

10V Drive Nch MOSFET

RSJ400N06

● Structure

Silicon N-channel MOSFET

● Features

- 1) Low on-resistance.
- 2) High current
- 3) High power Package

● Application

Switching

● Packaging specifications

| Type | Package | Taping |
|-----------|------------------------------|--------|
| | Code | TL |
| | Basic ordering unit (pieces) | 1000 |
| RSJ400N06 | | ○ |

● Absolute maximum ratings (T_a = 25°C)

| Parameter | Symbol | Limits | Unit | |
|--------------------------------|-------------------|--------------------|------|---|
| Drain-source voltage | V _{DSS} | 60 | V | |
| Gate-source voltage | V _{GSS} | ±20 | V | |
| Drain current | Continuous | I _D | ±40 | A |
| | Pulsed | I _{DP} *1 | ±80 | A |
| Source current (Body Diode) | Continuous | I _S | 40 | A |
| | Pulsed | I _{SP} *1 | 80 | A |
| Power dissipation | P _D *2 | 50 | W | |
| Channel temperature | T _{ch} | 150 | °C | |
| Range of storage temperature | T _{stg} | -55 to +150 | °C | |

*1 P_w≤10μs, Duty cycle≤1%

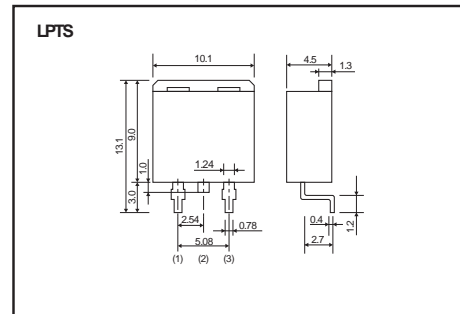
*2 T_c=25°C

● Thermal resistance

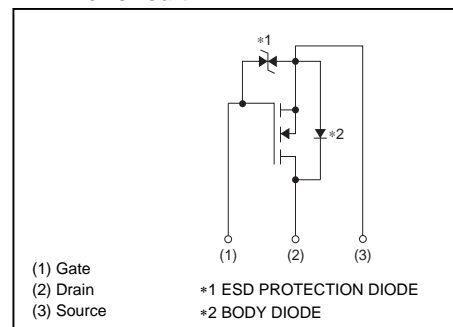
| Parameter | Symbol | Limits | Unit |
|-----------------|--------------------------|--------|--------|
| Channel to Case | R _{th (ch-c)} * | 2.5 | °C / W |

* T_c=25°C

● Dimensions (Unit : mm)



● Inner circuit



●Electrical characteristics (T_a = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|-----------------------|------|------|------|------|--|
| Gate-source leakage | I _{GSS} | - | - | ±10 | μA | V _{GS} =±20V, V _{DS} =0V |
| Drain-source breakdown voltage | V _{(BR)DSS} | 60 | - | - | V | I _D =1mA, V _{GS} =0V |
| Zero gate voltage drain current | I _{DSS} | - | - | 1 | μA | V _{DS} =60V, V _{GS} =0V |
| Gate threshold voltage | V _{GS(th)} | 1.0 | - | 3.0 | V | V _{DS} =10V, I _D =1mA |
| Static drain-source on-state resistance | R _{DS(on)} * | - | 11 | 16 | mΩ | I _D =40A, V _{GS} =10V |
| Forward transfer admittance | Y _{fs} * | 14 | - | - | S | I _D =20A, V _{DS} =10V |
| Input capacitance | C _{iss} | - | 2400 | - | pF | V _{DS} =10V |
| Output capacitance | C _{oss} | - | 490 | - | pF | V _{GS} =0V |
| Reverse transfer capacitance | C _{rss} | - | 250 | - | pF | f=1MHz |
| Turn-on delay time | t _{d(on)} * | - | 20 | - | ns | I _D =20A, V _{DD} ≒30V |
| Rise time | t _r * | - | 60 | - | ns | V _{GS} =10V |
| Turn-off delay time | t _{d(off)} * | - | 90 | - | ns | R _L =1.5Ω |
| Fall time | t _f * | - | 140 | - | ns | R _G =10Ω |
| Total gate charge | Q _g * | - | 52 | - | nC | V _{DD} ≒30V |
| Gate-source charge | Q _{gs} * | - | 8 | - | nC | I _D =40A, |
| Gate-drain charge | Q _{gd} * | - | 15 | - | nC | V _{GS} =10V |

*Pulsed

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|-------------------|------|------|------|------|--|
| Forward Voltage | V _{SD} * | - | - | 1.2 | V | I _s =40A, V _{GS} =0V |

*Pulsed

●Electrical characteristic curves (Ta=25°C)

Fig.1 Static Drain-Source On-State Resistance vs. Drain Current

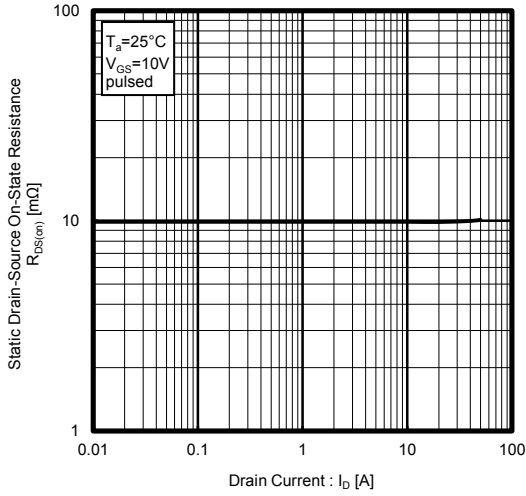


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

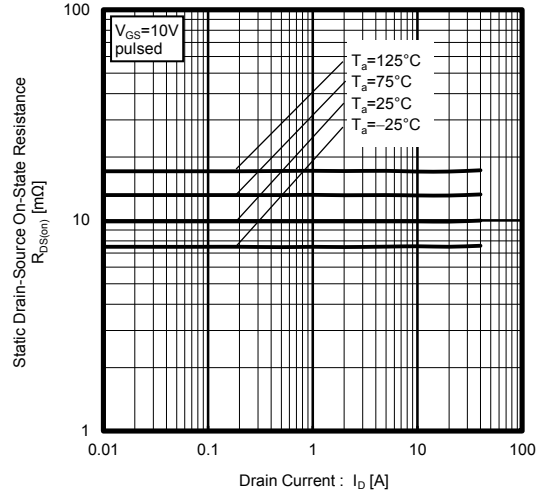


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

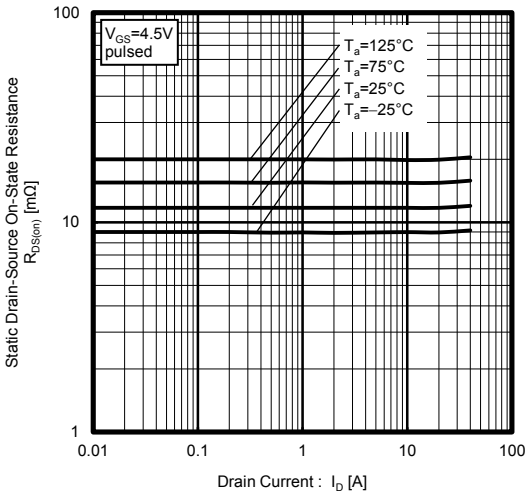


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

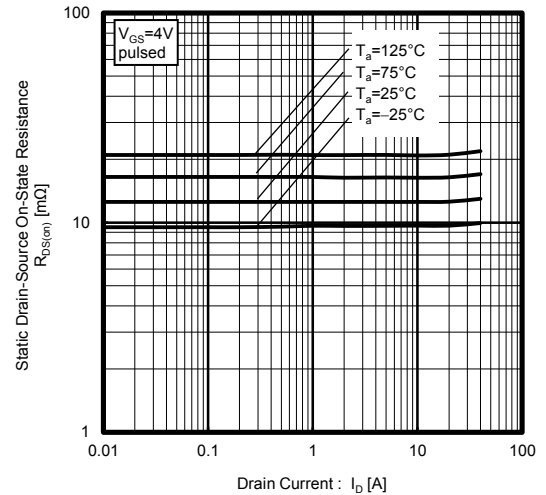


Fig.5 Forward Transfer Admittance vs. Drain Current

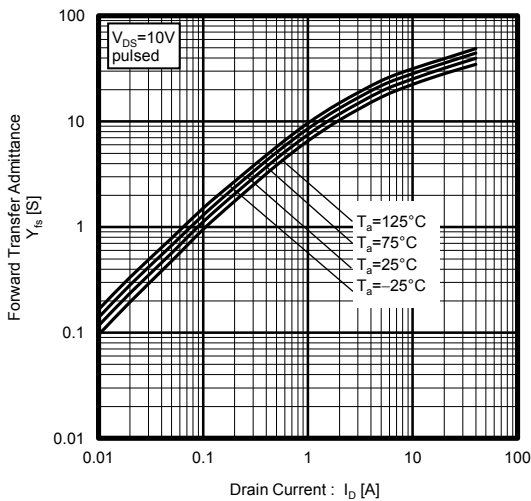


Fig.6 Typical Transfer Characteristics

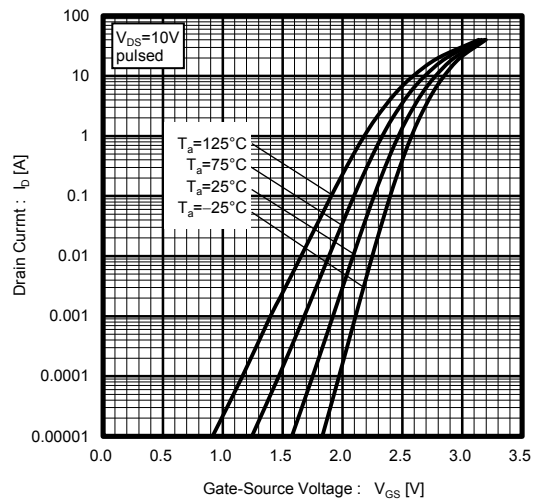


Fig.7 Source Current vs. Source-Drain Voltage

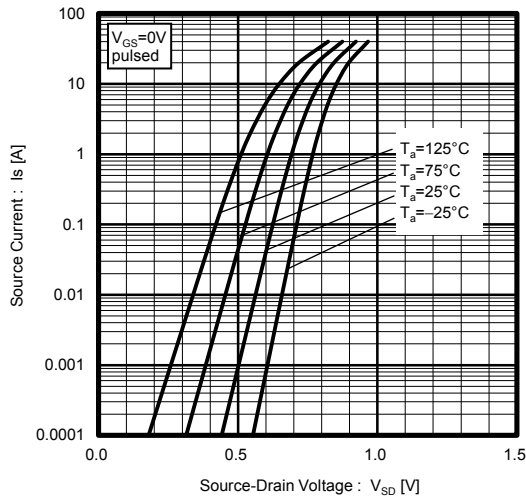


Fig.8 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

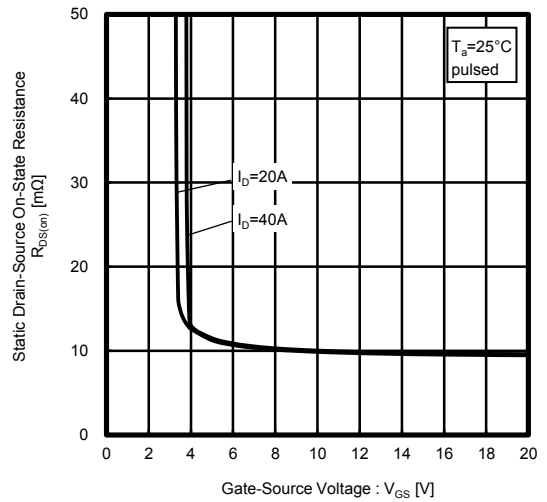


Fig.9 Switching Characteristics

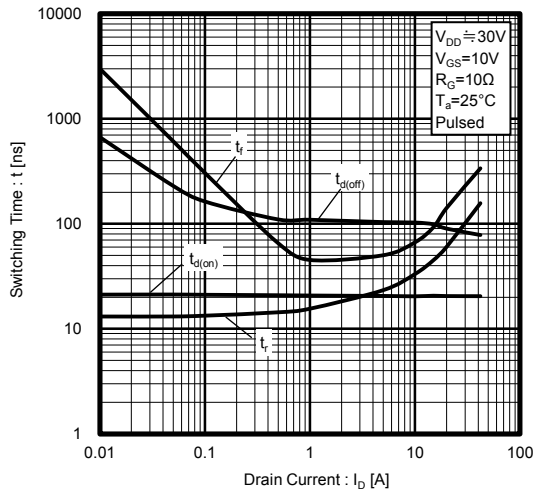


Fig.10 Dynamic Input Characteristics

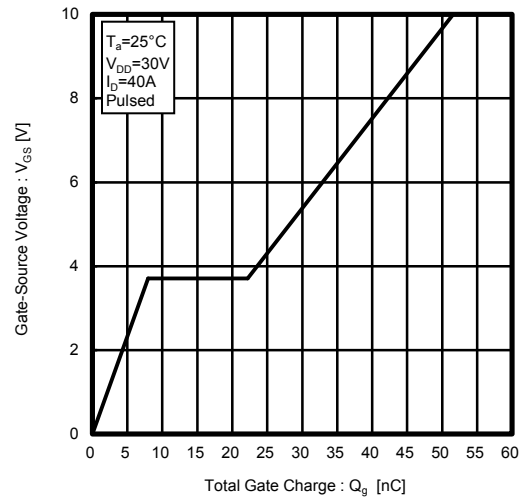


Fig.11 Typical Capacitance vs. Drain-Source Voltage

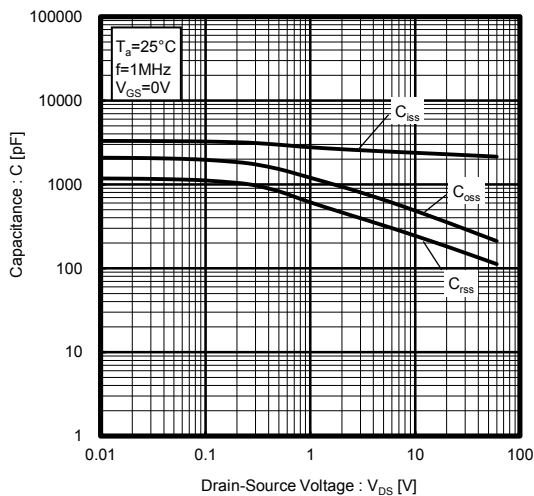
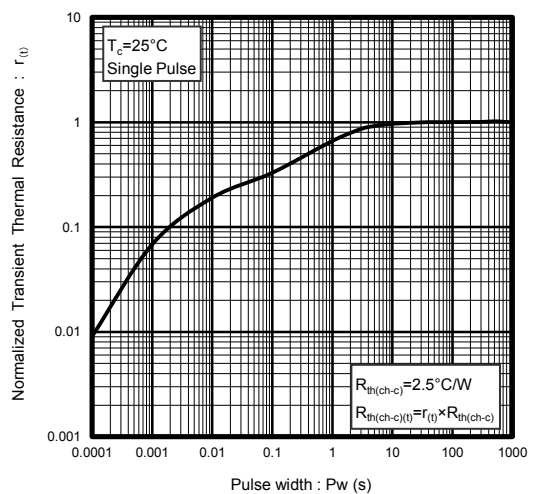


Fig.12 Normalized Transient Thermal Resistance v.s. Pulse Width



● Measurement circuits

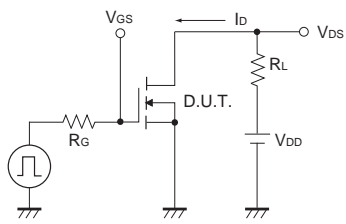


Fig.1-1 Switching Time Measurement Circuit

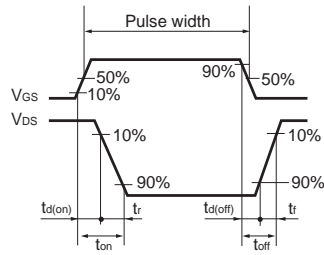


Fig.1-2 Switching Waveforms

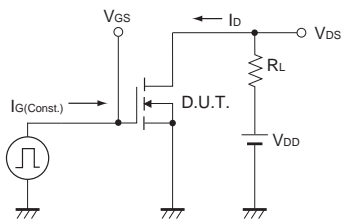


Fig.2-1 Gate Charge Measurement Circuit

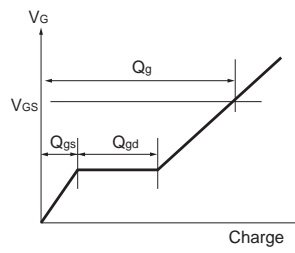


Fig.2-2 Gate Charge Waveform

Notes

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