



THE DATASHEET OF SP8J1TB



Switching (-30V, -5.0A)

SP8J1

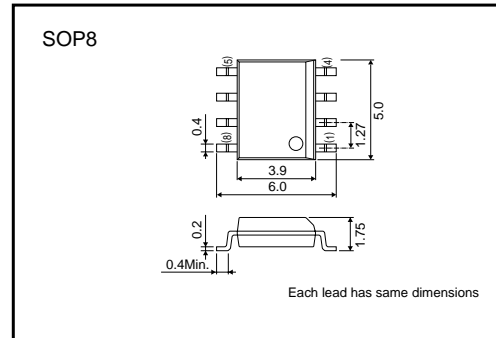
●Features

- 1) Low On-resistance. (40mΩ 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)



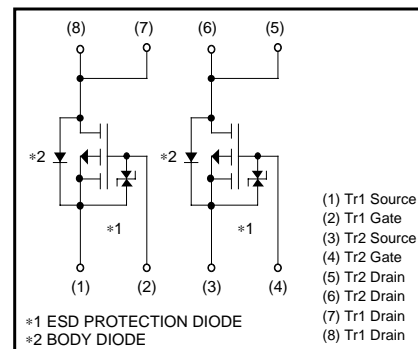
●Structure

Silicon P-channel
MOS FET

●Packaging specifications

| Type | Package | Taping |
|-------|------------------------------|--------|
| | | Code |
| | Basic ordering unit (pieces) | 2500 |
| SP8J1 | | ○ |

●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 | ±5.0 A |
| | Pulsed | I _{DP} | ±20 A |
| Source current (Body diode) | Continuous | I _S | -1.6 A |
| | Pulsed | I _{SP} | -20 A |
| 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)} | - | 30 | 42 | mΩ | I _D =-5.0A, V _{GS} =-10V |
| | | - | 40 | 56 | mΩ | I _D =-2.5A, V _{GS} =-4.5V |
| | | - | 45 | 63 | mΩ | I _D =-2.5A, V _{GS} =-4.0V |
| Forward transfer admittance | Y _{fs} | 4.5 | - | - | S | V _{DS} =-10V, I _D =-2.5A |
| Input capacitance | C _{iss} | - | 1400 | - | pF | V _{DS} =-10V |
| Output capacitance | C _{oss} | - | 300 | - | pF | V _{GS} =0V |
| Reverse transfer capacitance | C _{rss} | - | 230 | - | pF | f=1MHz |
| Turn-on delay time | t _{d(on)} | - | 15 | - | ns | I _D =-2.5A |
| Rise time | t _r | - | 30 | - | ns | V _{DD} ≐-15V |
| Turn-off delay time | t _{d(off)} | - | 80 | - | ns | V _{GS} =-10V |
| Fall time | t _f | - | 40 | - | ns | R _L =6Ω |
| Total gate charge | Q _g | - | 16 | - | nC | R _{GS} =10Ω |
| Gate-source charge | Q _{gs} | - | 3.5 | - | nC | V _{DD} ≐-15V |
| Gate-drain charge | Q _{gd} | - | 6.5 | - | nC | V _{GS} =-5V |
| | | | | | | I _D =-5.0A |

*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

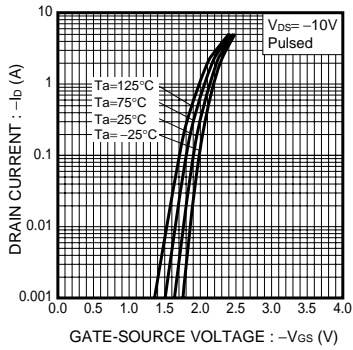


Fig.1 Typical Transfer Characteristics

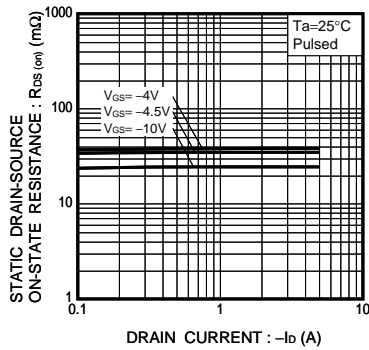


Fig.2 Static Drain-Source On-State Resistance vs. Drain Current

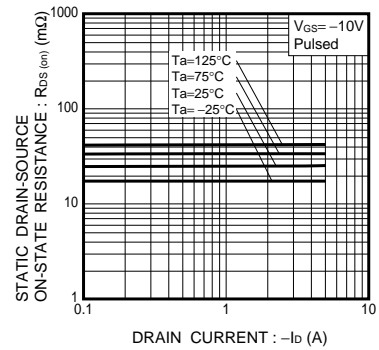


Fig.3 Static Drain-Source On-State Resistance vs. Drain Current

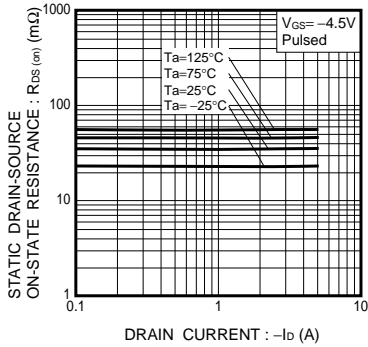


Fig.4 Static Drain-Source On-State vs. Drain Current

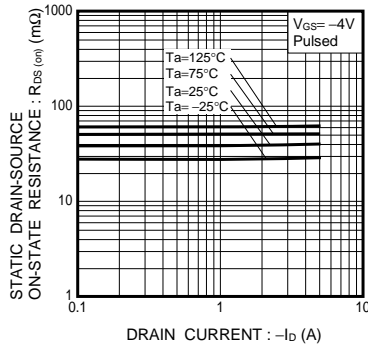


Fig.5 Static Drain-Source On-State vs. Drain Current

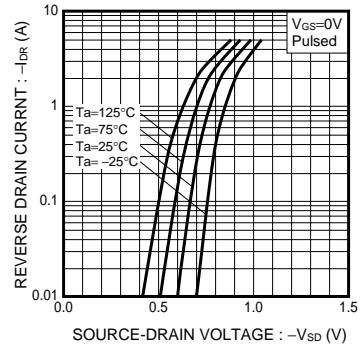


Fig.6 Reverse Drain Current Source-Drain Current

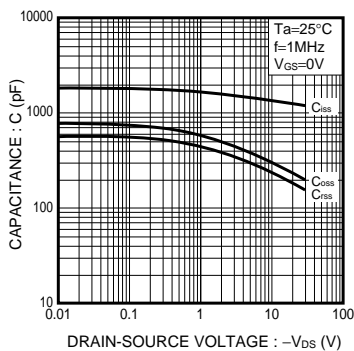


Fig.7 Typical Capacitance vs. Drain-Source Voltage

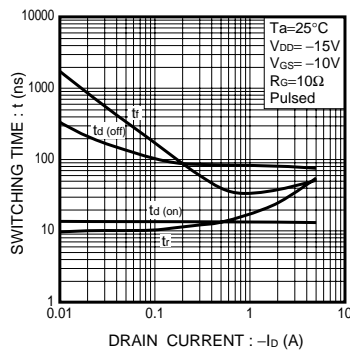


Fig.8 Switching Characteristics

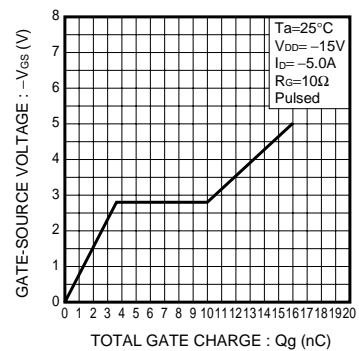


Fig.9 Dynamic Input Characteristics

Transistors

● Measurement circuits

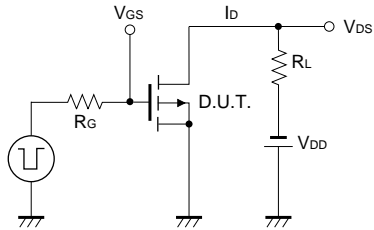


Fig.10 Switching Time Test Circuit

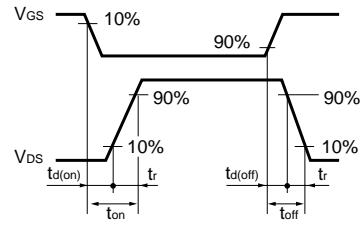


Fig.11 Switching Time Waveforms

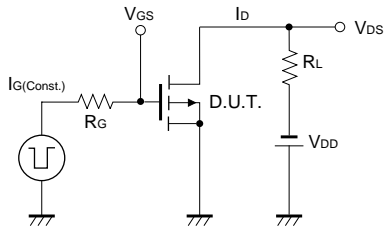


Fig.12 Gate Charge Test Circuit

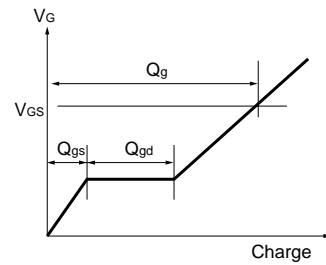


Fig.13 Gate Charge Waveform

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