

Transistor

2.5V Drive Pch MOS FET

RTQ030P02

●Structure

Silicon P-channel MOSFET

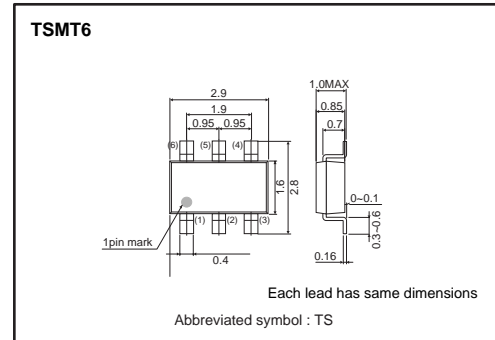
●Features

- 1) Low On-resistance.(110mΩ at 2.5V)
- 2) High Power Package.
- 3) High speed switching.
- 4) Low voltage drive.(2.5V)

●Applications

DC-DC converter

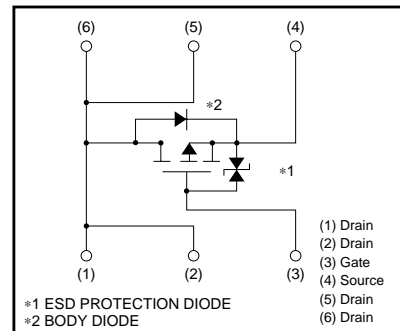
●External dimensions (Unit : mm)



●Packaging specifications

| | | |
|-----------|------------------------------|--------|
| Type | Package | Taping |
| | Code | TR |
| | Basic ordering unit (pieces) | 3000 |
| RTQ030P02 | | ○ |

●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|------------------------------|-------------------|--------------------|-------|
| Drain-source voltage | V _{DSS} | -20 | V |
| Gate-source voltage | V _{GSS} | ±12 | V |
| Drain current | Continuous | I _D | ±3 A |
| | Pulsed | I _{DP} *1 | ±12 A |
| Source current (Body diode) | Continuous | I _S | -1 A |
| | Pulsed | I _{SP} *1 | -4 A |
| Total power dissipation | P _D *2 | 1.25 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Range of Storage temperature | T _{stg} | -55 to +150 | °C |

*1 P_w≤10μs, Duty cycle≤1%
*2 Mounted on a ceramic board

●Thermal resistance

| Parameter | Symbol | Limits | Unit |
|--------------------|-------------------------|--------|--------|
| Channel to ambient | R _{th(ch-a)} * | 100 | °C / W |

* Mounted on a ceramic board.

Transistor

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|----------------------------------|------|------|------|------|--|
| Gate-source leakage | I _{GSS} | – | – | ±10 | μA | V _{GS} =±12V, V _{DS} =0V |
| Drain-source breakdown voltage | V _{(BR)DSS} | –20 | – | – | V | I _D =–1mA, V _{GS} =0V |
| Zero gate voltage drain current | I _{DSS} | – | – | –1 | μA | V _{DS} =–20V, V _{GS} =0V |
| Gate threshold voltage | V _{GS(th)} | –0.7 | – | –2.0 | V | V _{DS} =–10V, I _D =–1mA |
| Static drain-source on-state resistance | R _{DS(on)} [*] | – | 60 | 80 | mΩ | I _D =–3A, V _{GS} =–4.5V |
| | | – | 65 | 90 | mΩ | I _D =–3A, V _{GS} =–4V |
| | | – | 110 | 150 | mΩ | I _D =–1.5A, V _{GS} =–2.5V |
| Forward transfer admittance | Y _{fs} [*] | 2.0 | – | – | S | V _{DS} =–10V, I _D =–1.5A |
| Input capacitance | C _{iss} | – | 800 | – | pF | V _{DS} =–10V, V _{GS} =0V f=1MHz |
| Output capacitance | C _{oss} | – | 150 | – | pF | |
| Reverse transfer capacitance | C _{rss} | – | 100 | – | pF | |
| Turn-on delay time | t _{d(on)} [*] | – | 15 | – | ns | I _D =–1.5A V _{DD} =–15V V _{GS} =–4.5V R _L =10Ω R _G =10Ω |
| Rise time | t _r [*] | – | 27 | – | ns | |
| Turn-off delay time | t _{d(off)} [*] | – | 50 | – | ns | |
| Fall time | t _f [*] | – | 20 | – | ns | |
| Total gate charge | Q _g | – | 9.0 | – | nC | V _{DD} =–15V V _{GS} =–4.5V I _D =–3A |
| Gate-source charge | Q _{gs} | – | 1.6 | – | nC | |
| Gate-drain charge | Q _{gd} | – | 4.6 | – | nC | |

*PULSED

●Body diode characteristics (Source-drain) (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|-----------------|------|------|------|------|--|
| Forward voltage | V _{SD} | – | – | –1.2 | V | I _S =–1A, V _{GS} =0V |

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●Electrical characteristic curves

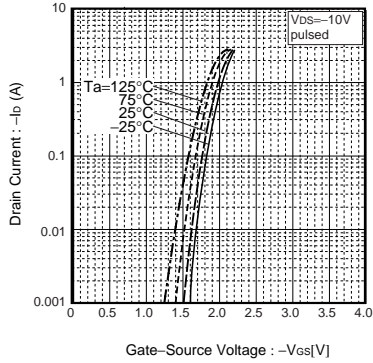


Fig.1 Typical Transfer Characteristics

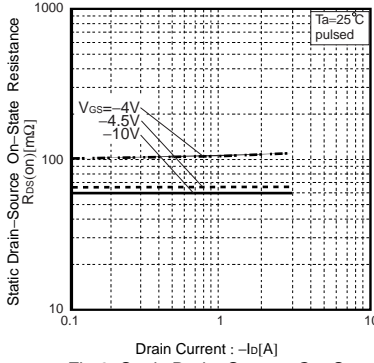


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

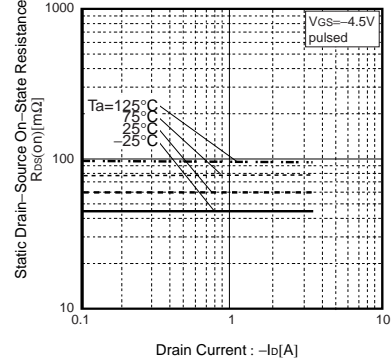


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

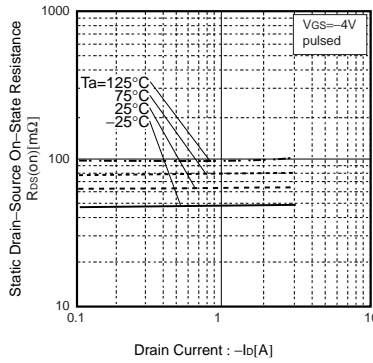


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

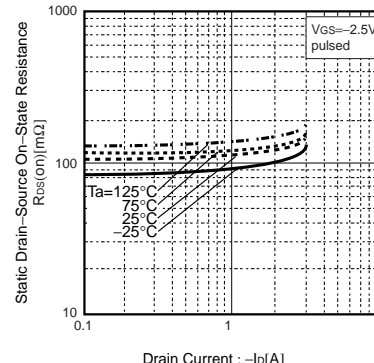


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

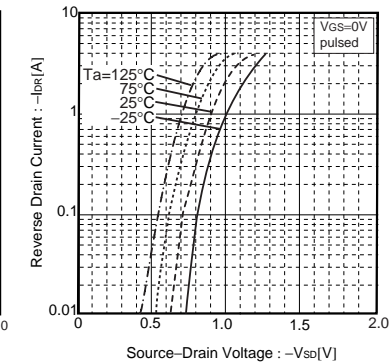


Fig.6 Reverse Drain Current vs. Source-Drain Voltage

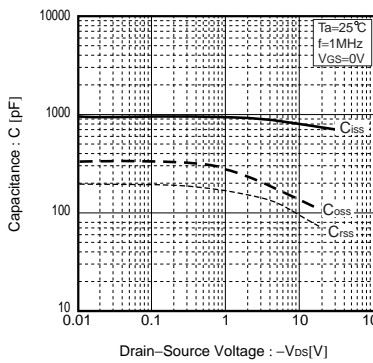


Fig.7 Typical Capacitance vs. Drain-Source Voltage

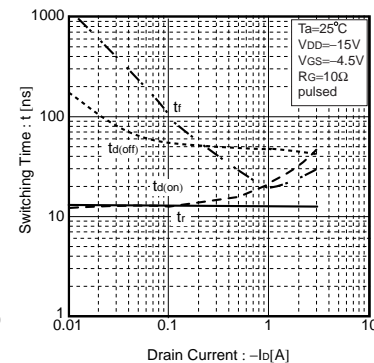


Fig.8 Switching Characteristics

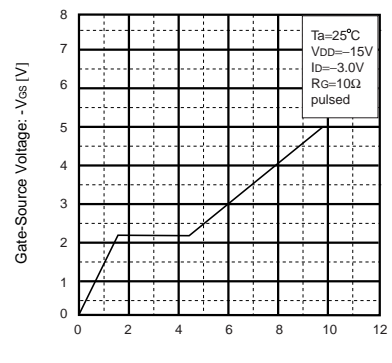


Fig.9 Dynamic Input Characteristics

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●Measurement circuits

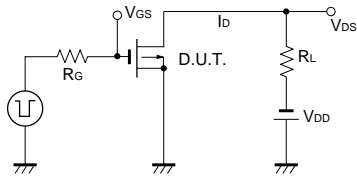


Fig.10 Switching Time Measurement Circuit

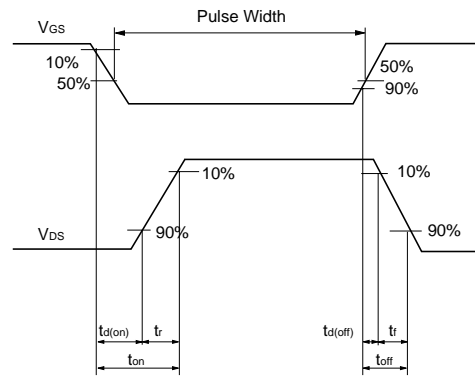


Fig.11 Switching Waveforms

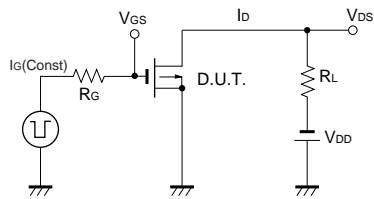


Fig.12 Gate Charge Measurement Circuit

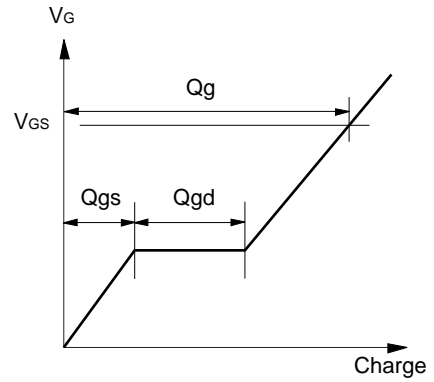


Fig.13 Gate Charge Waveforms

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