

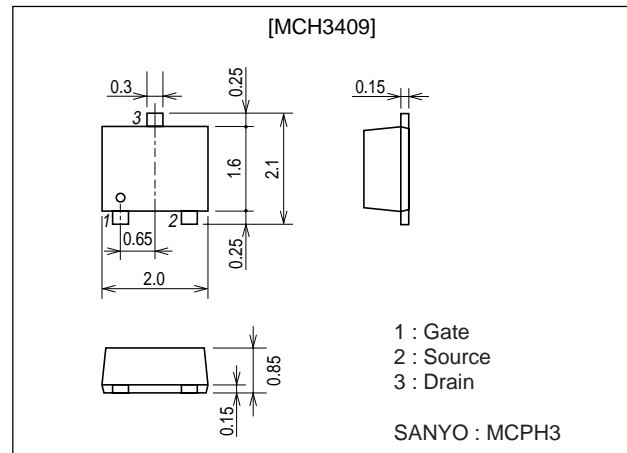
**MCH3409****Ultrahigh-Speed Switching Applications****Features**

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

**Package Dimensions**

unit : mm

2167

**Specifications****Absolute Maximum Ratings** at Ta=25°C

| Parameter                   | Symbol           | Conditions   | Ratings     | Unit |
|-----------------------------|------------------|--|-------------|------|
| Drain-to-Source Voltage     | V <sub>DSS</sub> |  | 20          | V    |
| Gate-to-Source Voltage      | V <sub>GSS</sub> |  | ±10         | V    |
| Drain Current (DC)          | I <sub>D</sub>   |  | 2.0         | A    |
| Drain Current (Pulse)       | I <sub>DP</sub>  | PW≤10μs, duty cycle≤1%                                 | 8.0         | A    |
| Allowable Power Dissipation | P <sub>D</sub>   | Mounted on a ceramic board (900mm <sup>2</sup> X0.8mm) | 0.9         | 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> =0     | 20      |     |     | V    |
| Zero-Gate Voltage Drain Current            | I <sub>DSS</sub>     | V <sub>DS</sub> =20V, V <sub>GS</sub> =0    |         |     | 1   | μA   |
| Gate-to-Source Leakage Current             | I <sub>GSS</sub>     | V <sub>GS</sub> =±8V, V <sub>DS</sub> =0    |         |     | ±10 | μA   |
| Cutoff Voltage                             | V <sub>GS(off)</sub> | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA   | 0.4     |     | 1.3 | V    |
| Forward Transfer Admittance                | y <sub>fs</sub>      | V <sub>DS</sub> =10V, I <sub>D</sub> =1A    | 2.4     | 3.5 |     | S    |
| Static Drain-to-Source On-State Resistance | R <sub>DS(on)1</sub> | I <sub>D</sub> =1A, V <sub>GS</sub> =4V     |         | 100 | 130 | mΩ   |
|  | R <sub>DS(on)2</sub> | I <sub>D</sub> =0.5A, V <sub>GS</sub> =2.5V |         | 130 | 180 | mΩ   |

Marking : KJ

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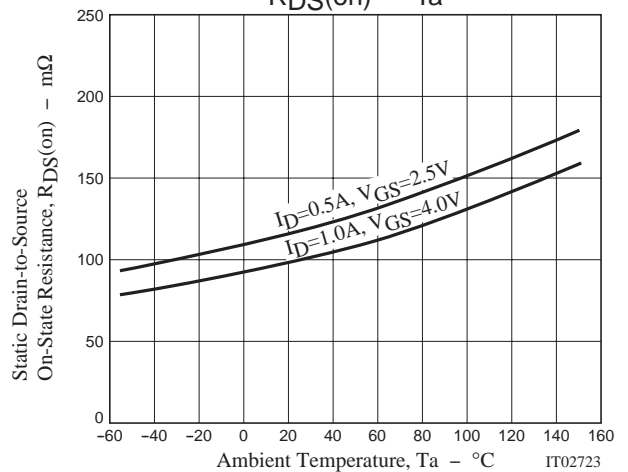
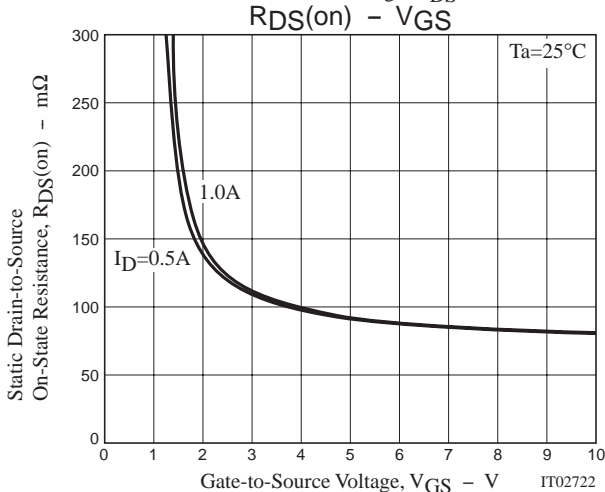
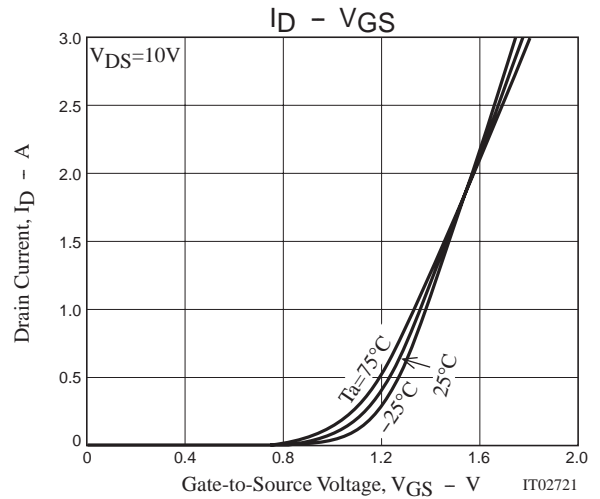
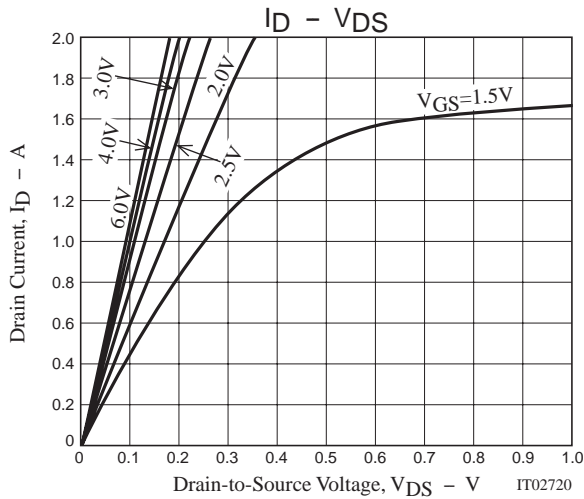
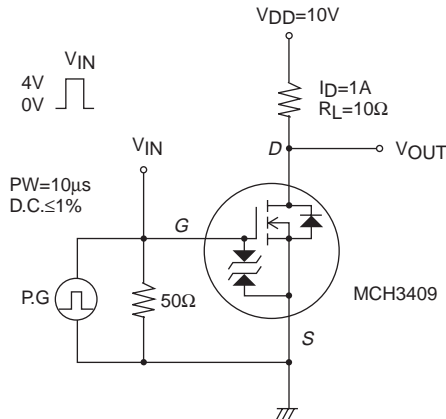
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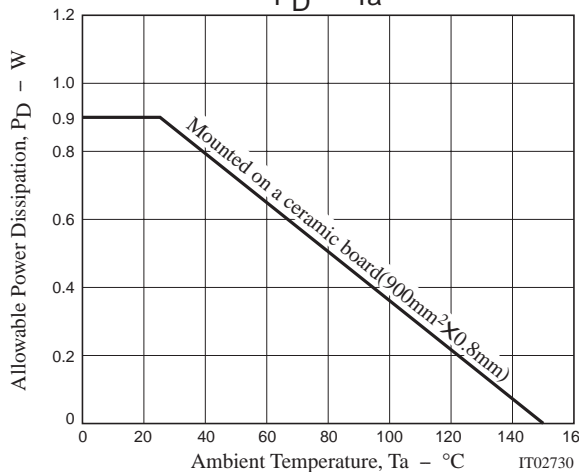
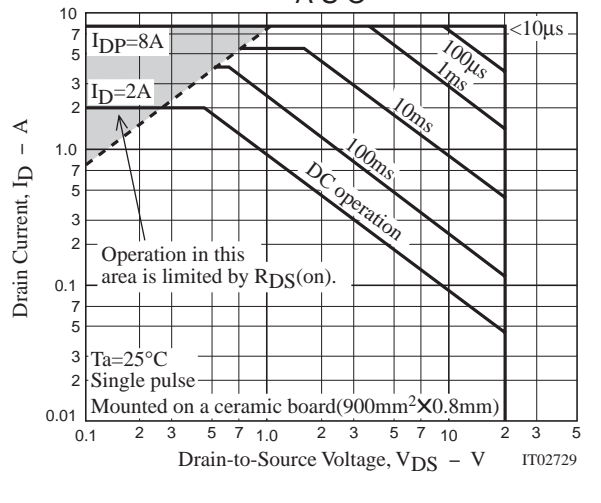
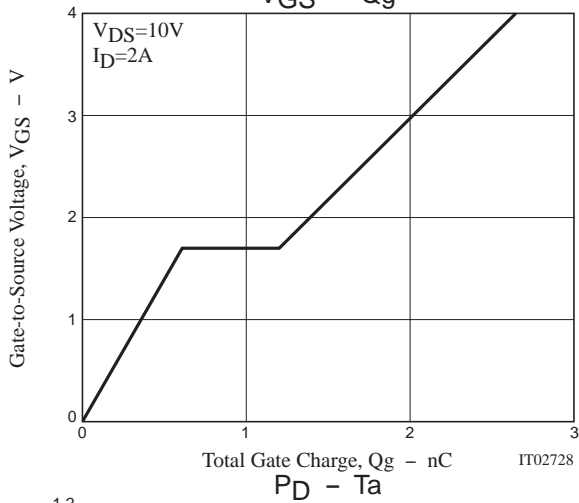
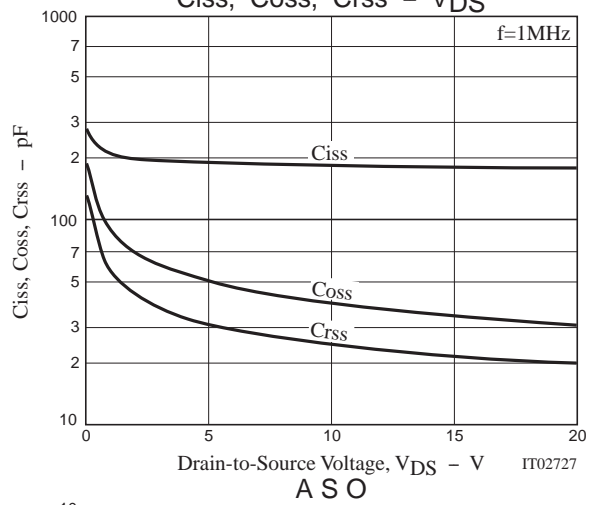
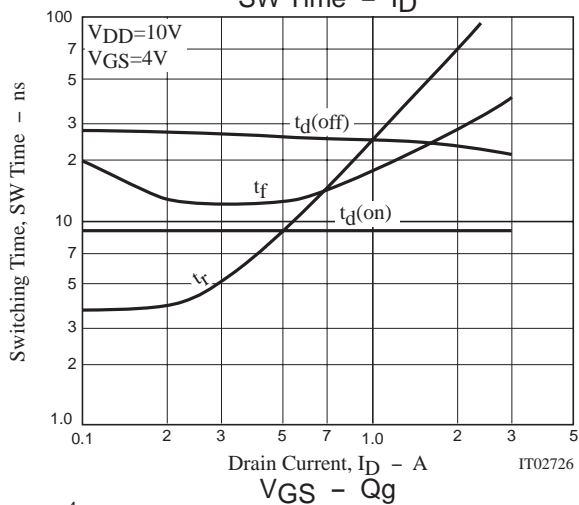
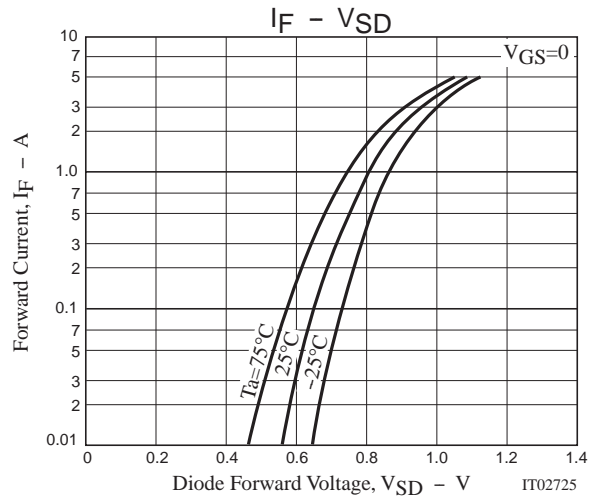
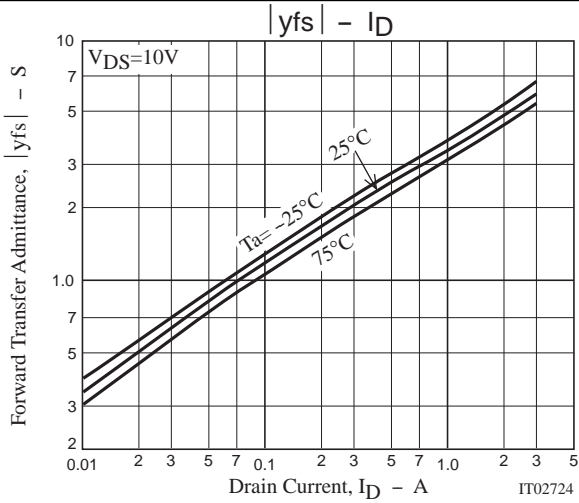
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| Parameter                     | Symbol              | Conditions  | Ratings |     |     | Unit |
|-------------------------------|---------------------|---|---------|-----|-----|------|
|                               |                     |   | min     | typ | max |      |
| Input Capacitance             | Ciss                | V <sub>DS</sub> =10V, f=1MHz                                    |         | 190 |     | pF   |
| Output Capacitance            | Coss                | V <sub>DS</sub> =10V, f=1MHz                                    |         | 40  |     | pF   |
| Reverse Transfer Capacitance  | Crss                | V <sub>DS</sub> =10V, f=1MHz                                    |         | 25  |     | pF   |
| Turn-ON Delay Time            | t <sub>d(on)</sub>  | See specified Test Circuit                                      |         | 9   |     | ns   |
| Rise Time                     | t <sub>r</sub>      | See specified Test Circuit                                      |         | 25  |     | ns   |
| Turn-OFF Delay Time           | t <sub>d(off)</sub> | See specified Test Circuit                                      |         | 25  |     | ns   |
| Fall Time                     | t <sub>f</sub>      | See specified Test Circuit                                      |         | 18  |     | ns   |
| Total Gate Charge             | Q <sub>g</sub>      | V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2.0A |         | 2.7 |     | nC   |
| Gate-to-Source Charge         | Q <sub>gs</sub>     | V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2.0A |         | 0.6 |     | nC   |
| Gate-to-Drain "Miller" Charge | Q <sub>gd</sub>     | V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2.0A |         | 0.6 |     | nC   |
| Diode Forward Voltage         | V <sub>SD</sub>     | I <sub>S</sub> =2.0A, V <sub>GS</sub> =0                        | 0.87    |     | 1.2 | V    |

## Switching Time Test Circuit



# MCH3409



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