

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

●Features

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

●Application

Switching

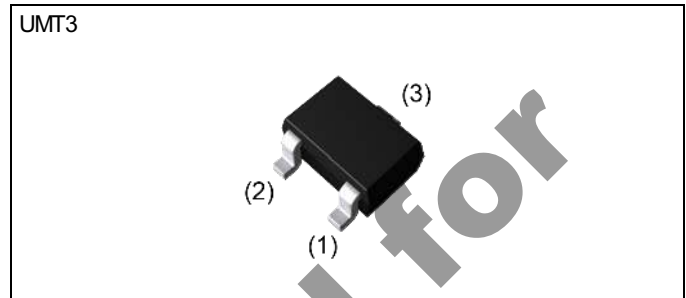
●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

| 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 | °C |
| Range of storage temperature | T_{stg} | -55 to +150 | °C |

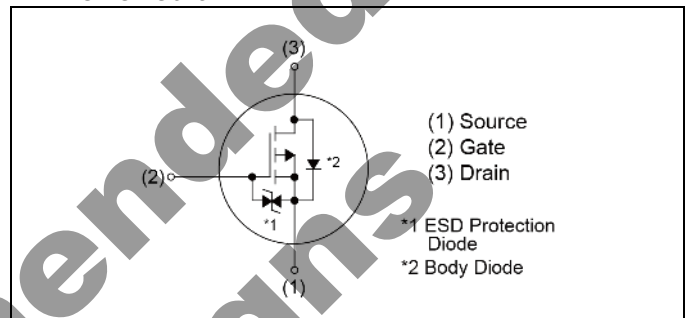
●Thermal resistance

| Parameter | Symbol | Value | Unit |
|--------------------|---------------------|-------|------|
| junction - ambient | $R_{th(ch-a)}^{*2}$ | 625 | °C/W |

●Outline



●Inner circuit



●Packaging specifications

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

●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 |

*1 P_w ≤ 10μs, Duty cycle ≤ 1%

*2 Each terminal mounted on a recommended land

*3 Pulsed

● Electrical characteristic curves

Fig.1 Typical Capacitance vs. Drain - Source Voltage

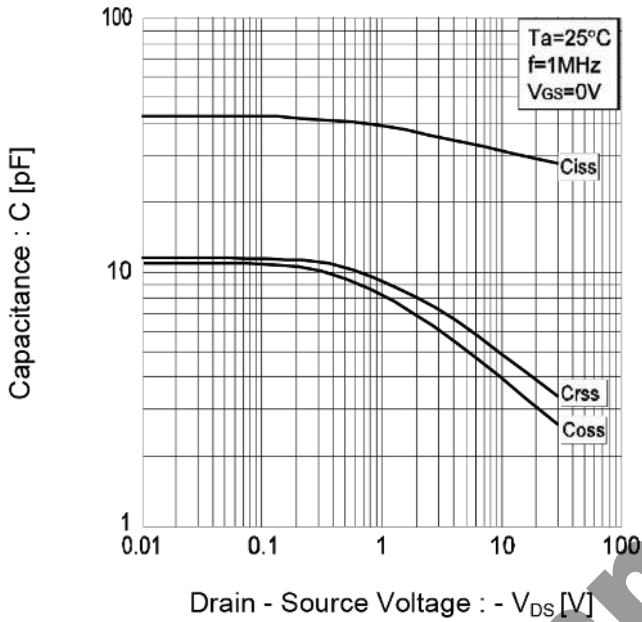


Fig.2 Switching Characteristics

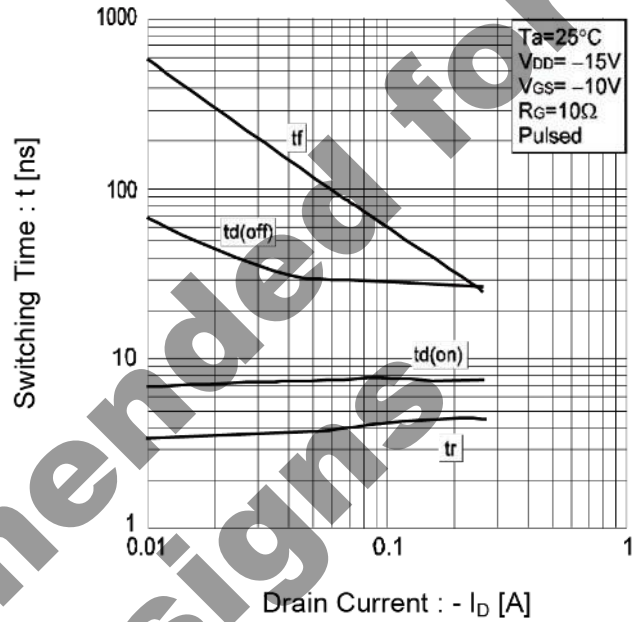


Fig.3 Dynamic Input Characteristics

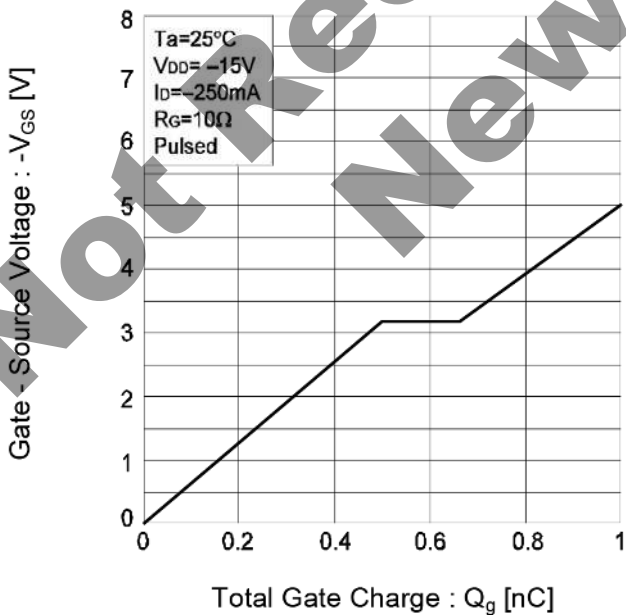
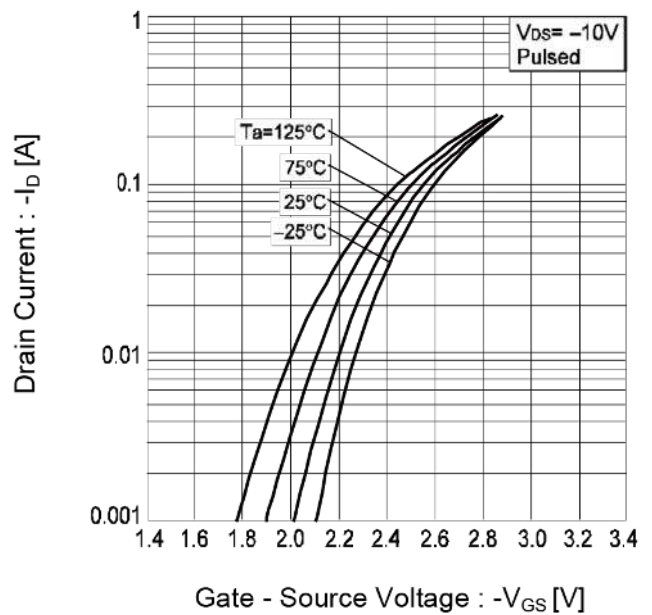


Fig.4 Typical Transfer Characteristics



● Electrical characteristic curves

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

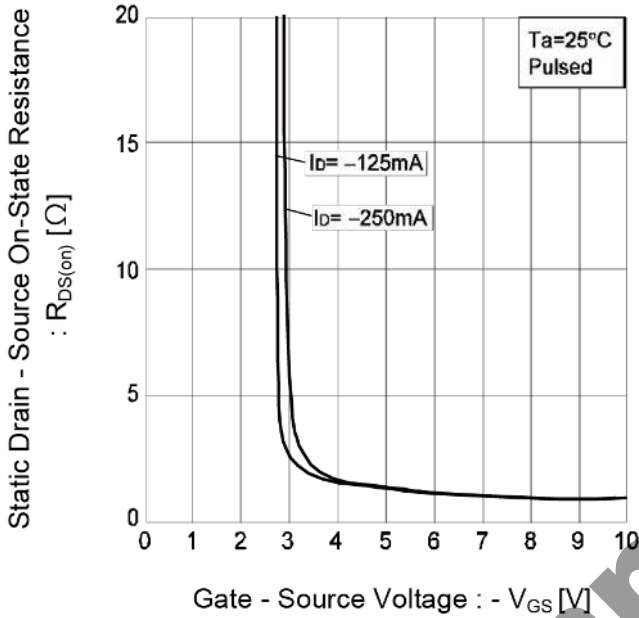


Fig.6 Reverse Drain Current vs. Source- Drain Voltage

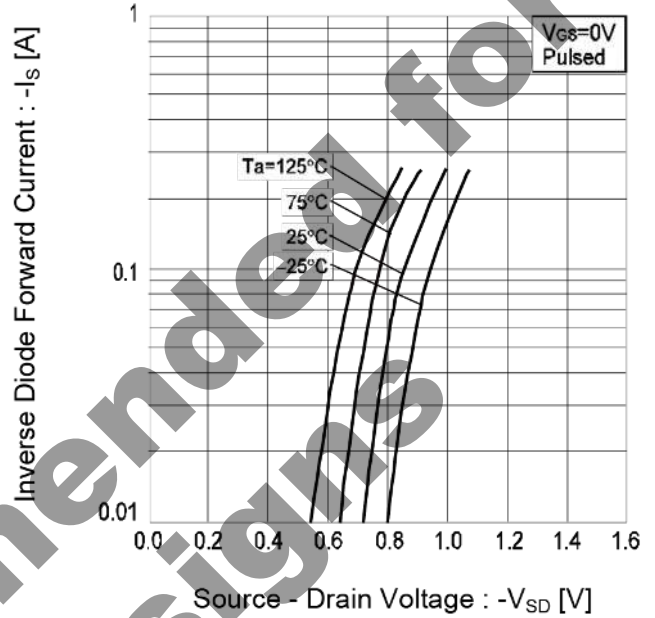


Fig.7 Static Drain - Source On - State Resistance vs. Drain Current (I)

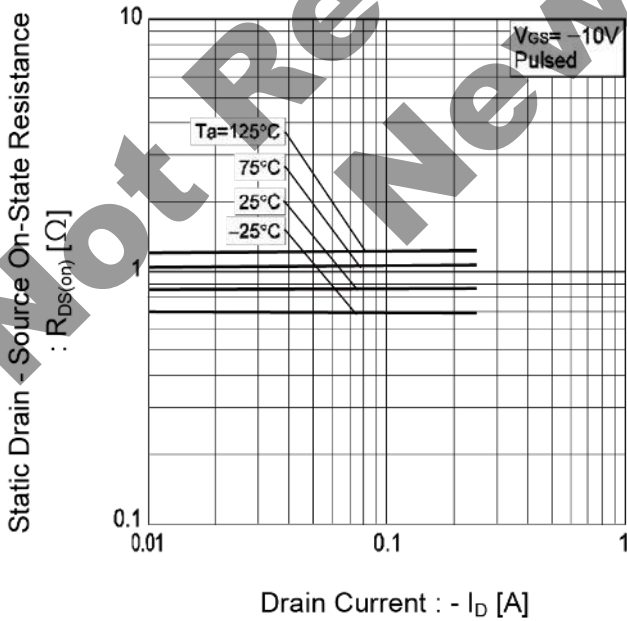
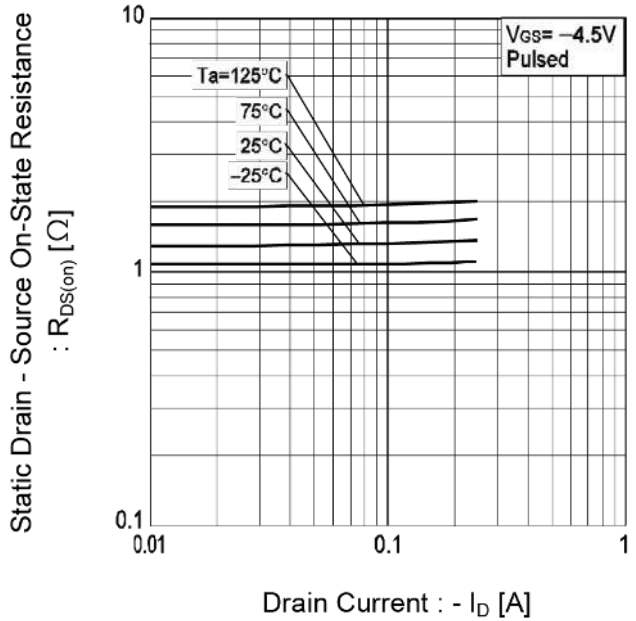


Fig.8 Static Drain - Source On - State Resistance vs. Drain Current (II)



● Electrical characteristic curves

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

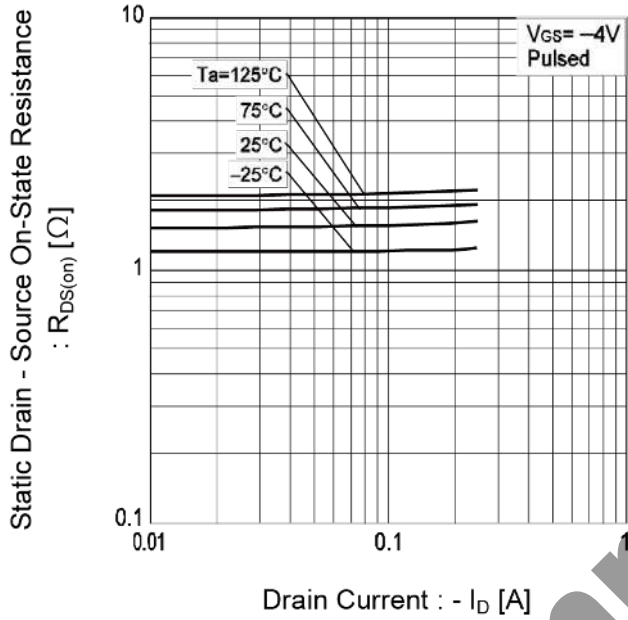
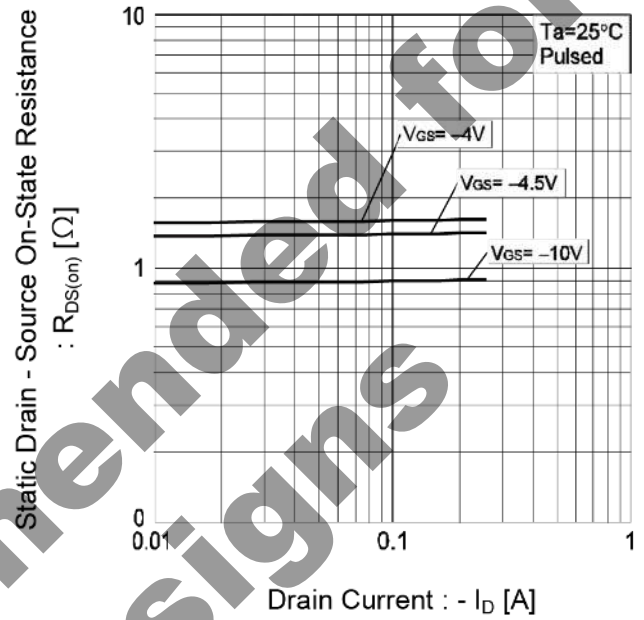


Fig.10 Static Drain - Source On - State Resistance vs. Drain Current (IV)



Not Recommended for New Designs

● Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

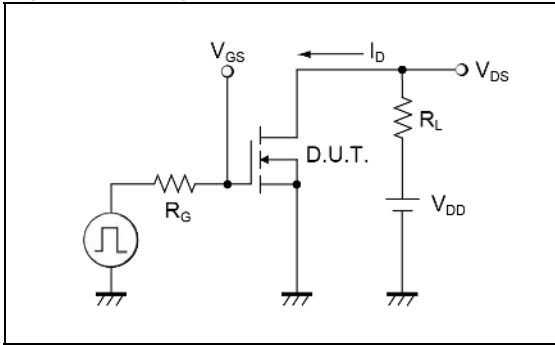
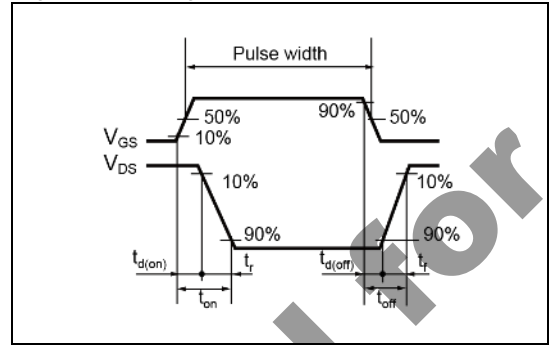


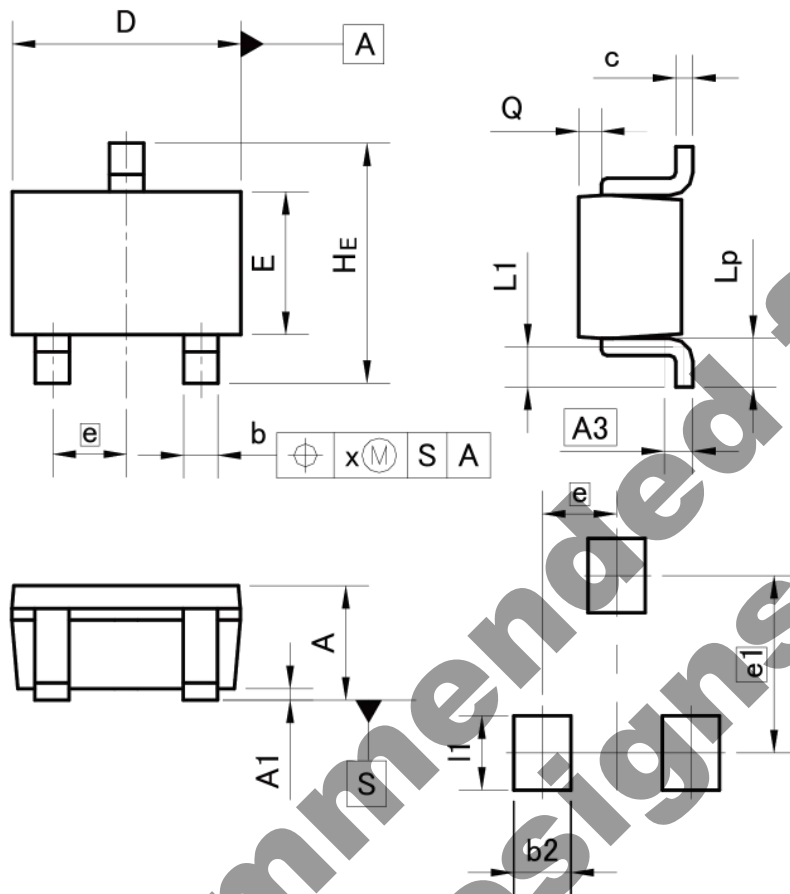
Fig.1-2 Switching Waveforms



Not Recommended for New Designs

●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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