



SANYO Semiconductors

## DATA SHEET

# SCH1301

P-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 1.8V drive.

### Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter                   | Symbol           | Conditions                                             | Ratings     | Unit |
|-----------------------------|------------------|--------------------------------------------------------|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |                                                        | -12         | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |                                                        | ±8          | V    |
| Drain Current (DC)          | I <sub>D</sub>   |                                                        | -2.4        | A    |
| Drain Current (Pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1%                                 | -9.6        | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) | 0.8         | W    |
| Channel Temperature         | T <sub>ch</sub>  |                                                        | 150         | °C   |
| Storage Temperature         | T <sub>stg</sub> |                                                        | -55 to +150 | °C   |

Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol               | Conditions                                    | Ratings |     |      | Unit |
|--------------------------------------------|----------------------|-----------------------------------------------|---------|-----|------|------|
|                                            |                      |                                               | min     | typ | max  |      |
| Drain-to-Source Breakdown Voltage          | V <sub>(BR)DSS</sub> | I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V     | -12     |     |      | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>D</sub> =-4V, V <sub>GS</sub> =0V      |         |     | -1   | μA   |
|                                            |                      | V <sub>D</sub> =-12V, V <sub>GS</sub> =0V     |         |     | -10  | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> =±6.4V, V <sub>D</sub> =0V    |         |     | ±10  | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>D</sub> =-6V, I <sub>D</sub> =-1mA     | -0.3    |     | -1.0 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>D</sub> =-6V, I <sub>D</sub> =-1.3A    | 2.52    | 4.2 |      | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)1</sub> | I <sub>D</sub> =-1.3A, V <sub>GS</sub> =-4.5V |         | 90  | 120  | mΩ   |
|                                            | R <sub>DS(on)2</sub> | I <sub>D</sub> =-0.7A, V <sub>GS</sub> =-2.5V |         | 125 | 175  | mΩ   |
|                                            | R <sub>DS(on)3</sub> | I <sub>D</sub> =-0.3A, V <sub>GS</sub> =-1.8V |         | 165 | 280  | mΩ   |
|                                            | R <sub>DS(on)4</sub> | I <sub>D</sub> =-0.1A, V <sub>GS</sub> =-1.5V |         | 330 | 580  | mΩ   |
| Input Capacitance                          | C <sub>iss</sub>     | V <sub>D</sub> =-6V, f=1MHz                   |         | 450 |      | pF   |
| Output Capacitance                         | C <sub>oss</sub>     | V <sub>D</sub> =-6V, f=1MHz                   |         | 100 |      | pF   |
| Reverse Transfer Capacitance               | C <sub>rss</sub>     | V <sub>D</sub> =-6V, f=1MHz                   |         | 85  |      | pF   |

Marking : JA

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# SCH1301

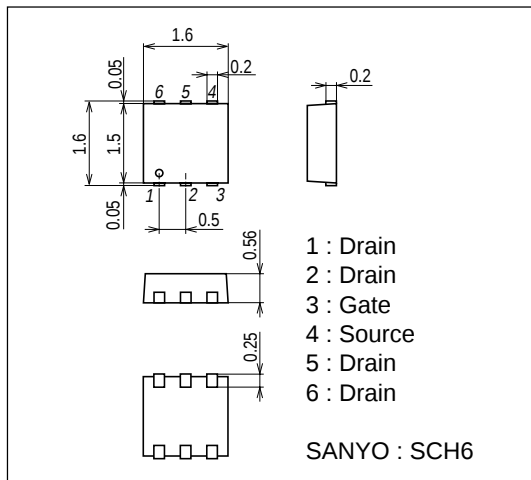
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| Parameter                     | Symbol       | Conditions                            | Ratings |       |      | Unit |
|-------------------------------|--------------|---------------------------------------|---------|-------|------|------|
|                               |              |                                       | min     | typ   | max  |      |
| Turn-ON Delay Time            | $t_{d(on)}$  | See specified Test Circuit.           |         | 15    |      | ns   |
| Rise Time                     | $t_r$        | See specified Test Circuit.           |         | 70    |      | ns   |
| Turn-OFF Delay Time           | $t_{d(off)}$ | See specified Test Circuit.           |         | 65    |      | ns   |
| Fall Time                     | $t_f$        | See specified Test Circuit.           |         | 50    |      | ns   |
| Total Gate Charge             | $Q_g$        | $V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.6A$ |         | 6.5   |      | nC   |
| Gate-to-Source Charge         | $Q_{gs}$     | $V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.6A$ |         | 0.8   |      | nC   |
| Gate-to-Drain "Miller" Charge | $Q_{gd}$     | $V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.6A$ |         | 2.0   |      | nC   |
| Diode Forward Voltage         | $V_{SD}$     | $I_S=-2.6A, V_{GS}=0V$                |         | -0.87 | -1.5 | V    |

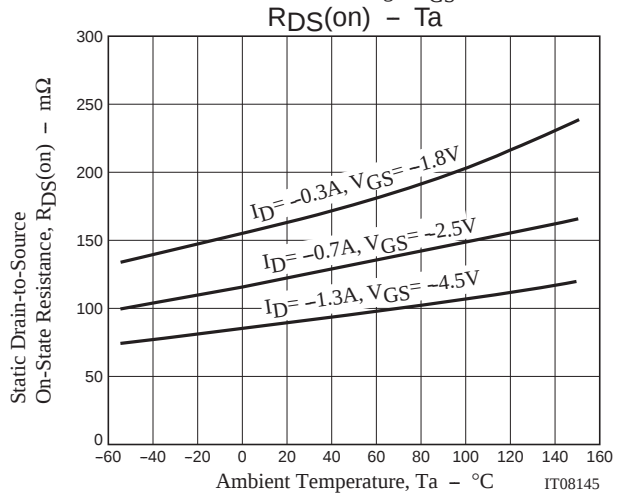
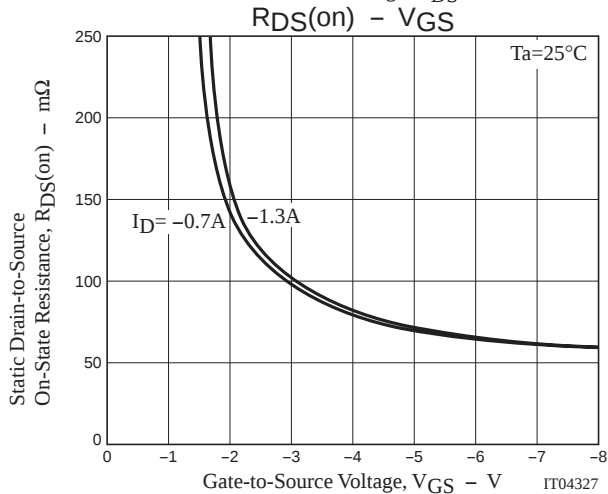
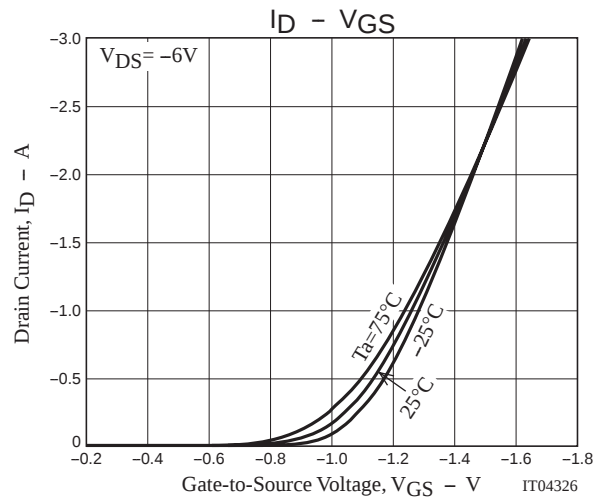
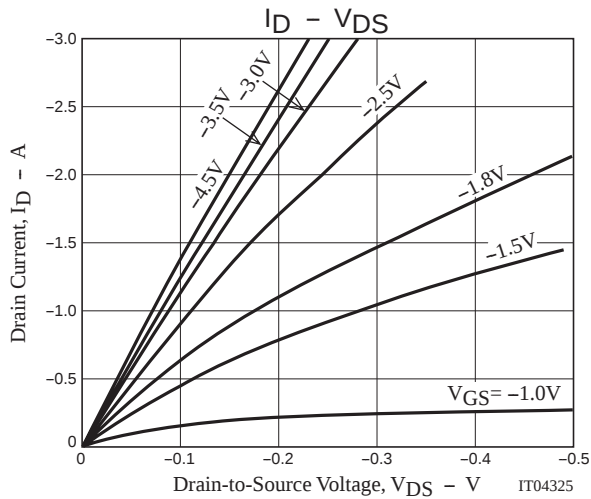
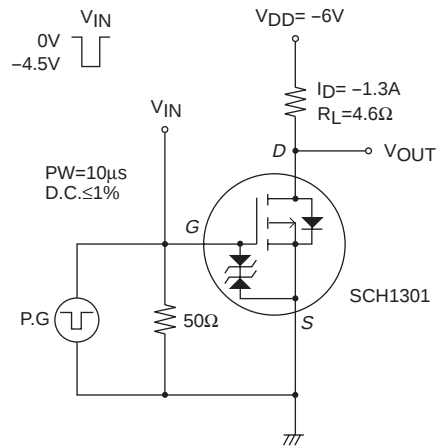
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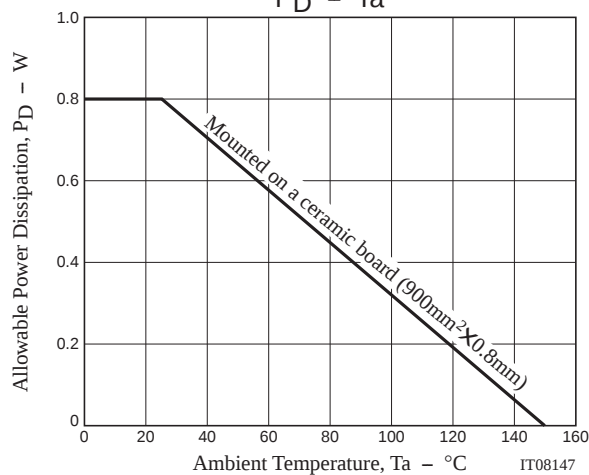
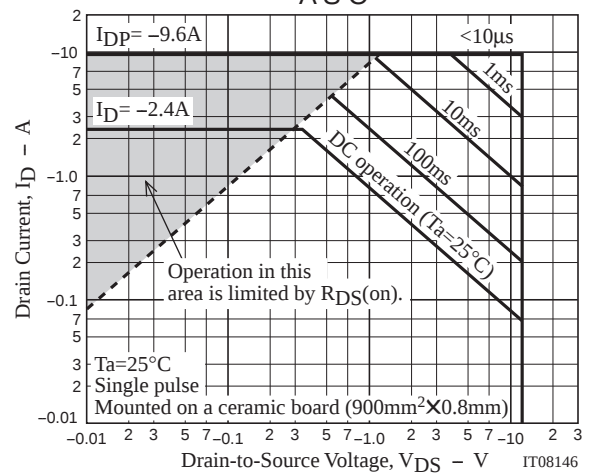
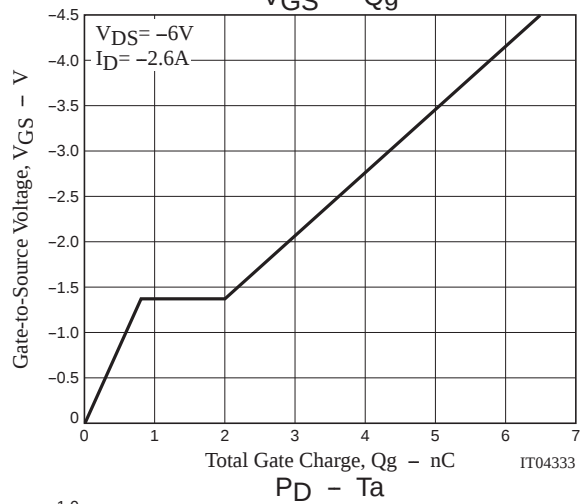
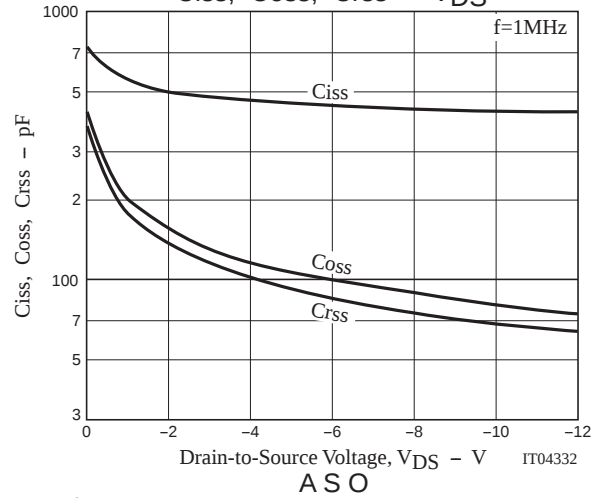
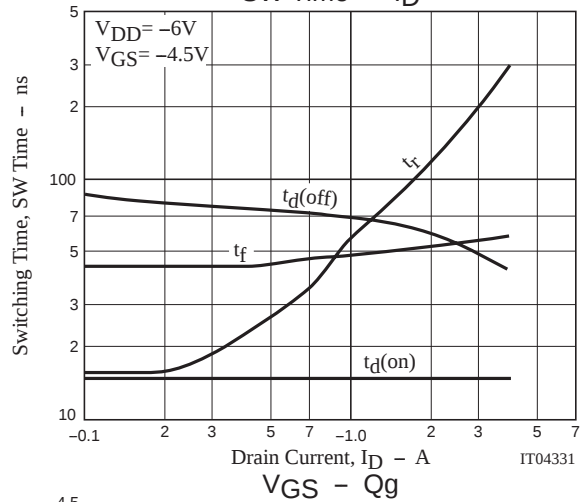
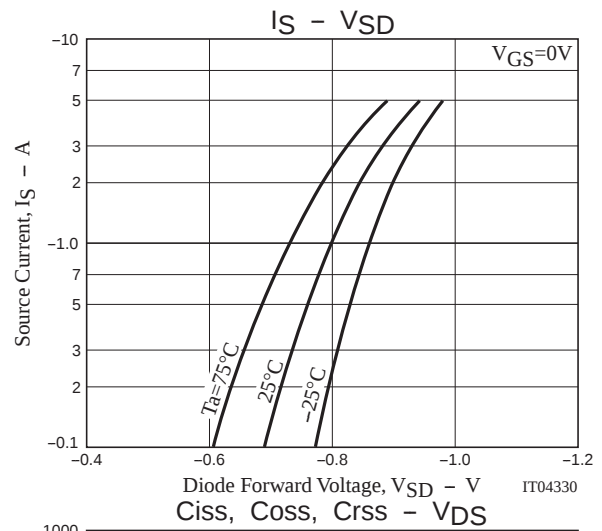
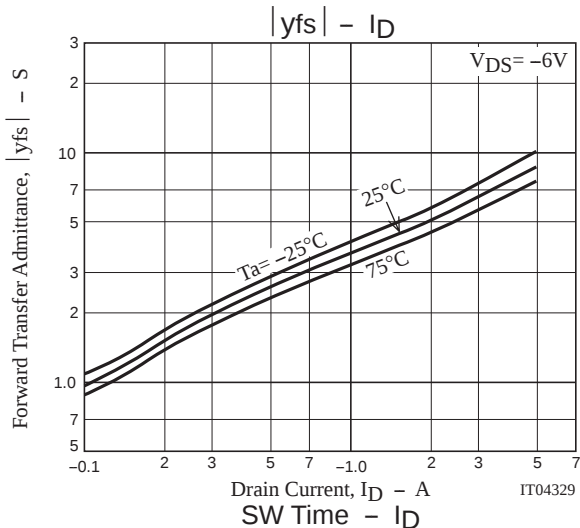
unit : mm

7028-002



## Switching Time Test Circuit





Note on usage : Since the SCH1301 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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