

Transistor

4V Drive Pch MOS FET

RSS070P05

●Structure

Silicon P-channel
MOS FET

●Features

- 1) Built-in G-S Protection Diode.
- 2) Small and Surface Mount Package (SOP8).

●Applications

Power switching , DC / DC converter , Inverter

●Packaging dimensions

| Type | Package | Taping |
|-----------|------------------------------|--------|
| | Code | TB |
| | Basic ordering unit (pieces) | 2500 |
| RSS070P05 | | ○ |

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit | |
|--------------------------------|------------|-------------|-----------|---|
| Drain-source voltage | V_{DS} | -45 | V | |
| Gate-source voltage | V_{GS} | ± 20 | V | |
| Drain current | Continuous | I_D | ± 7.0 | A |
| | Pulsed | I_{DP} *1 | ± 28 | A |
| Source current (Body diode) | Continuous | I_S | -1.6 | A |
| | Pulsed | I_{SP} *1 | -28 | A |
| Total power dissipation | P_D *2 | 2 | W | |
| Chanel temperature | T_{ch} | 150 | °C | |
| Range of Storage temperature | T_{stg} | -55 to +150 | °C | |

*1 $PW \leq 10\mu s$, Duty cycle $\leq 1\%$

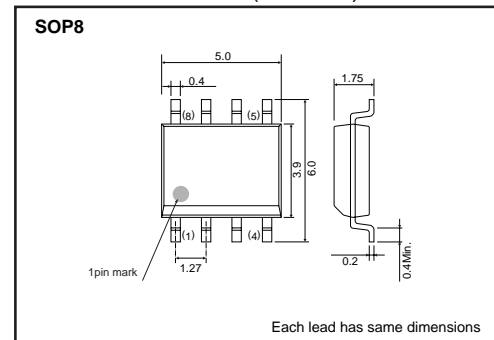
*2 Mounted on a ceramic board

●Thermal resistance

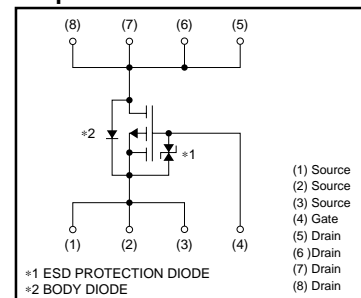
| Parameter | Symbol | Limits | Unit |
|-------------------|------------------|--------|------|
| Chanel to ambient | $R_{th(ch-a)}$ * | 62.5 | °C/W |

* Mounted on a ceramic board

●External dimensions (Unit : mm)



●Equivalent circuit



Transistor

●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 | $V_{(BR)DSS}$ | –45 | – | – | V | $I_D = -1mA, V_{GS}=0V$ |
| Zero gate voltage drain current | I_{DSS} | – | – | –1 | μA | $V_{DS} = -45V, V_{GS}=0V$ |
| Gate threshold voltage | $V_{GS(th)}$ | –1.0 | – | –2.5 | V | $V_{DS} = -10V, I_D = -1mA$ |
| Static drain-source on-state resistance | $R_{DS(on)}^*$ | – | 19 | 27 | $m\Omega$ | $I_D = -7A, V_{GS} = -10V$ |
| | | – | 25 | 35 | $m\Omega$ | $I_D = -7A, V_{GS} = -4.5V$ |
| | | – | 28 | 39 | $m\Omega$ | $I_D = -7A, V_{GS} = -4.0V$ |
| Forward transfer admittance | $ Y_{fs} ^*$ | 10.0 | – | – | S | $V_{DS} = -10V, I_D = -7A$ |
| Input capacitance | C_{iss} | – | 4100 | – | pF | $V_{DS} = -10V$ |
| Output capacitance | C_{oss} | – | 510 | – | pF | $V_{GS}=0V$ |
| Reverse transfer capacitance | C_{rss} | – | 330 | – | pF | $f=1MHz$ |
| Turn-on delay time | $t_{d(on)}^*$ | – | 31 | – | ns | $V_{DD} \doteq -25V$ |
| Rise time | t_r^* | – | 35 | – | ns | $I_D = -3.5A$ |
| Turn-off delay time | $t_{d(off)}^*$ | – | 135 | – | ns | $V_{GS} = -10V$ |
| Fall time | t_f^* | – | 50 | – | ns | $R_L = -7\Omega$ |
| Total gate charge | Q_g^* | – | 34.0 | 47.6 | nC | $V_{DD} \doteq -25V, V_{GS} = -5V$ |
| Gate-source charge | Q_{gs}^* | – | 9.5 | – | nC | $I_D = -7A$ |
| Gate-drain charge | Q_{gd}^* | – | 12 | – | nC | $R_L = 3.5\Omega, R_G = 10\Omega$ |

*Pulsed

Body diode characteristics (Source-Drain)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------|------------|------|------|------|------|------------------------|
| Forward voltage | V_{SD}^* | – | – | –1.2 | V | $I_S = -7A, V_{GS}=0V$ |

*Pulsed

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●Electrical characteristic curves

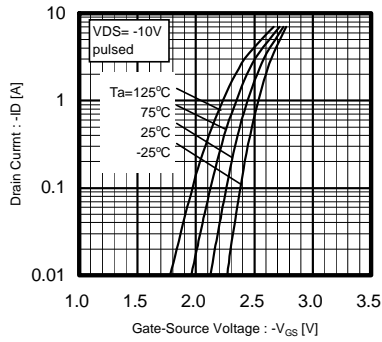


Fig.1 Typical Transfer Characteristics

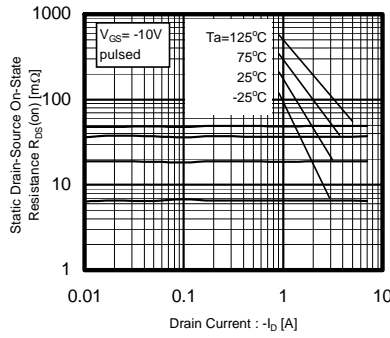


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current (1)

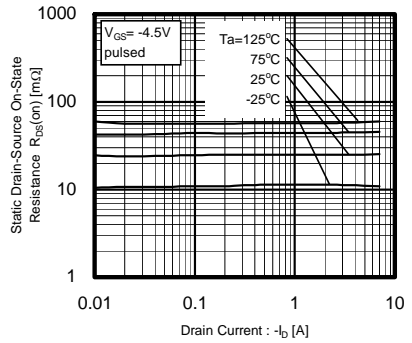


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current (2)

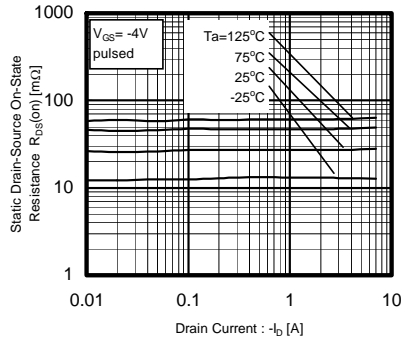


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current (3)

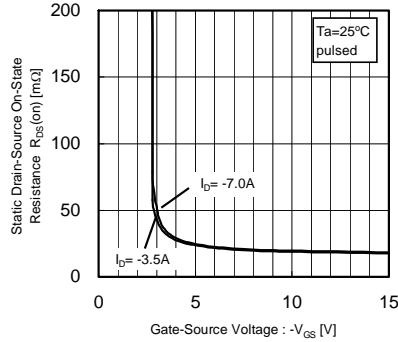


Fig.5 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

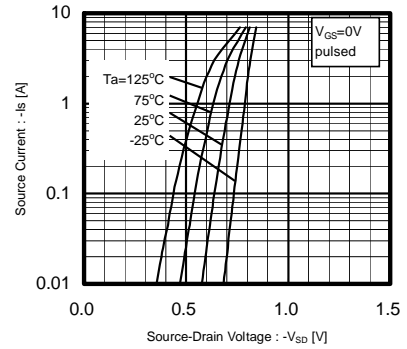


Fig.6 Source-Current vs. Source-Drain Voltage

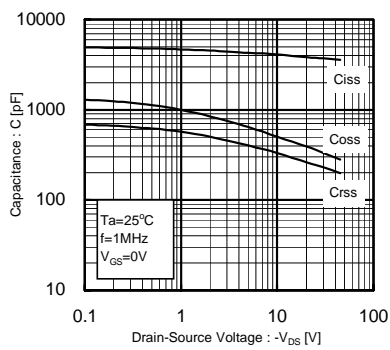


Fig.7 Typical capacitance vs. Source-Drain Voltage

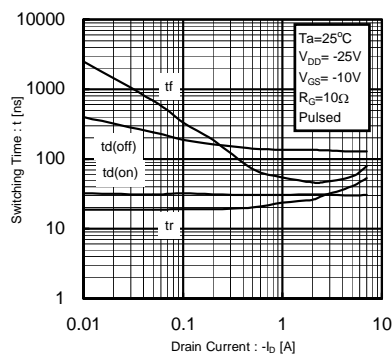


Fig.8 Switching Characteristics

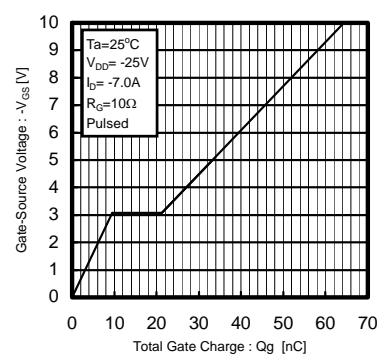


Fig.9 Dynamic Input Characteristics

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● Measurement circuits

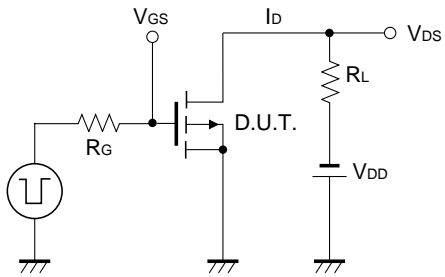


Fig.10 Switching Time Test Circuit

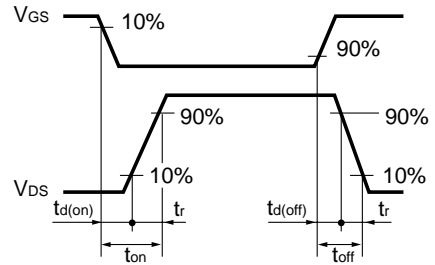


Fig.11 Switching Time Waveforms

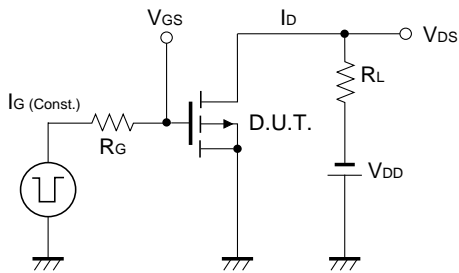


Fig.12 Gate Charge Test Circuit

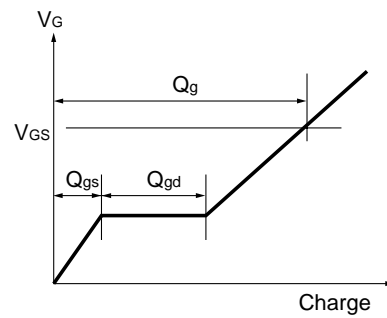


Fig.13 Gate Charge Waveform

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