



SANYO Semiconductors

## DATA SHEET

# CPH6445 — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- 4V drive.

### Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter                   | Symbol           | Conditions   | Ratings     | Unit |
|-----------------------------|------------------|--|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |  | 60          | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |  | ±20         | V    |
| Drain Current (DC)          | I <sub>D</sub>   |  | 3.5         | A    |
| Drain Current (Pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1%   | 14          | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | When mounted on ceramic substrate (1200mm <sup>2</sup> ×0.8mm) | 1.6         | 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(BR)DSS             | I <sub>D</sub> =1mA, V <sub>GS</sub> =0V    | 60      |     |     | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V   |         |     | 1   | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V  |         |     | ±10 | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA   | 1.2     |     | 2.6 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =10V, I <sub>D</sub> =1.5A  | 1.2     | 2.0 |     | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)1</sub> | I <sub>D</sub> =1.5A, V <sub>GS</sub> =10V  |         | 92  | 117 | mΩ   |
|  | R <sub>DS(on)2</sub> | I <sub>D</sub> =0.7A, V <sub>GS</sub> =4.5V |         | 120 | 168 | mΩ   |
|  | R <sub>DS(on)3</sub> | I <sub>D</sub> =0.7A, V <sub>GS</sub> =4V   |         | 132 | 185 | mΩ   |

Marking : ZX

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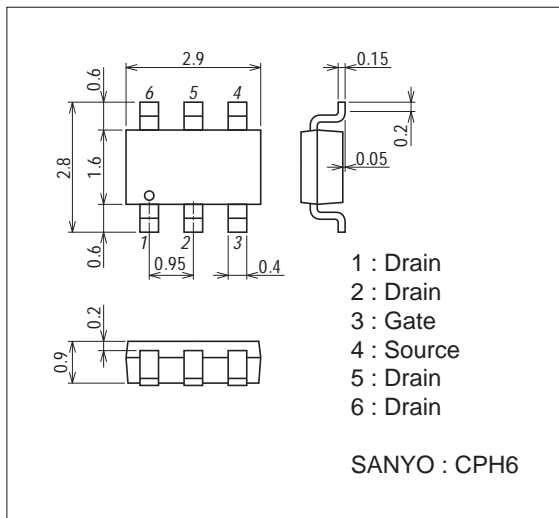
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| Parameter                     | Symbol       | Conditions                         | Ratings |      |     | Unit |
|-------------------------------|--------------|------------------------------------|---------|------|-----|------|
|                               |              |                                    | min     | typ  | max |      |
| Input Capacitance             | Ciss         | $V_{DS}=20V, f=1MHz$               |         | 310  |     | pF   |
| Output Capacitance            | Coss         | $V_{DS}=20V, f=1MHz$               |         | 40   |     | pF   |
| Reverse Transfer Capacitance  | Crss         | $V_{DS}=20V, f=1MHz$               |         | 25   |     | pF   |
| Turn-ON Delay Time            | $t_{d(on)}$  | See specified Test Circuit.        |         | 6.0  |     | ns   |
| Rise Time                     | $t_r$        | See specified Test Circuit.        |         | 5.5  |     | ns   |
| Turn-OFF Delay Time           | $t_{d(off)}$ | See specified Test Circuit.        |         | 27   |     | ns   |
| Fall Time                     | $t_f$        | See specified Test Circuit.        |         | 13   |     | ns   |
| Total Gate Charge             | Qg           | $V_{DS}=30V, V_{GS}=10V, I_D=3.5A$ |         | 6.8  |     | nC   |
| Gate-to-Source Charge         | Qgs          | $V_{DS}=30V, V_{GS}=10V, I_D=3.5A$ |         | 1.1  |     | nC   |
| Gate-to-Drain "Miller" Charge | Qgd          | $V_{DS}=30V, V_{GS}=10V, I_D=3.5A$ |         | 1.4  |     | nC   |
| Diode Forward Voltage         | VSD          | $I_S=3.5A, V_{GS}=0V$              |         | 0.85 | 1.2 | V    |

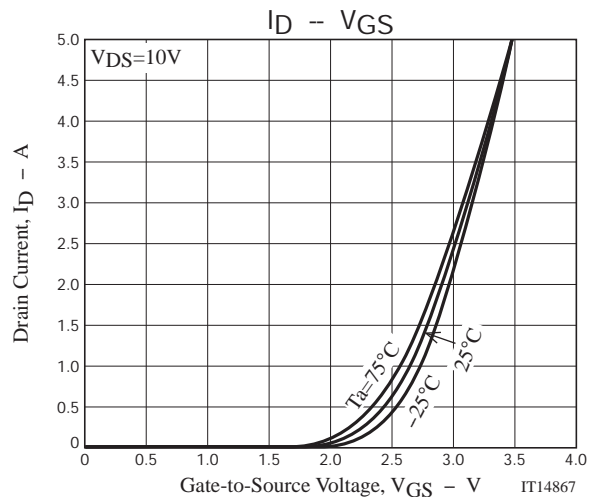
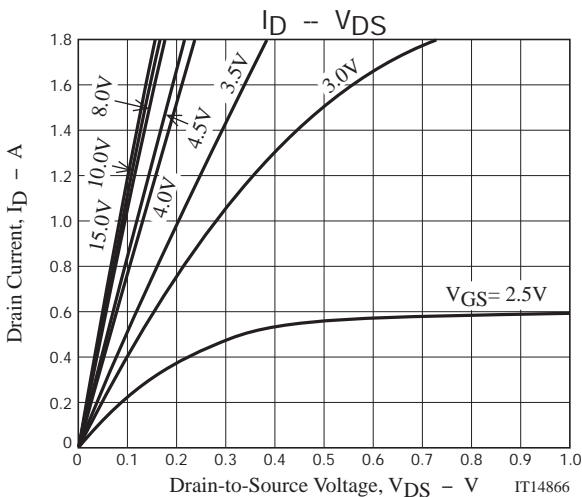
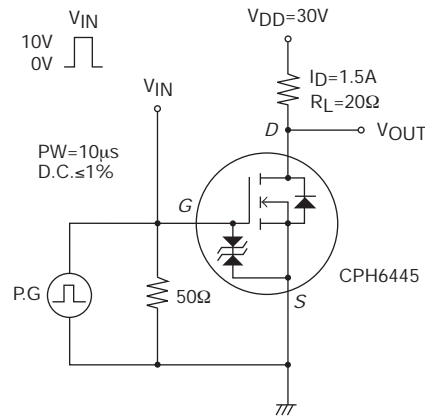
Package Dimensions

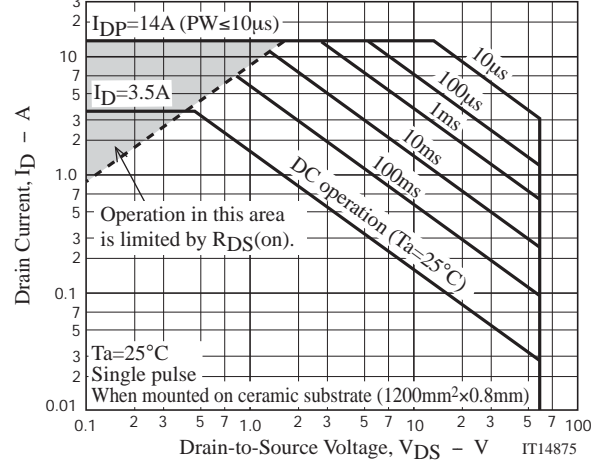
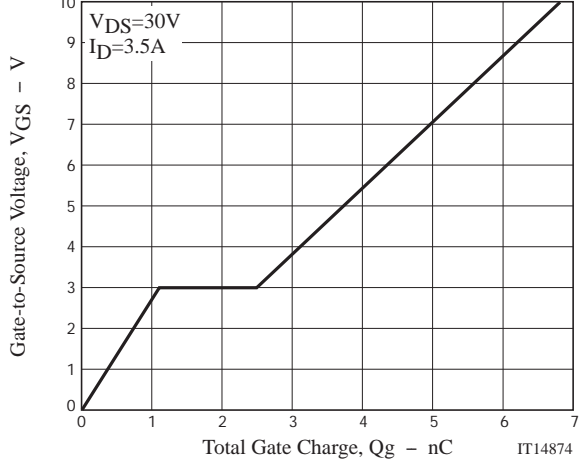
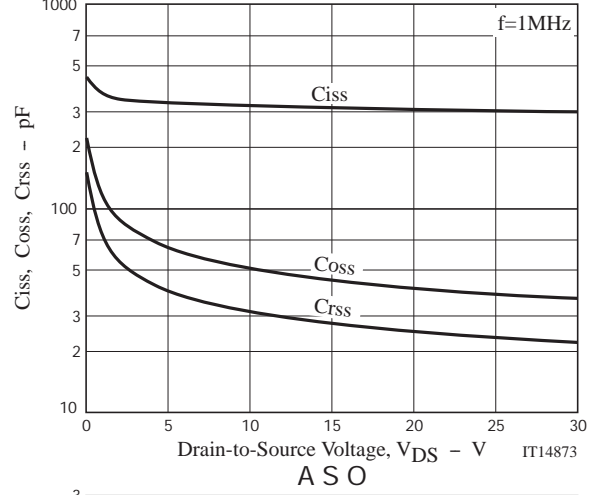
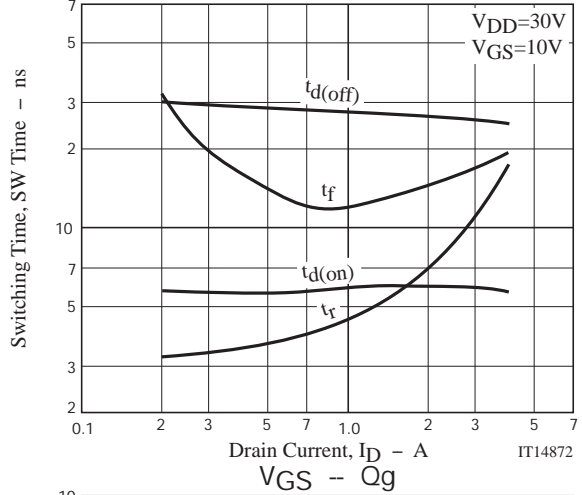
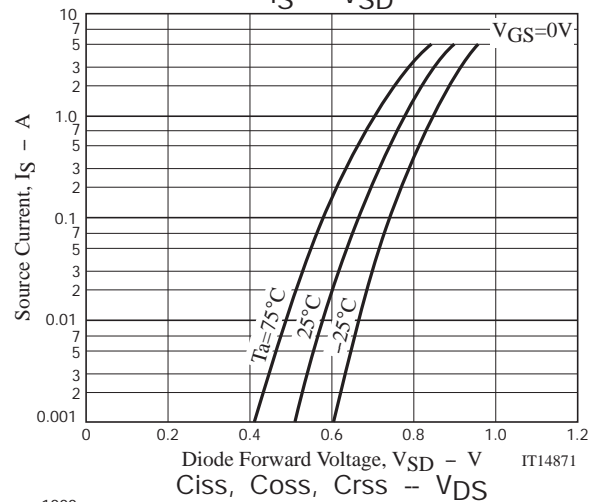
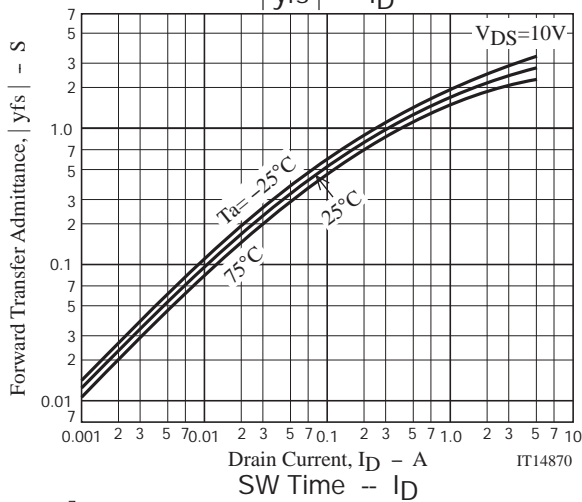
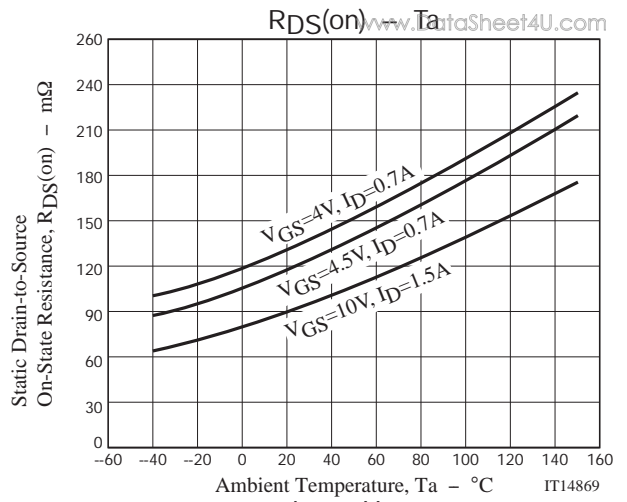
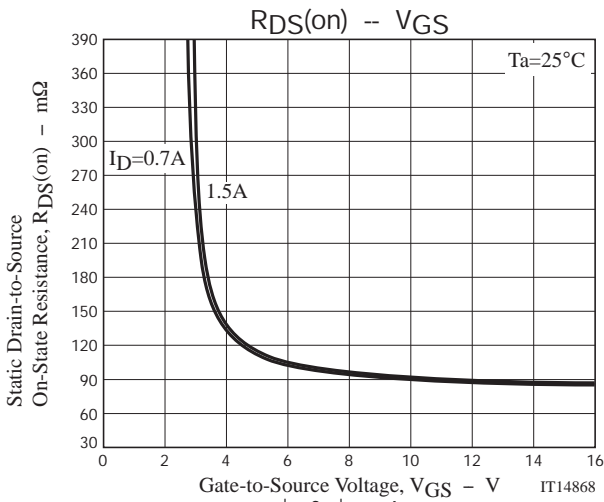
unit : mm (typ)

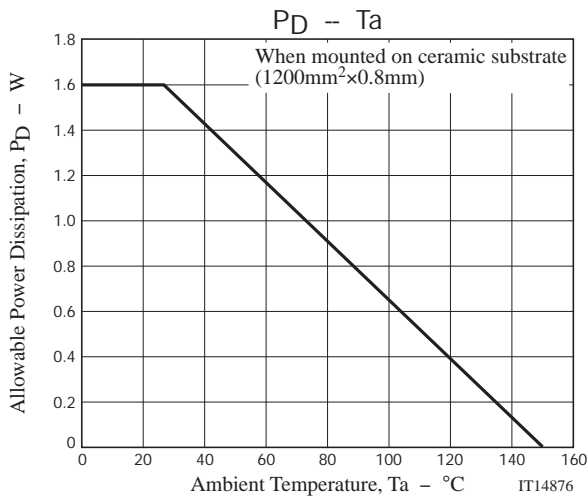
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Switching Time Test Circuit







Note on usage : Since the CPH6445 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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