON)</sub>, V<sub>GS</sub>@ -4.5V, I<sub>DS</sub>@ -4.0A < 65.0mΩ**
**Features**

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance


 Maximum Ratings and Thermal Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

| Parameter                                        | Symbol                                | Rating     | Unit |
|--------------------------------------------------|---------------------------------------|------------|------|
| Drain-Source Voltage                             | V <sub>DS</sub>                       | -30        | V    |
| Drain Current – Continuous                       | I <sub>D</sub>                        | -4.2       | A    |
| Drain Current- Continuous <sup>A</sup>           | I <sub>D</sub> (T <sub>a</sub> =70°C) | -3.5       | A    |
| Pulsed Drain Current <sup>B</sup>                | I <sub>DM</sub>                       | -30        | A    |
| Gate-Source Voltage                              | V <sub>GS</sub>                       | ±12        | V    |
| Total Power Dissipation <sup>A</sup>             | P <sub>D</sub>                        | 1.4        | W    |
| Total Power Dissipation <sup>A</sup>             | P <sub>D</sub> (T <sub>a</sub> =70°C) | 1.0        | W    |
| Operating and Storage Junction Temperature Range | T <sub>J</sub> , T <sub>STG</sub>     | -55 to 150 | °C   |
| Maximum Junction-to-Ambient <sup>A</sup>         | R <sub>θJA</sub>                      | 125        | °C/W |
| Maximum Junction-to-Lead <sup>C</sup>            | R <sub>θJL</sub>                      | 60         | °C/W |

| Model          | Marking    | Package        | shipping                  |
|----------------|------------|----------------|---------------------------|
| <b>M3401MC</b> | <b>B1H</b> | <b>SOT23-3</b> | <b>3000/Tape&amp;Reel</b> |

**Electrical Characteristics(Ta=25°C)**

| Parameter                          | Symbol                 | Test Conditions                                                                          | Min  | Typ   | Max  | Unit |
|------------------------------------|------------------------|------------------------------------------------------------------------------------------|------|-------|------|------|
| Drain–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> =-24V V <sub>GS</sub> =0V                                                |      |       | -1   | μA   |
|                                    |                        | V <sub>DS</sub> =-24V V <sub>GS</sub> =0V<br>T <sub>J</sub> =55°C                        |      |       | -5   | μA   |
| Gate–Body Leakage.                 | I <sub>GSS</sub>       | V <sub>GS</sub> =±12V V <sub>DS</sub> =0V                                                |      |       | ±0.1 | μA   |
| On–State Drain Current             | I <sub>D(on)</sub>     | V <sub>GS</sub> =-4.5V V <sub>DS</sub> =-5V                                              | -25  |       |      | A    |
| Gate Threshold Voltage             | V <sub>GS(th)</sub>    | V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250μA                                  | -0.7 | -1    | -1.3 | V    |
| Static Drain–Source On–Resistance  | R <sub>DS(on)(1)</sub> | V <sub>GS</sub> =-10V I <sub>D</sub> =-4.2A                                              |      | 52    | 60   | mΩ   |
|                                    | R <sub>DS(on)(2)</sub> | V <sub>GS</sub> =-10V I <sub>D</sub> =-4.2A<br>T <sub>J</sub> =125°C                     |      |       | 75   |      |
|                                    | R <sub>DS(on)(3)</sub> | V <sub>GS</sub> =-4.5V I <sub>D</sub> =-4A                                               |      | 60    | 65   |      |
|                                    | R <sub>DS(on)(4)</sub> | V <sub>GS</sub> =-2.5V I <sub>D</sub> =-1A                                               |      | 75    | 120  |      |
| Forward Transconductance           | g <sub>FS</sub>        | V <sub>DS</sub> =-5V I <sub>D</sub> =-5A                                                 | 4    | 8     |      | S    |
| Drain–Source Diode Forward Voltage | V <sub>SD</sub>        | V <sub>GS</sub> =0V I <sub>S</sub> =-1A                                                  |      | -0.75 | -1.0 | V    |
| Input Capacitance                  | C <sub>iss</sub>       | V <sub>DS</sub> =-15V V <sub>GS</sub> =0V<br>f=1MHz                                      |      | 957   |      | pF   |
| Output Capacitance                 | C <sub>oss</sub>       |                                                                                          |      | 115   |      |      |
| Reverse Transfer Capacitance       | C <sub>rss</sub>       |                                                                                          |      | 77    |      |      |
| Gate resistance                    | R <sub>g</sub>         | V <sub>GS</sub> =0V V <sub>DS</sub> =0V,<br>f=1MHz                                       |      | 6     |      | Ω    |
| Total Gate Charge                  | Q <sub>g</sub>         | V <sub>GS</sub> =-4.5V V <sub>DS</sub> =-15V<br>I <sub>D</sub> =-4A                      |      | 9.4   |      | nC   |
| Gate Source Charge                 | Q <sub>gs</sub>        |                                                                                          |      | 2     |      |      |
| Gate Drain Charge                  | Q <sub>gd</sub>        |                                                                                          |      | 3     |      |      |
| Turn–On Delay Time                 | t <sub>d(on)</sub>     | V <sub>GS</sub> =-10V R <sub>L</sub> =3.6Ω<br>V <sub>DS</sub> =-15V R <sub>GEN</sub> =6Ω |      | 6.3   |      | ns   |
| Turn–On Rise Time                  | t <sub>r</sub>         |                                                                                          |      | 3.2   |      |      |
| Turn–Off Delay Time                | t <sub>d(off)</sub>    |                                                                                          |      | 38.2  |      |      |
| Turn–Off Fall Time                 | t <sub>f</sub>         |                                                                                          |      | 12    |      |      |
| Body Diode Reverse Recovery Time   | t <sub>rr</sub>        | I <sub>F</sub> =-4A, dI/dt=100A/μs                                                       |      | 20.2  |      | ns   |
| Body Diode Reverse Recovery Charge | Q <sub>rr</sub>        | I <sub>F</sub> =-4A, dI/dt=100A/μs                                                       |      | 11.2  |      | nC   |

A: The value of R<sub>θJA</sub> is measured with the 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. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

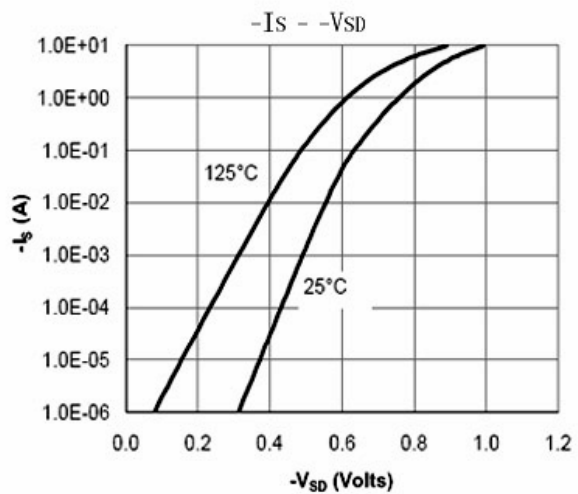
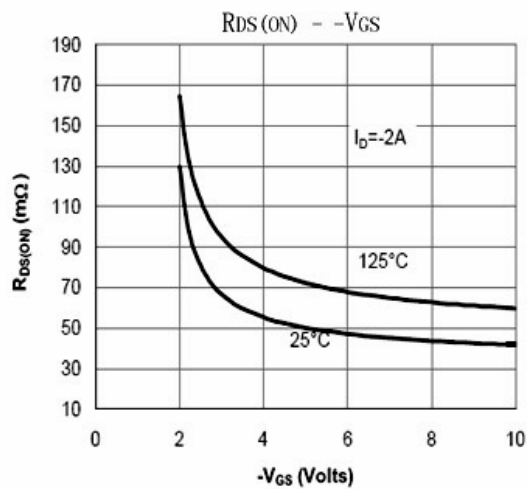
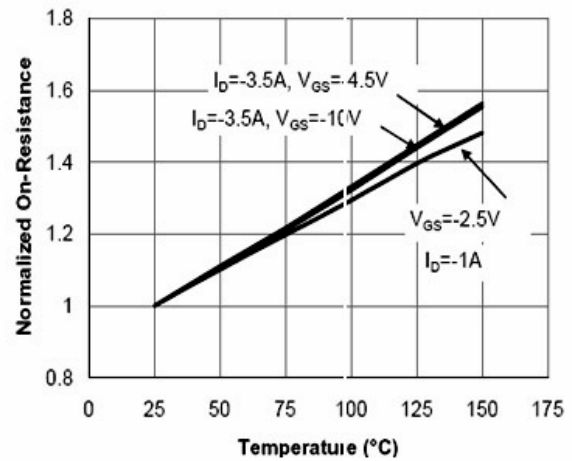
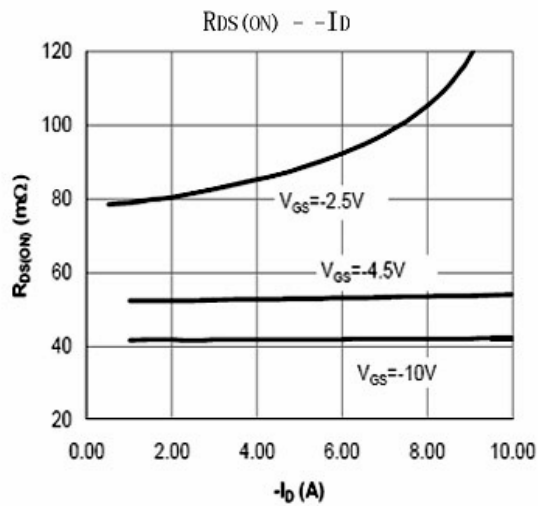
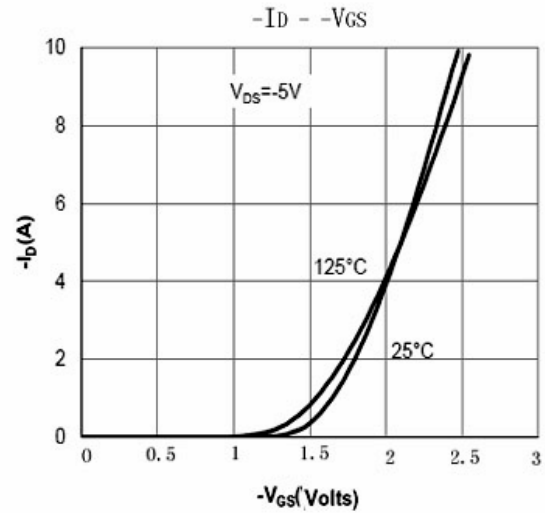
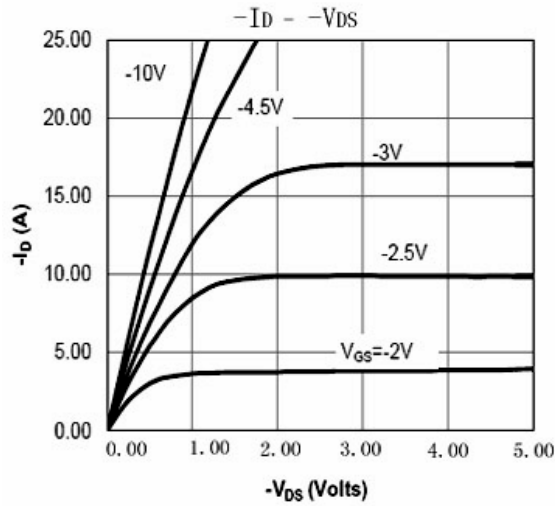
B: Repetitive rating, pulse width limited by junction temperature.

C: The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

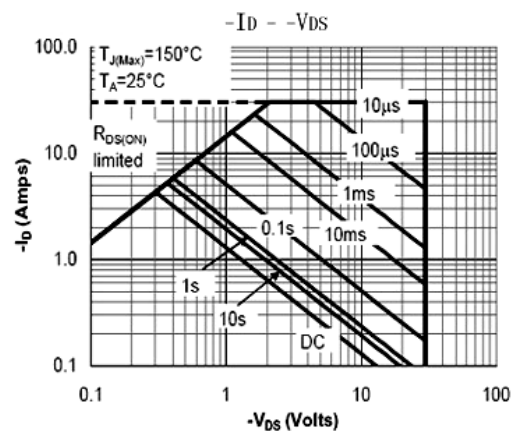
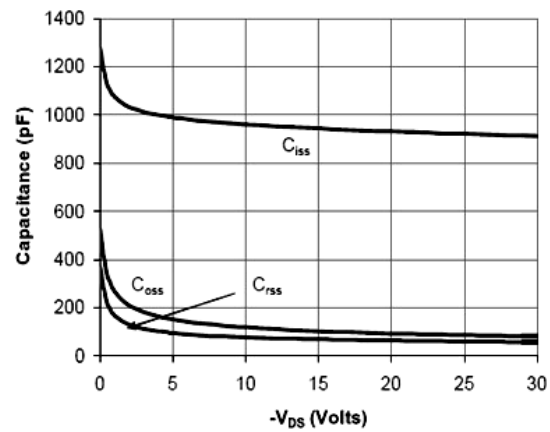
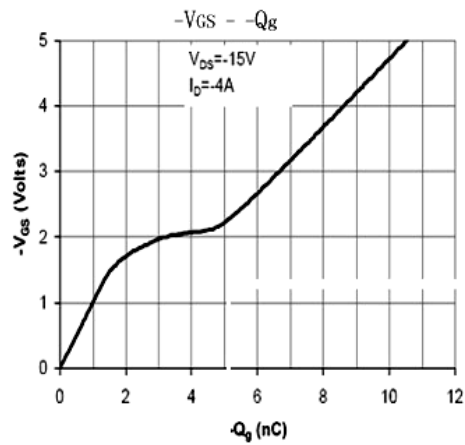
D: The static characteristics in Figures 1 to 6,12,14 are obtained using 80 μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The SOA curve provides a single pulse rating.

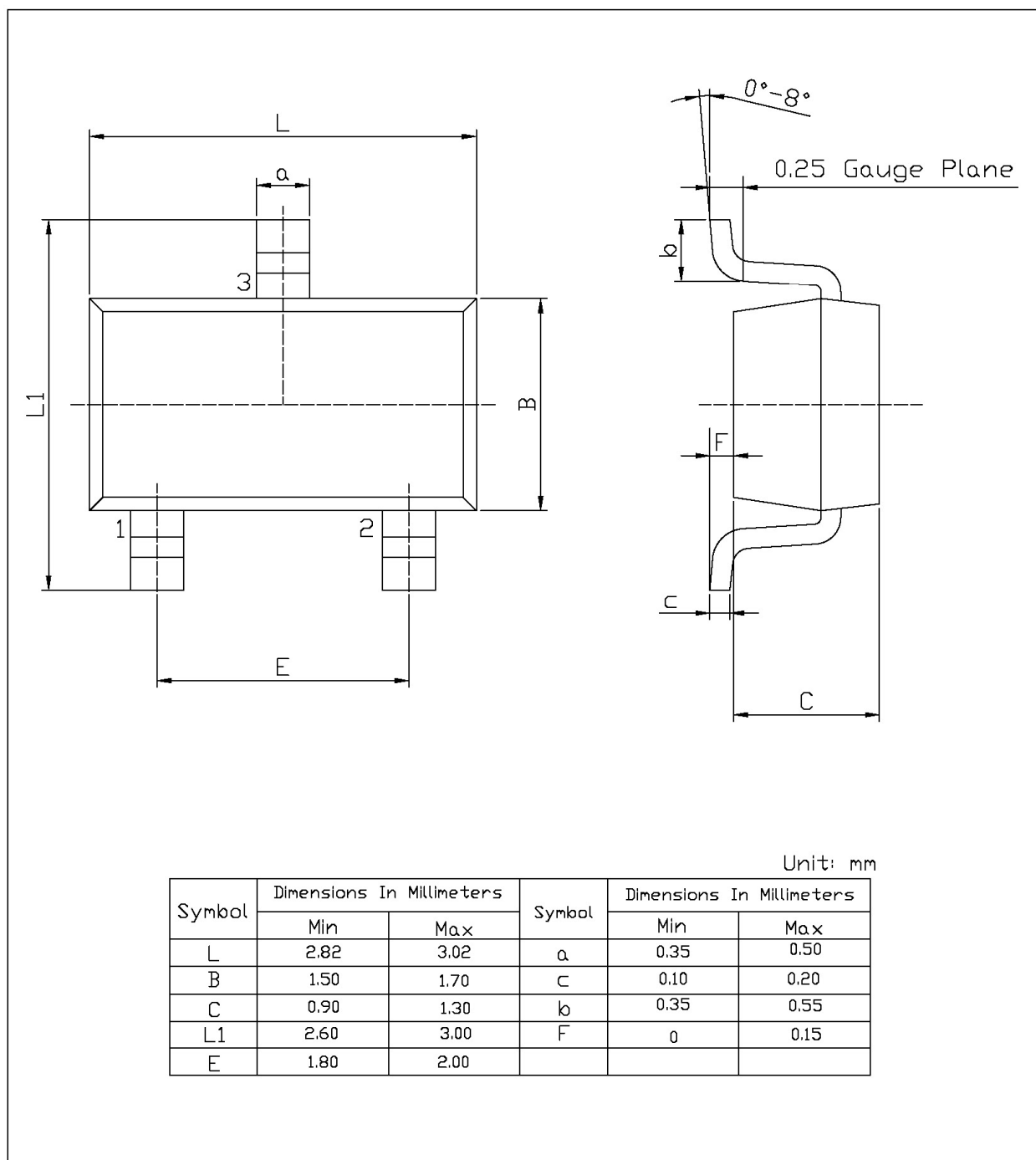
## Electrical Characteristic Curve



## Electrical Characteristic Curve



## Dimension outline Unit:mm



## Suggested Pad Layout

