

Switching (−30V, −4.5A)

SP8J2

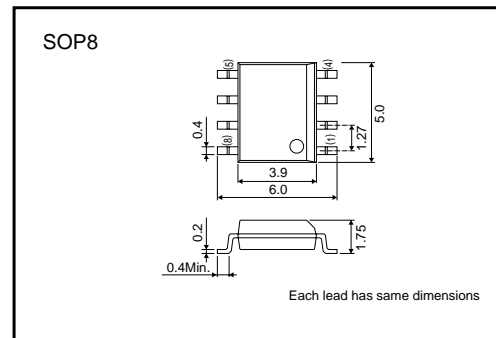
●Features

- 1) Low On-resistance. (57mΩ at 4.5V)
- 2) High Power Package.
- 3) High speed switching.
- 4) Low voltage drive. (4.5V)

●Applications

Power switching, DC-DC converter

●External dimensions (Unit : mm)



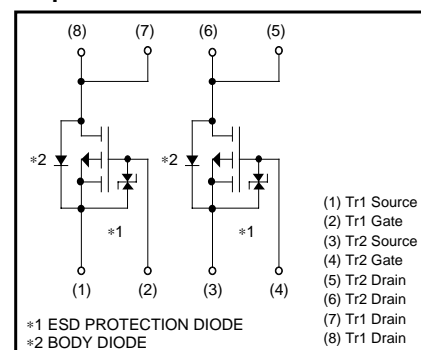
●Structure

Silicon P-channel
MOS FET

●Packaging specifications

| Type | Package | Taping |
|-------|------------------------------|--------|
| | Code | TB |
| | Basic ordering unit (pieces) | 2500 |
| SP8J2 | | ○ |

●Equivalent circuit



Transistors

●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 | ±4.5 |
| | Pulsed | I _{DP} | ±18 |
| Source current (Body diode) | Continuous | I _S | −1.6 |
| | Pulsed | I _{SP} | −18 |
| Total power dissipation | P _D | 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

●Electrical characteristics (Ta=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} | −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)} | − | 40 | 56 | mΩ | I _D = −4.5A, V _{GS} = −10V |
| | | − | 57 | 80 | mΩ | I _D = −2.5A, V _{GS} = −4.5V |
| | | − | 65 | 90 | mΩ | I _D = −2.5A, V _{GS} = −4.0V |
| Forward transfer admittance | Y _{fs} | 3.5 | − | − | S | V _{DS} = −10V, I _D = −2.5A |
| Input capacitance | C _{iss} | − | 850 | − | pF | V _{DS} = −10V |
| Output capacitance | C _{oss} | − | 190 | − | pF | V _{GS} =0V |
| Reverse transfer capacitance | C _{rss} | − | 120 | − | pF | f=1MHz |
| Turn-on delay time | t _{d (on)} | − | 10 | − | ns | I _D = −2.5A |
| Rise time | t _r | − | 25 | − | ns | V _{DD} ≒ −15V |
| Turn-off delay time | t _{d (off)} | − | 60 | − | ns | V _{GS} = −10V |
| Fall time | t _f | − | 25 | − | ns | R _L =6.0Ω |
| Total gate charge | Q _g | − | 8.5 | − | nC | V _{DD} ≒ −15V |
| Gate-source charge | Q _{gs} | − | 2.5 | − | nC | V _{GS} = −5V |
| Gate-drain charge | Q _{gd} | − | 3.0 | − | nC | I _D = −4.5A |

*Pulsed

Body diode characteristics (source-drain characteristics)

| | | | | | | |
|-----------------|-----------------|---|---|------|---|---------------------------------------------|
| Forward voltage | V _{SD} | − | − | −1.2 | V | I _S = −1.6A, V _{GS} =0V |
|-----------------|-----------------|---|---|------|---|---------------------------------------------|

Transistors

●Electrical characteristic curves

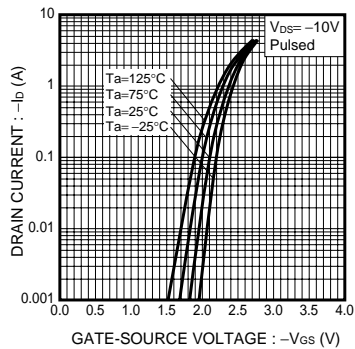


Fig.1 Typical Transfer Characteristics

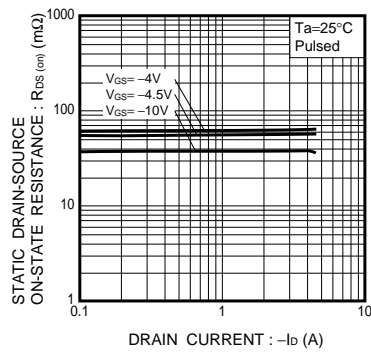


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

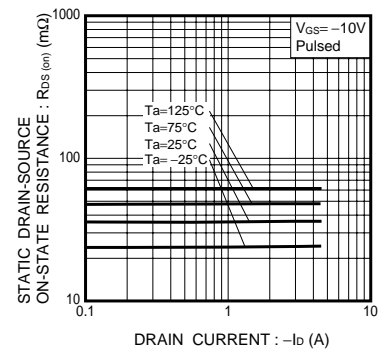


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

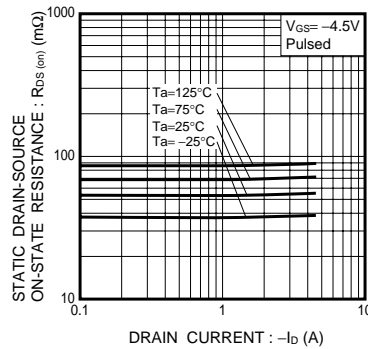


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current

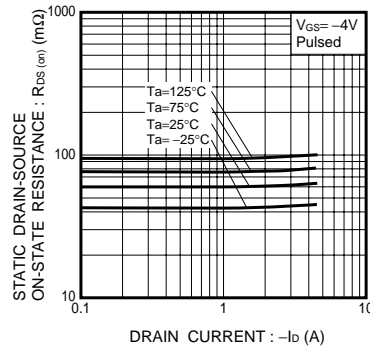


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

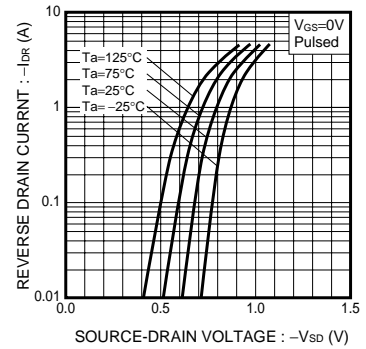


Fig.6 Reverse Drain Current Source-Drain Current

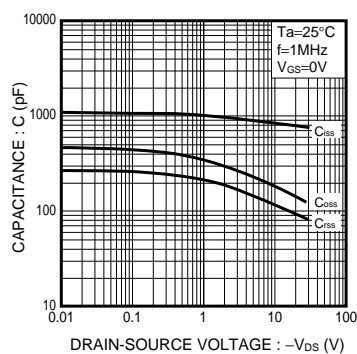


Fig.7 Typical Capacitance vs. Drain-Source Voltage

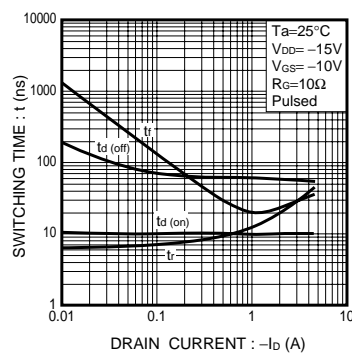


Fig.8 Switching Characteristics

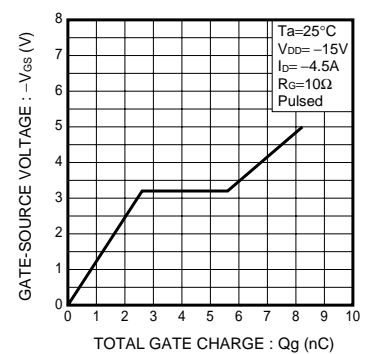


Fig.9 Dynamic Input Characteristics

Transistors

● Measurement circuits

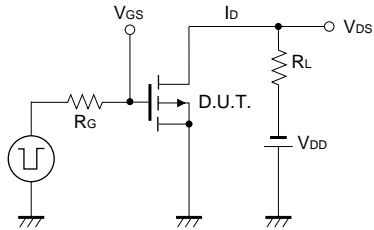


Fig.10 Switching Time Test Circuit

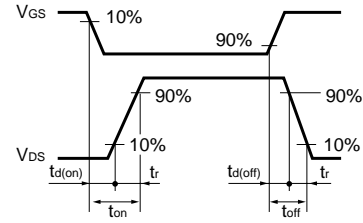


Fig.11 Switching Time Waveforms

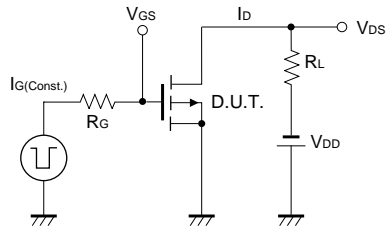


Fig.12 Gate Charge Test Circuit

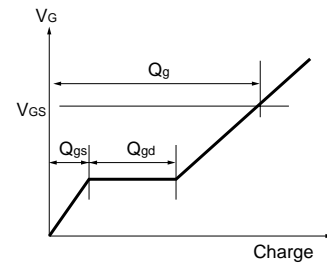


Fig.13 Gate Charge Waveform

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