

**CPH3413**

Ultrahigh-Speed Switching Applications

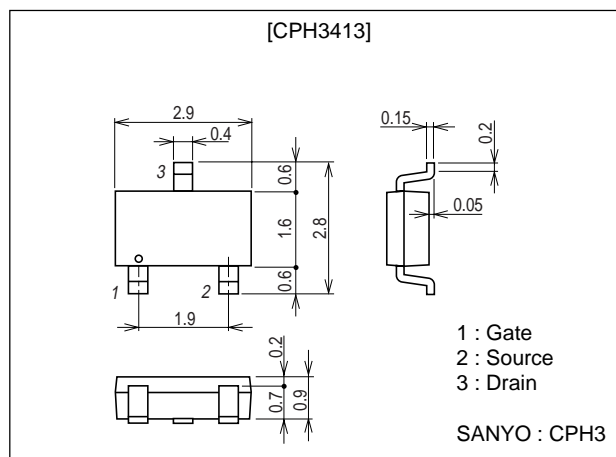
Features

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

Package Dimensions

unit : mm

2152A



Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|------------------|---|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | 20 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±10 | V |
| Drain Current (DC) | I _D | | 2.2 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 8.8 | A |
| Allowable Power Dissipation | P _D | Mounted on a ceramic board (900mm²X0.8mm) | 1.0 | W |
| Channel Temperature | T _{ch} | | 150 | °C |
| Storage Temperature | T _{stg} | | -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 _D =1mA, V _{GS} =0 | 20 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =20V, V _{GS} =0 | | | 1 | μA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±8V, V _{DS} =0 | | | ±10 | μA |
| Cutoff Voltage | V _{GS(off)} | V _{DS} =10V, I _D =1mA | 0.4 | | 1.3 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} =10V, I _D =1A | 2.4 | 3.5 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =1A, V _{GS} =4V | | 100 | 130 | mΩ |
| | R _{DS(on)2} | I _D =0.5A, V _{GS} =2.5V | | 130 | 180 | mΩ |

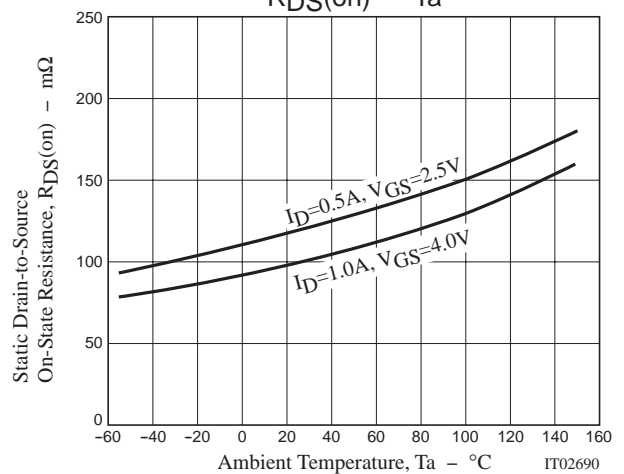
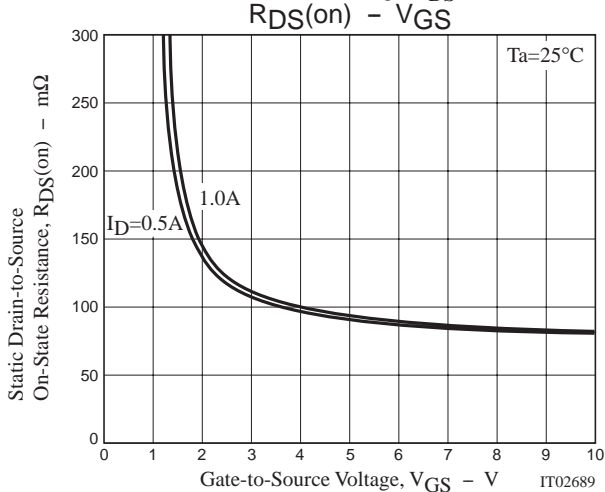
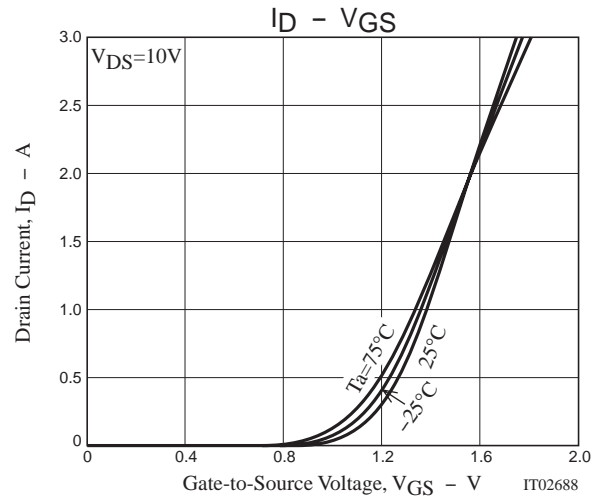
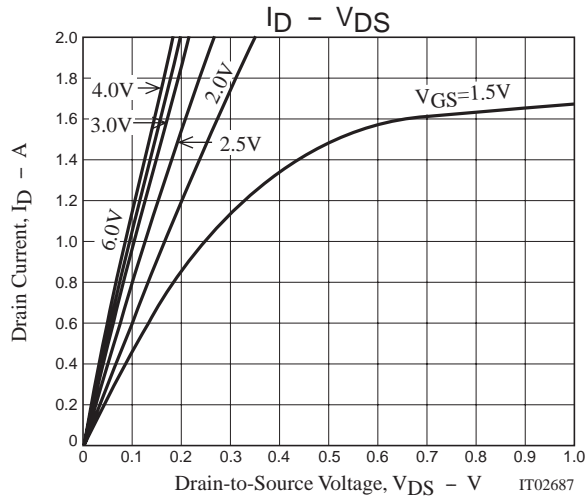
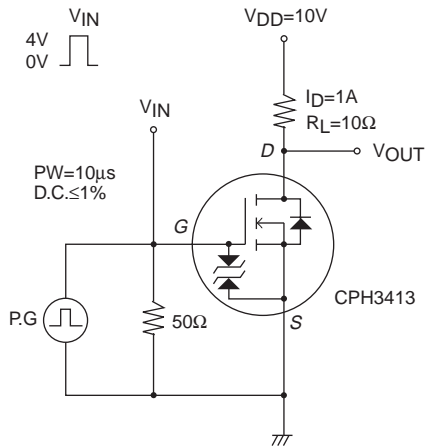
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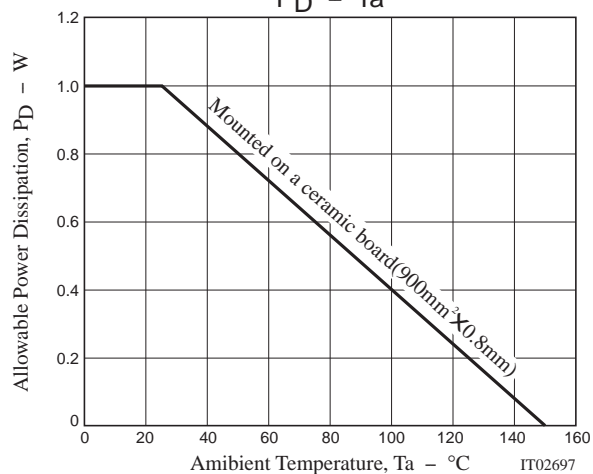
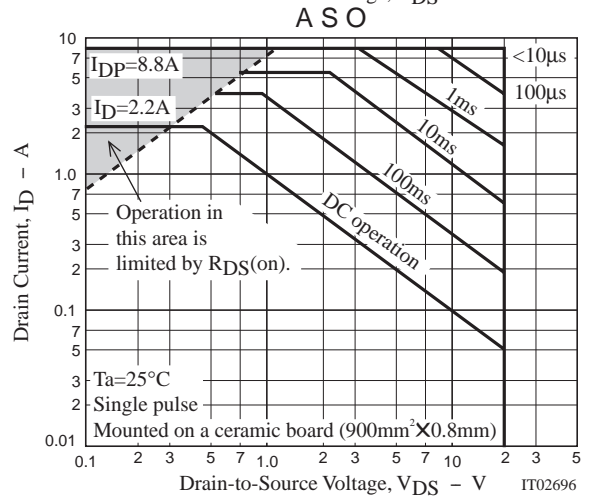
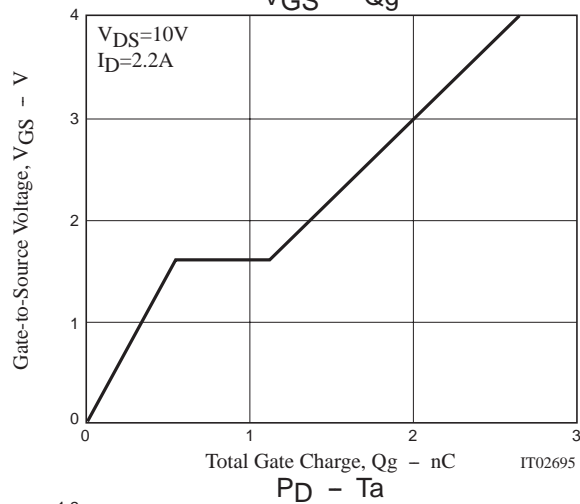
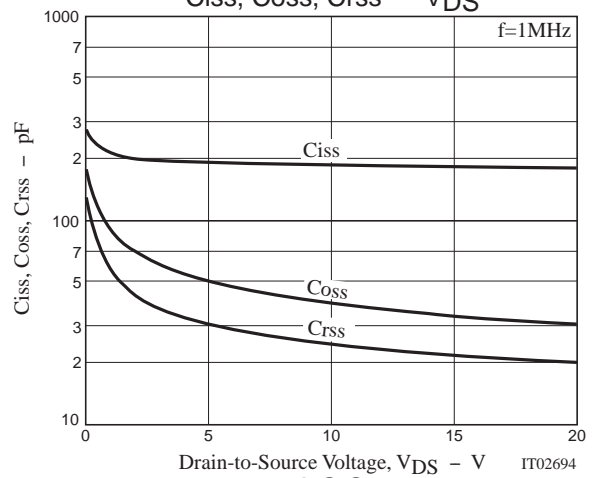
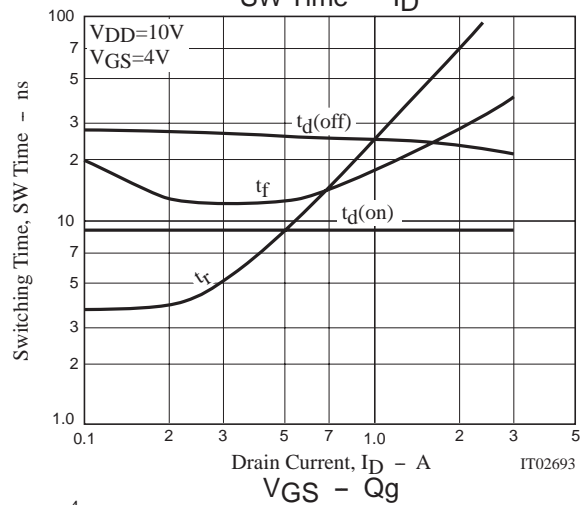
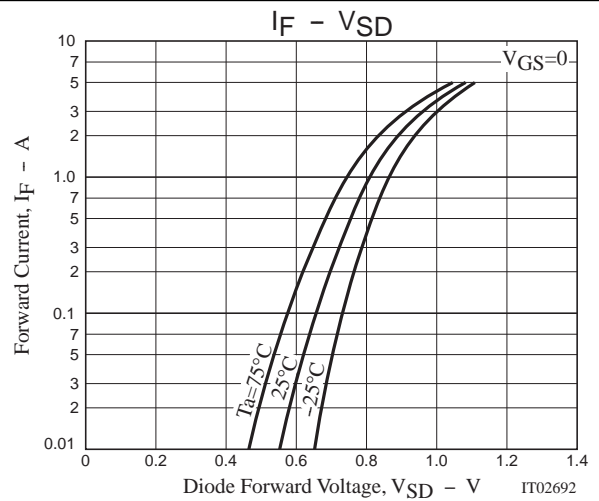
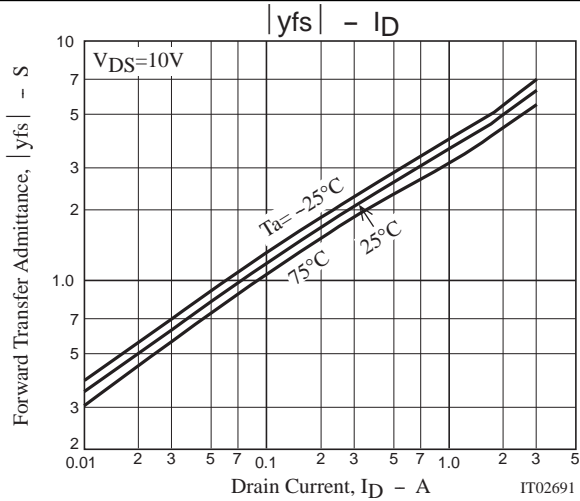
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|------------|-----------------------------------|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | C_{iss} | $V_{DS}=10V, f=1MHz$ | | 190 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=10V, f=1MHz$ | | 40 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=10V, f=1MHz$ | | 25 | | pF |
| Turn-ON Delay Time | $t_d(on)$ | See specified Test Circuit | | 9 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 25 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | See specified Test Circuit | | 25 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 18 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=4V, I_D=2.2A$ | | 2.7 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=10V, V_{GS}=4V, I_D=2.2A$ | | 0.6 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=10V, V_{GS}=4V, I_D=2.2A$ | | 0.6 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=2.2A, V_{GS}=0$ | | 0.89 | 1.2 | V |

Switching Time Test Circuit



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