# RSU002P03

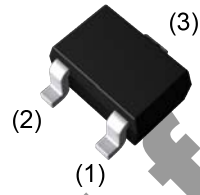
4V Dirve Pch MOSFET

Datasheet

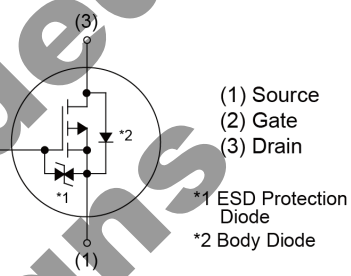
| | |
|---|---|
| $V_{DSS}$ | -30V |
| $R_{DS(on)}$(Max.) | 1.4Ω |
| $I_D$ | ±0.2A |
| $P_D$ | 0.2W |

## ●Outline

UMT3




## ●Inner circuit




## ●Features

1) Low on-resistance.
2) 4V drive.
3) Lead Free/RoHS Compliant.

## ●Packaging specifications

| | | |
|---|---|---|
| Type | Packing | Embossed Tape |
| | Reel size (mm) | 180 |
| | Tape width (mm) | 8 |
| | Basic ordering unit (pcs) | 3000 |
| | Taping code | T106 |
| | Marking | WP |

## ●Application

Switching

## ●Absolute maximum ratings ($T_a$ = 25°C)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain - Source voltage | $V_{DSS}$ | -30 | V |
| Continuous drain current | $I_D$ | ±0.2 | A |
| Pulsed drain current | $I_{D,pulse}$ *1 | ±0.4 | A |
| Gate - Source voltage | $V_{GSS}$ | ±20 | V |
| Power dissipation | $P_D$ *2 | 0.2 | W |
| Junction temperature | $T_j$ | 150 | ℃ |
| Range of storage temperature | $T_{stg}$ | -55 to +150 | ℃ |

## ●Thermal resistance

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| junction - ambient | Rth(ch-a) *2 | 625 | ℃/W |

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## ●Electrical characteristics ($T_a$ = 25°C)

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Drain - Source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -1mA | -30 | - | - | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ = -30V, $V_{GS}$ = 0V | - | - | -1 | μA |
| Gate - Source leakage current | $I_{GSS}$ | $V_{GS}$ = ±20V, $V_{DS}$ = 0V | - | - | ±10 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ = -10V, $I_D$ = -1mA | -1.0 | - | -2.5 | V |
| Static drain - source on - state resistance | $R_{DS(on)}$*3 | $V_{GS}$ = -10V, $I_D$ = -0.2A | - | 0.9 | 1.4 | Ω |
| | | $V_{GS}$ = -4.5V, $I_D$ = -0.15A | - | 1.4 | 2.1 | |
| | | $V_{GS}$ = -4.0V, $I_D$ = -0.15A | - | 1.6 | 2.4 | |
| Transconductance | $g_{fs}$*3 | $V_{DS}$ = -10V, $I_D$ = -0.15A | 0.2 | - | - | S |
| Input capacitance | $C_{iss}$ | $V_{GS}$ = 0V | - | 30 | - | pF |
| Output capacitance | $C_{oss}$ | $V_{DS}$ = -10V | - | 4 | - | |
| Reverse transfer capacitance | $C_{rss}$ | f = 1MHz | - | 5 | - | |
| Turn - on delay time | $t_{d(on)}$*3 | $V_{DD}$ ≒ -15V, $V_{GS}$ = -10V | - | 8 | - | ns |
| Rise time | $t_r$*3 | $I_D$ = 0.15A | - | 5 | - | |
| Turn - off delay time | $t_{d(off)}$*3 | $R_L$ = 100Ω | - | 30 | - | |
| Fall time | $t_f$*3 | $R_G$ = 10Ω | - | 40 | - | |

## ●Body diode electrical characteristics (Source-Drain) ($T_a$ = 25°C)

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Forward voltage | $V_{SD}$*3 | $V_{GS}$ = 0V, $I_S$ = -0.1A | - | - | -1.2 | V |

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*1 Pw ≤ 10μs, Duty cycle ≤ 1%

*2 Each teminal mounted on a recommended land

*3 Pulsed


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## ●Electrical characteristic curves

Fig.1 Typical Capacitance vs. Drain - Source Voltage

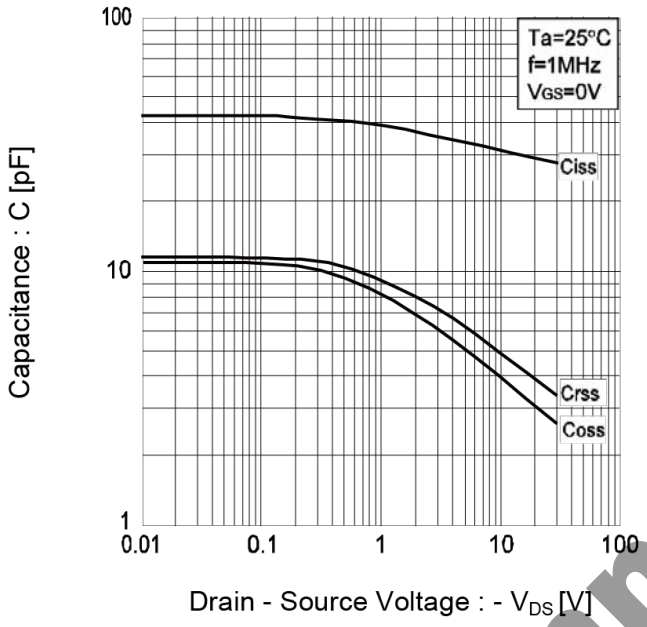



Fig.2 Switching Characteristics

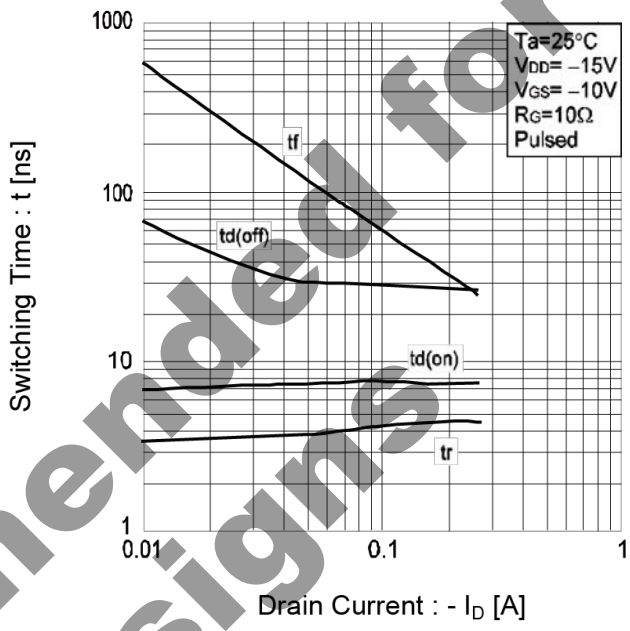



Fig.3 Dynamic Input Characteristics

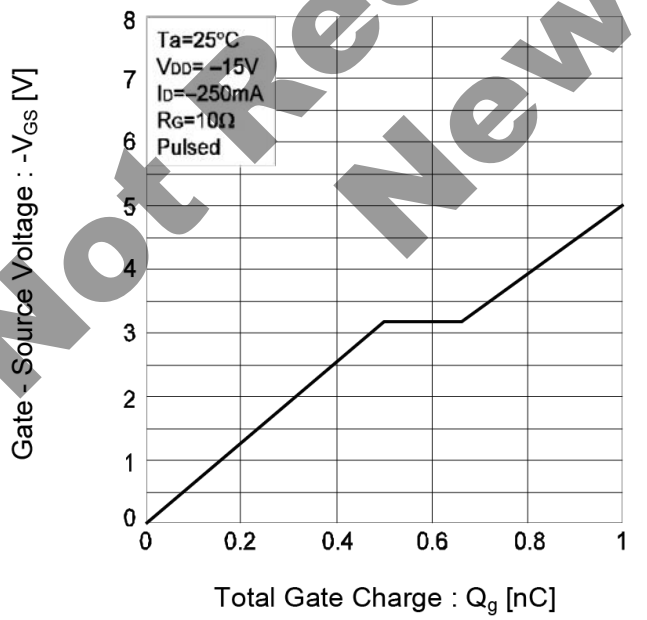
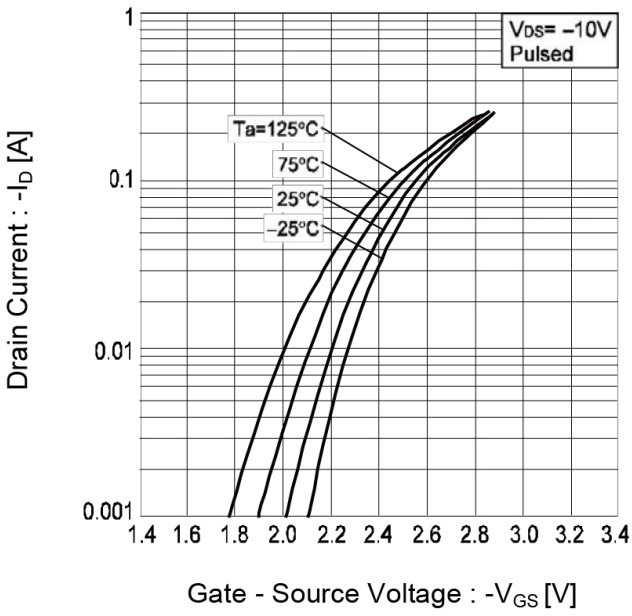



Fig.4 Typical Transfer Characteristics




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## ●Electrical characteristic curves

Fig.5 Static Drain - Source On - State Resistance vs. Gate Source Voltage

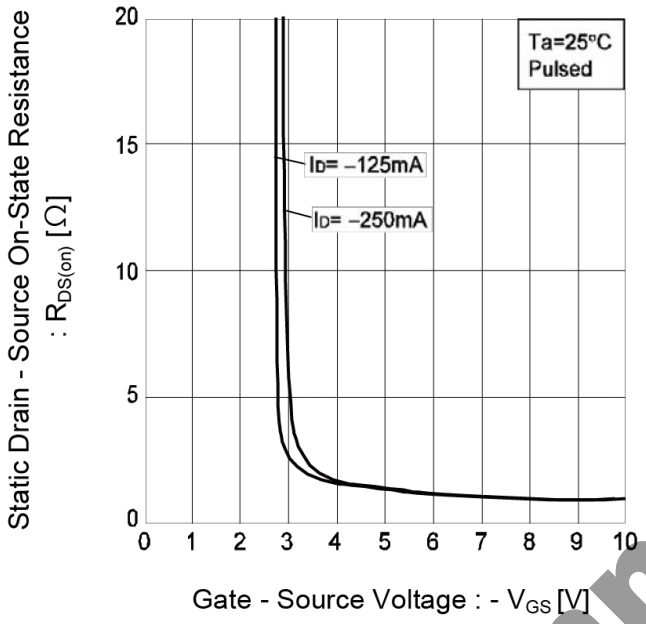



Fig.6 Reverse Drain Current vs. Source-Drain Voltage

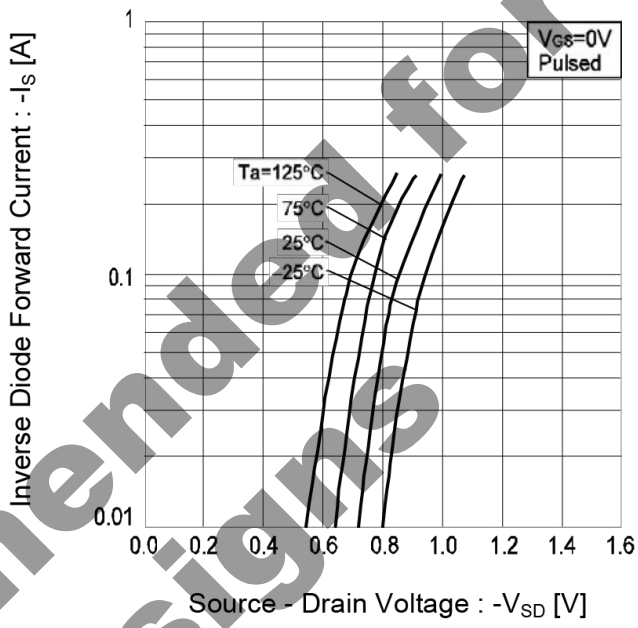



Fig.7 Static Drain - Source On - State Resistance vs. Drain Current (I)

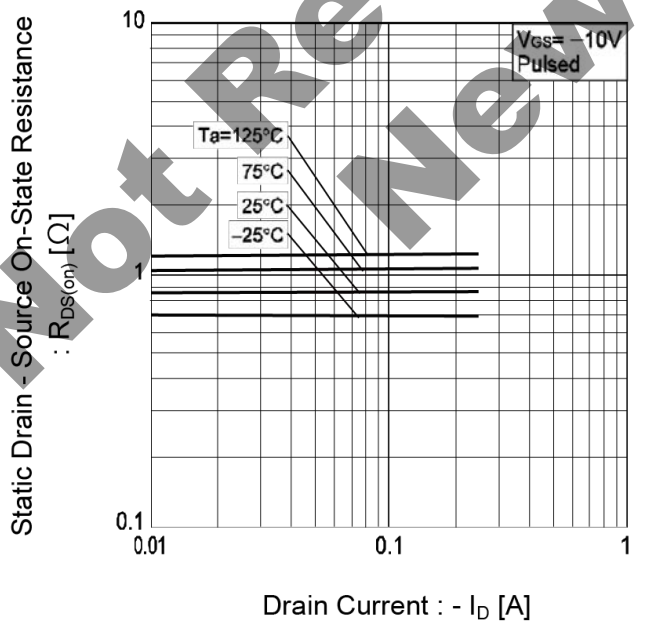
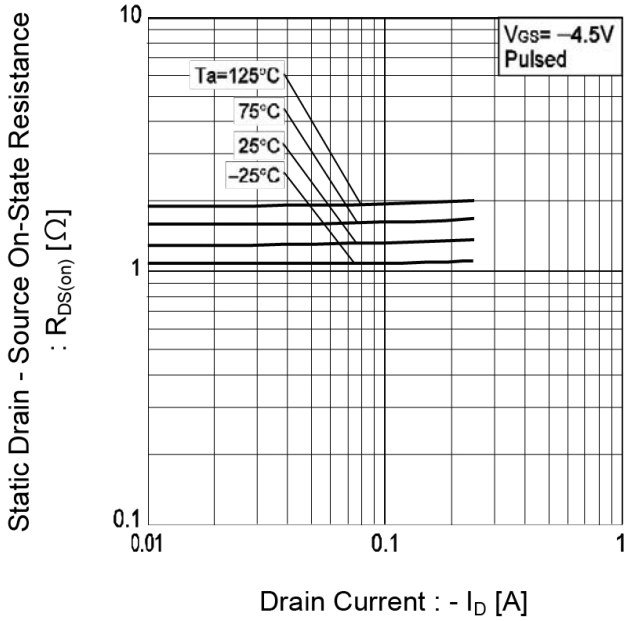



Fig.8 Static Drain - Source On - State Resistance vs. Drain Current (II)




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## ●Electrical characteristic curves

Fig.9 Static Drain - Source On - State Resistance vs. Drain Current (III)

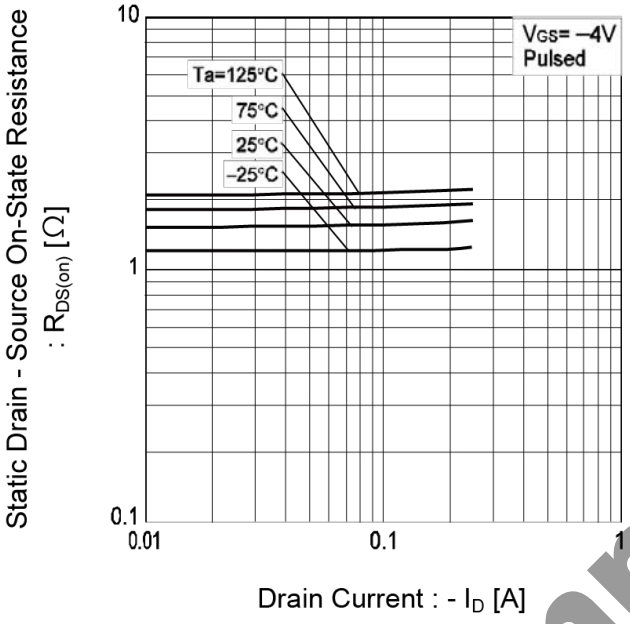
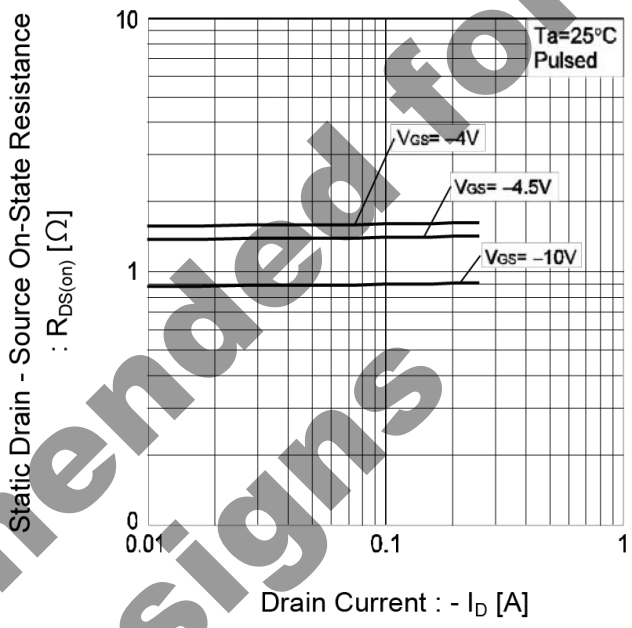



Fig.10 Static Drain - Source On - State Resistance vs. Drain Current (IV)




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## ●Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

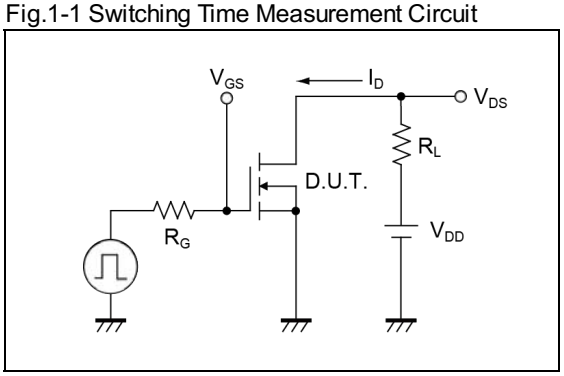
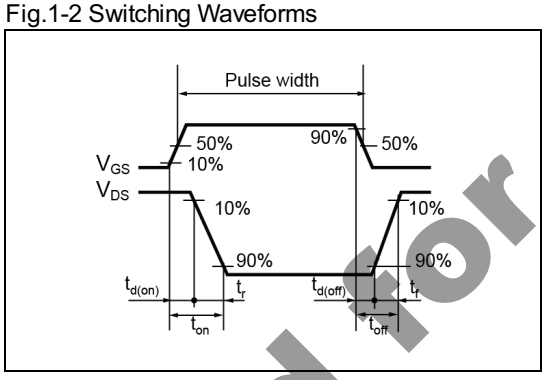



Fig.1-2 Switching Waveforms



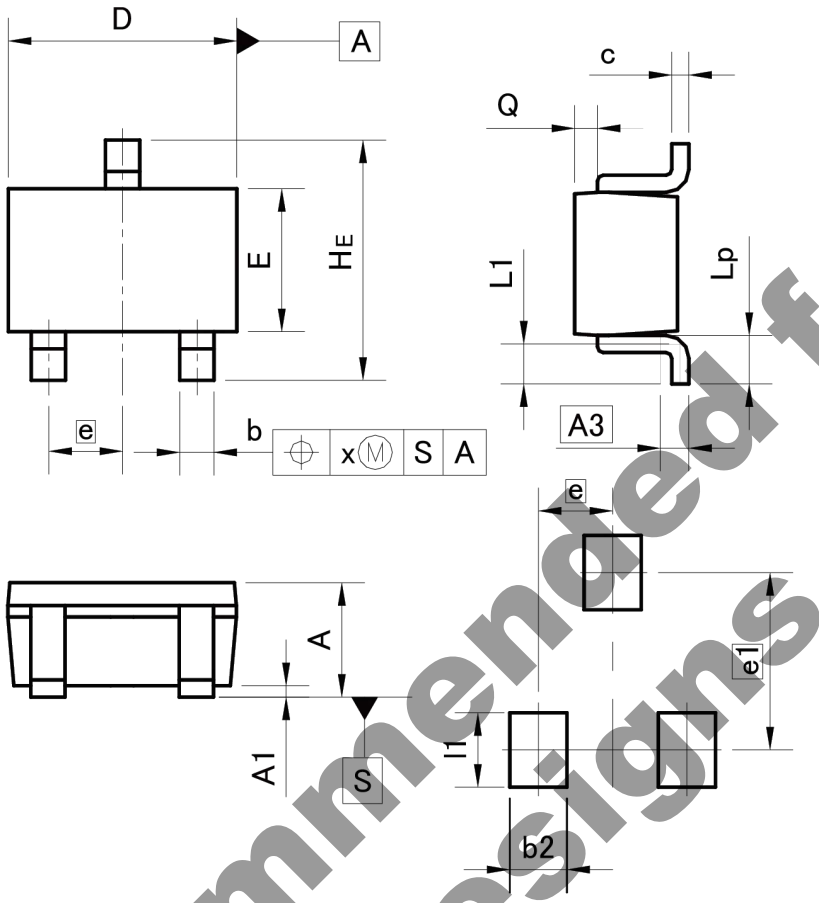

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## ●Dimensions

UMT3




Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.80 | 1.00 | 0.031 | 0.039 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A3 | 0.25 | | 0.010 | |
| b | 0.15 | 0.30 | 0.006 | 0.012 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| D | 1.90 | 2.10 | 0.075 | 0.083 |
| E | 1.15 | 1.35 | 0.045 | 0.053 |
| e | 0.65 | | 0.026 | |
| HE | 2.00 | 2.20 | 0.079 | 0.087 |
| L1 | 0.20 | 0.50 | 0.008 | 0.020 |
| Lp | 0.25 | 0.55 | 0.010 | 0.022 |
| Q | 0.10 | 0.30 | 0.004 | 0.012 |
| x | – | 0.10 | – | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | – | 0.50 | – | 0.020 |
| e1 | 1.55 | | 0.061 | |
| l1 | – | 0.65 | – | 0.026 |

Dimension in mm/inches

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