

4V Drive Pch MOS FET

RSS075P03

●Structure

Silicon P-channel MOS FET

●Features

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

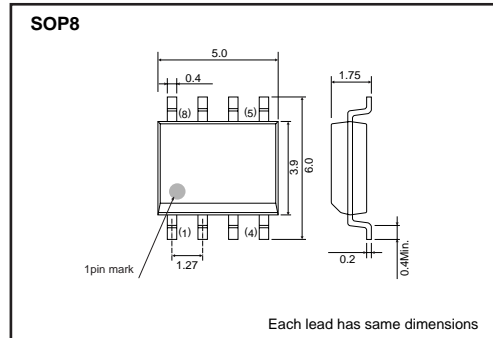
●Application

Power switching, DC / DC converter.

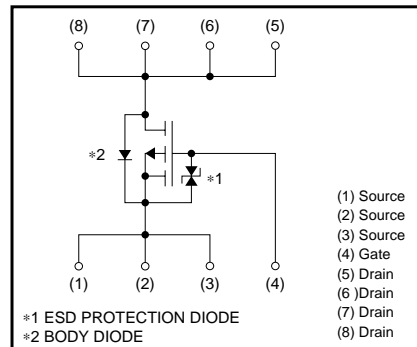
●Packaging specifications

| | | |
|-----------|------------------------------|--------|
| Type | Package | Taping |
| | Code | TB |
| | Basic ordering unit (pieces) | 2500 |
| RSS075P03 | | ○ |

●External dimensions (Unit : mm)



●Equivalent circuit



●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit | |
|------------------------------|------------|-------------|------|---|
| Drain-source voltage | V_{DSS} | -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 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$
 *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.

Transistors

●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | 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 | mΩ | $I_D = -4.0A, V_{GS} = -4.5V$ |
| | | – | 25 | 35 | mΩ | $I_D = -4.0A, V_{GS} = -4.0V$ |
| Forward transfer admittance | $ Y_{fs} $ * | 6.0 | – | – | S | $V_{DS} = -10V, I_D = -4.0A$ |
| Input capacitance | C_{iss} | – | 2900 | – | pF | $V_{DS} = -10V$ |
| Output capacitance | C_{oss} | – | 540 | – | pF | $V_{GS} = 0V$ |
| Reverse transfer capacitance | C_{rss} | – | 430 | – | pF | $f = 1MHz$ |
| Turn-on delay time | $t_{d(on)}$ * | – | 20 | – | ns | $I_D = -4.0A$ |
| Rise time | t_r * | – | 35 | – | ns | $V_{DD} = -15V$ |
| Turn-off delay time | $t_{d(off)}$ * | – | 85 | – | ns | $V_{GS} = -10V$ |
| Fall time | t_f * | – | 90 | – | ns | $R_L = 3.75\Omega$ $R_G = 10\Omega$ |
| Total gate charge | Q_g * | – | 30 | – | nC | $V_{DD} = -15V$ |
| Gate-source charge | Q_{gs} * | – | 5.5 | – | nC | $V_{GS} = -5V$ |
| Gate-drain charge | Q_{gd} * | – | 12 | – | nC | $I_D = -7.5A$ |

*Pulsed

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|----------|------|------|------|------|----------------------------|
| Forward voltage | V_{SD} | – | – | –1.2 | V | $I_S = -1.6A, V_{GS} = 0V$ |

Transistors

●Electrical characteristic curves

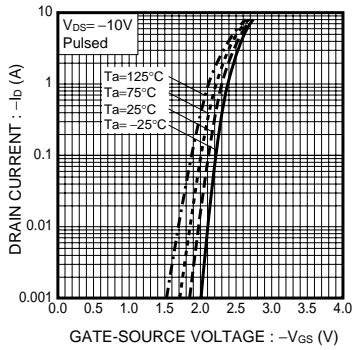


Fig.1 Typical Transfer Characteristics

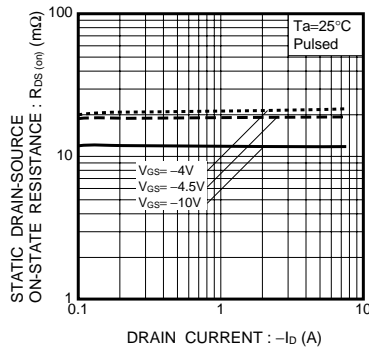


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

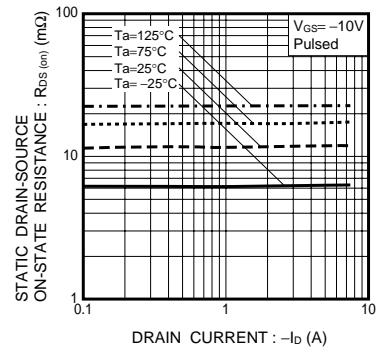


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

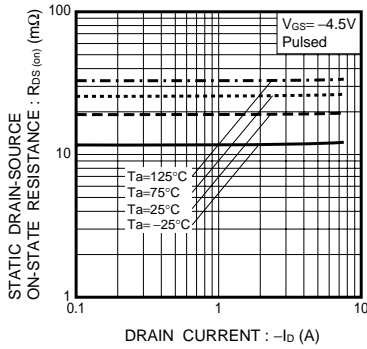


Fig.4 Static Drain-Source On-State vs. Drain Current

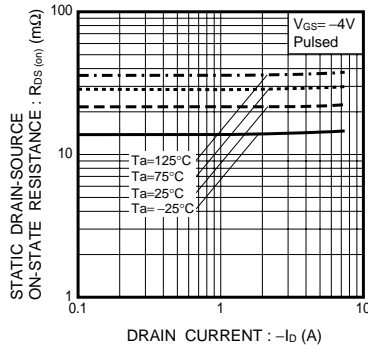


Fig.5 Static Drain-Source On-State vs. Drain Current

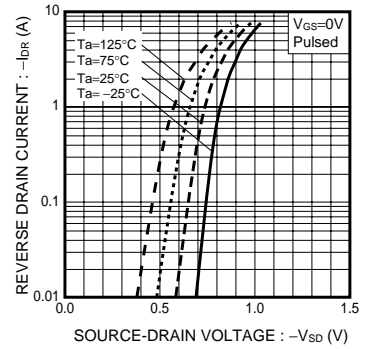


Fig.6 Reverse Drain Current Source-Drain Current

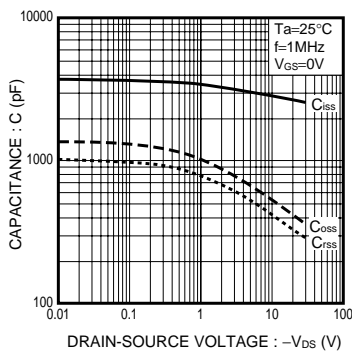


Fig.7 Typical Capacitance vs. Drain-Source Voltage

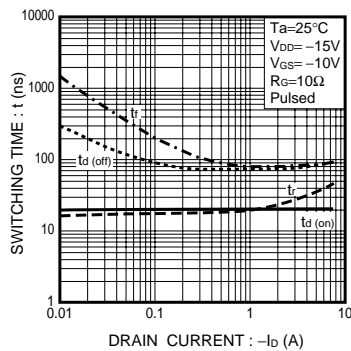


Fig.8 Switching Characteristics

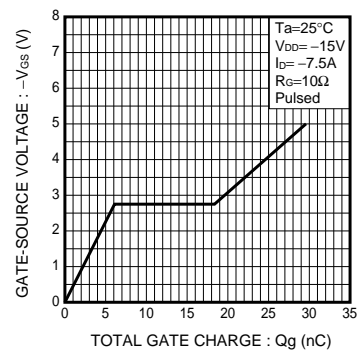


Fig.9 Dynamic Input Characteristics

Transistors

●Measurement circuits

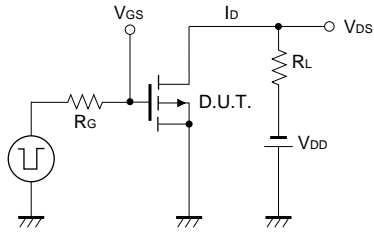


Fig.10 Switching Time Test Circuit

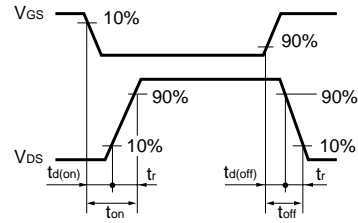


Fig.11 Switching Time Waveforms

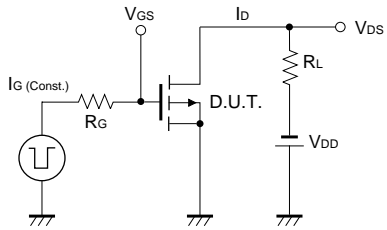


Fig.12 Gate Charge Test Circuit

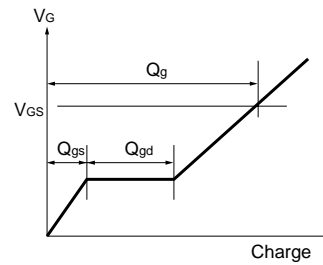


Fig.13 Gate Charge Waveform

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