

4V Drive Pch MOSFET

RRH075P03

●Structure

Silicon P-channel MOSFET

●Features

- 1) Low on-resistance.
- 2) Built-in G-S Protection Diode.
- 3) Small Surface Mount Package (SOP8).

●Application

Switching

●Packaging specifications

| | | |
|-----------|------------------------------|--------|
| Type | Package | Taping |
| | Code | TB |
| | Basic ordering unit (pieces) | 2500 |
| RRH075P03 | | ○ |

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit | |
|------------------------------|-------------------|--------------------|------|---|
| Drain-source voltage | V _{bss} | -30 | V | |
| Gate-source voltage | V _{GSS} | ±20 | V | |
| Drain current | Continuous | I _D | ±7.5 | A |
| | Pulsed | I _{DP} *1 | ±30 | A |
| Source current (Body Diode) | Continuous | I _S | -1.6 | A |
| | Pulsed | I _{SP} *1 | -30 | A |
| Total power dissipation | P _D *2 | 2.0 | W | |
| Channel temperature | T _{ch} | 150 | °C | |
| Range of storage temperature | T _{stg} | -55 to +150 | °C | |

*1 P_w ≤ 10μs, Duty cycle ≤ 1%

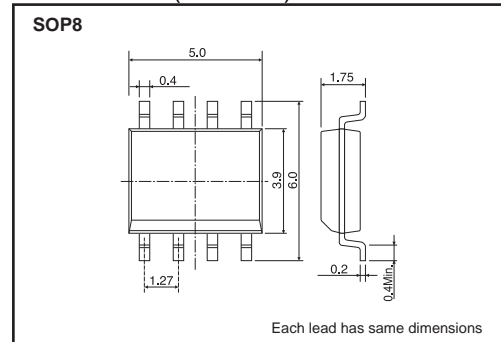
*2 Mounted on a ceramic board.

●Thermal resistance

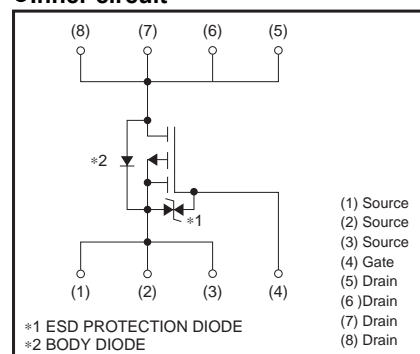
| Parameter | Symbol | Limits | Unit |
|--------------------|--------------------------|--------|--------|
| Channel to Ambient | R _{th (ch-a)} * | 62.5 | °C / W |

* Mounted on a ceramic board.

●Dimensions (Unit : mm)



●Inner circuit



●Electrical characteristics (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|----------------|------|------|------|------|--|
| Gate-source leakage | I_{GSS} | – | – | ±10 | μA | $V_{GS}=\pm 20V, V_{DS}=0V$ |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | –30 | – | – | V | $I_D=-1mA, V_{GS}=0V$ |
| Zero gate voltage drain current | I_{DSS} | – | – | –1 | μA | $V_{DS}=-30V, V_{GS}=0V$ |
| Gate threshold voltage | $V_{GS(th)}$ | –1.0 | – | –2.5 | V | $V_{DS}=-10V, I_D=-1mA$ |
| Static drain-source on-state resistance | $R_{DS(on)}$ * | – | 15 | 21 | mΩ | $I_D=-7.5A, V_{GS}=-10V$ |
| | | – | 22 | 31 | | $I_D=-4A, V_{GS}=-4.5V$ |
| | | – | 25 | 35 | | $I_D=-4A, V_{GS}=-4.0V$ |
| Forward transfer admittance | $ Y_{fs} $ * | 9 | – | – | S | $I_D=-7.5A, V_{DS}=-10V$ |
| Input capacitance | C_{iss} | – | 1900 | – | pF | $V_{DS}=-10V$ |
| Output capacitance | C_{oss} | – | 250 | – | pF | $V_{GS}=0V$ |
| Reverse transfer capacitance | C_{rss} | – | 250 | – | pF | $f=1MHz$ |
| Turn-on delay time | $t_{d(on)}$ * | – | 14 | – | ns | $I_D=-4A, V_{DD} \approx -15V$ |
| Rise time | t_r * | – | 25 | – | ns | $V_{GS}=-10V$ |
| Turn-off delay time | $t_{d(off)}$ * | – | 100 | – | ns | $R_L=3.8\Omega$ |
| Fall time | t_f * | – | 70 | – | ns | $R_G=10\Omega$ |
| Total gate charge | Q_g * | – | 21 | – | nC | $I_D=-7.5A, V_{DD} \approx -15V$ $V_{GS}=-5V$ |
| Gate-source charge | Q_{gs} * | – | 5 | – | nC | $R_L=2.0\Omega$ |
| Gate-drain charge | Q_{gd} * | – | 7 | – | nC | $R_G=10\Omega$ |

*Pulsed

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|-----------------|------------|------|------|------|------|------------------------|
| Forward Voltage | V_{SD} * | – | – | –1.2 | V | $I_S=-7.5A, V_{GS}=0V$ |

*Pulsed

●Electrical characteristics curves

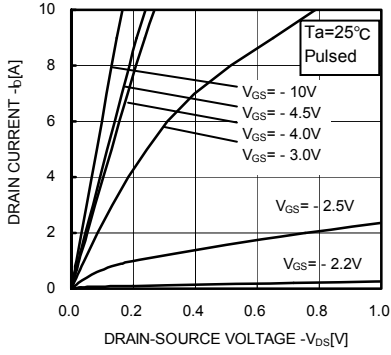


Fig.1 Typical output characteristics(I)

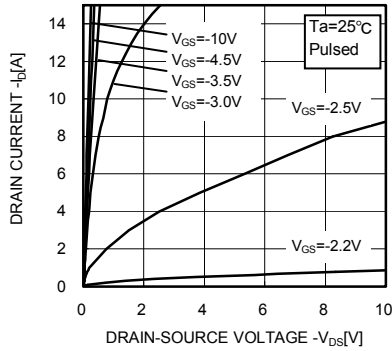


Fig.2 Typical output characteristics(II)

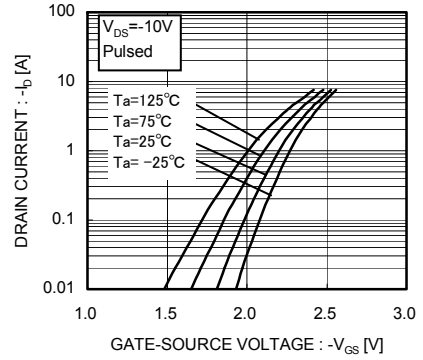


Fig.3 Typical Transfer Characteristics

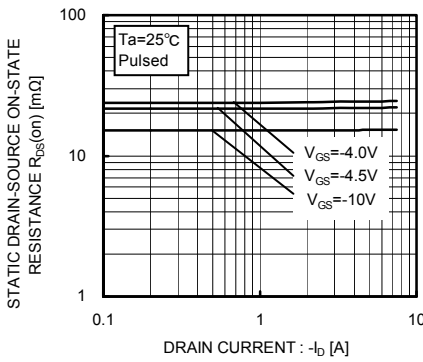


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(I)

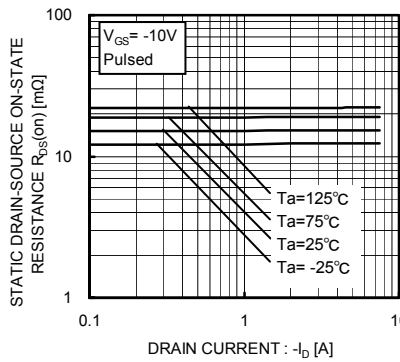


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(II)

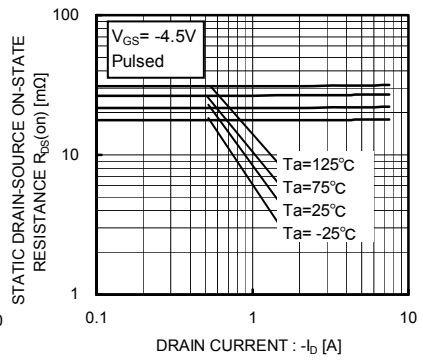


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(III)

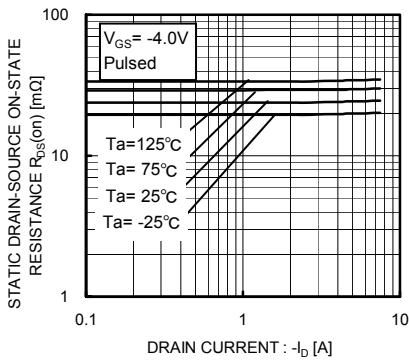


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

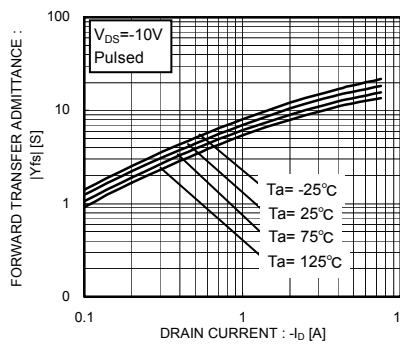


Fig.8 Forward Transfer Admittance vs. Drain Current

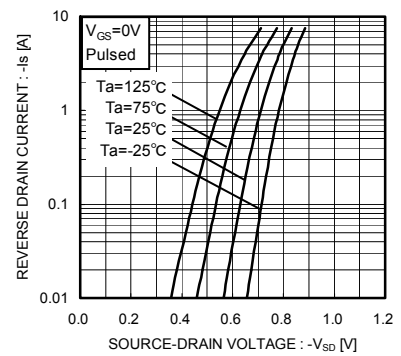


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

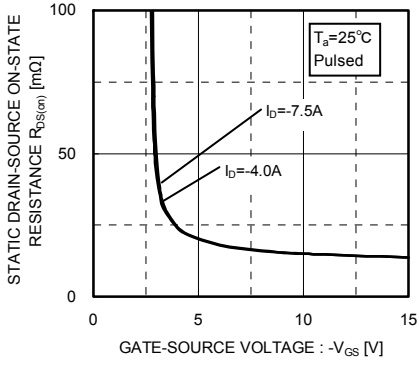


Fig.10 Static Drain-Source On-State Resistance vs. Gate Source Voltage

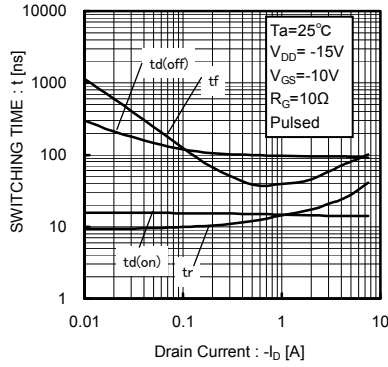


Fig.11 Switching Characteristics

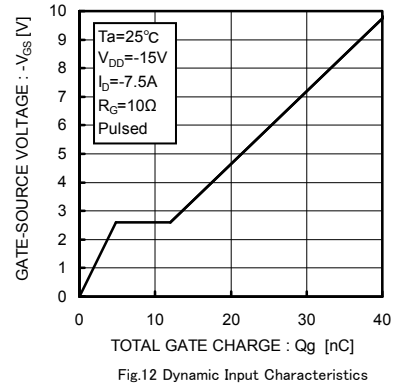


Fig.12 Dynamic Input Characteristics

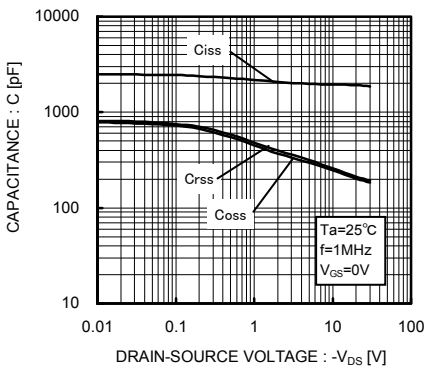


Fig.13 Typical Capacitance vs. Drain-Source Voltage

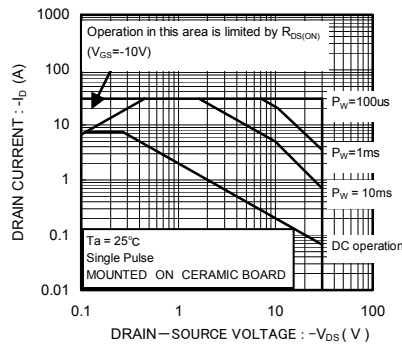


Fig.14 Maximum Safe Operating Area

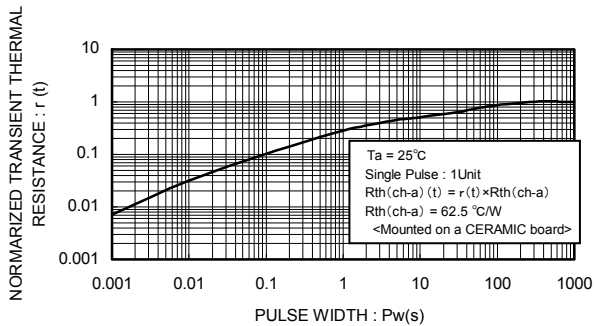


Fig.15 Normalized Transient Thermal Resistance vs. Pulse Width

●Measurement circuit

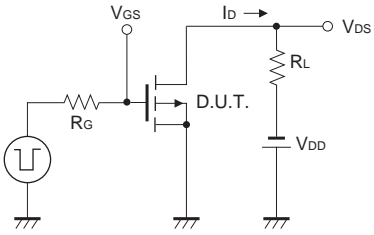


Fig.1-1 Switching Time Measurement Circuit

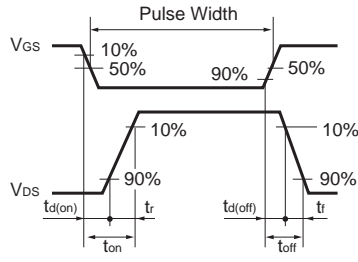


Fig.1-2 Switching Waveforms

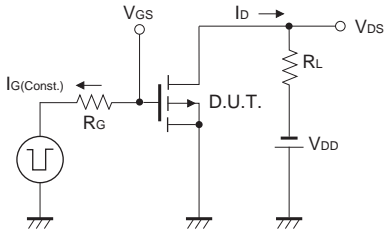


Fig.2-1 Gate Charge Measurement Circuit

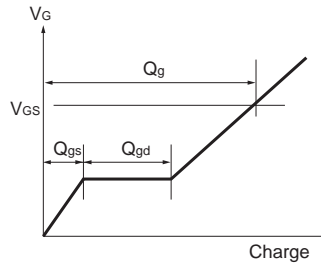


Fig.2-2 Gate Charge Waveform

Notes

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