



ON Semiconductor®

**ON Semiconductor**  
**DATA SHEET****CPH3337** — P-Channel Silicon MOSFET  
**General-Purpose Switching Device**  
**Applications****Features**

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

**Specifications****Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$ 

| Parameter                   | Symbol    | Conditions   | Ratings     | Unit |
|-----------------------------|-----------|--|-------------|------|
| Drain-to-Source Voltage     | $V_{DS}$  |  | -20         | V    |
| Gate-to-Source Voltage      | $V_{GS}$  |  | $\pm 10$    | V    |
| Drain Current (DC)          | $I_D$     |  | -3.5        | A    |
| Drain Current (Pulse)       | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$        | -14         | A    |
| Allowable Power Dissipation | $P_D$     | Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) | 1.0         | W    |
| Channel Temperature         | $T_{ch}$  |  | 150         | °C   |
| Storage Temperature         | $T_{stg}$ |  | -55 to +150 | °C   |

**Electrical Characteristics** at  $T_a=25^\circ\text{C}$ 

| Parameter                                  | Symbol        | Conditions                               | Ratings |     |          | Unit             |
|--|---------------|--|---------|-----|----------|------------------|
|  |               |  | min     | typ | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D=-1\text{mA}$ , $V_{GS}=0$           | -20     |     |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS}=-20\text{V}$ , $V_{GS}=0$        |         |     | -1       | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS}=\pm 8\text{V}$ , $V_{DS}=0$      |         |     | $\pm 10$ | $\mu\text{A}$    |
| Cutoff Voltage                             | $V_{GS(off)}$ | $V_{DS}=-10\text{V}$ , $I_D=-1\text{mA}$ | -0.4    |     | -1.4     | V                |
| Forward Transfer Admittance                | $ y_{fs} $    | $V_{DS}=-10\text{V}$ , $I_D=-2\text{A}$  | 3.8     | 6.3 |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-2\text{A}$ , $V_{GS}=-4.5\text{V}$ |         | 53  | 74       | $\text{m}\Omega$ |
|  | $R_{DS(on)2}$ | $I_D=-2\text{A}$ , $V_{GS}=-4\text{V}$   |         | 55  | 77       | $\text{m}\Omega$ |
|  | $R_{DS(on)3}$ | $I_D=-1\text{A}$ , $V_{GS}=-2.5\text{V}$ |         | 81  | 113      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS}=-10\text{V}$ , $f=1\text{MHz}$   |         | 903 |          | pF               |
| Output Capacitance                         | $C_{oss}$     | $V_{DS}=-10\text{V}$ , $f=1\text{MHz}$   |         | 126 |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     | $V_{DS}=-10\text{V}$ , $f=1\text{MHz}$   |         | 115 |          | pF               |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.              |         | 16  |          | ns               |
| Rise Time                                  | $t_r$         | See specified Test Circuit.              |         | 54  |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  | See specified Test Circuit.              |         | 107 |          | ns               |
| Fall Time                                  | $t_f$         | See specified Test Circuit.              |         | 82  |          | ns               |

Marking : YM

Continued on next page.

# CPH3337

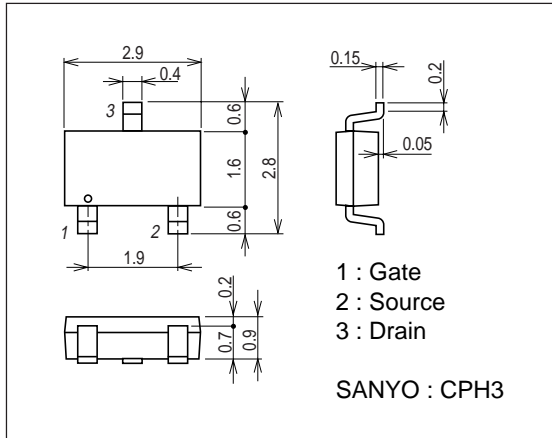
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| Parameter                     | Symbol | Conditions                           | Ratings |       |      | Unit |
|-------------------------------|--------|--------------------------------------|---------|-------|------|------|
|                               |        |                                      | min     | typ   | max  |      |
| Total Gate Charge             | Qg     | $V_{DS}=-10V, V_{GS}=-4V, I_D=-3.5A$ |         | 9.3   |      | nC   |
| Gate-to-Source Charge         | Qgs    | $V_{DS}=-10V, V_{GS}=-4V, I_D=-3.5A$ |         | 2.5   |      | nC   |
| Gate-to-Drain "Miller" Charge | Qgd    | $V_{DS}=-10V, V_{GS}=-4V, I_D=-3.5A$ |         | 1.9   |      | nC   |
| Diode Forward Voltage         | VSD    | $I_S=-3.5A, V_{GS}=0$                |         | -0.85 | -1.5 | V    |

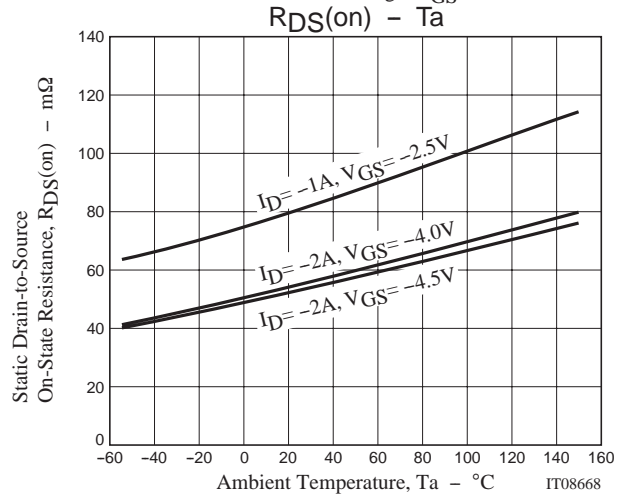
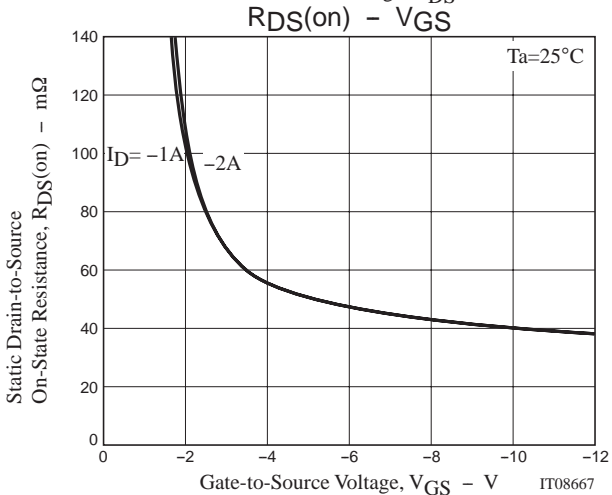
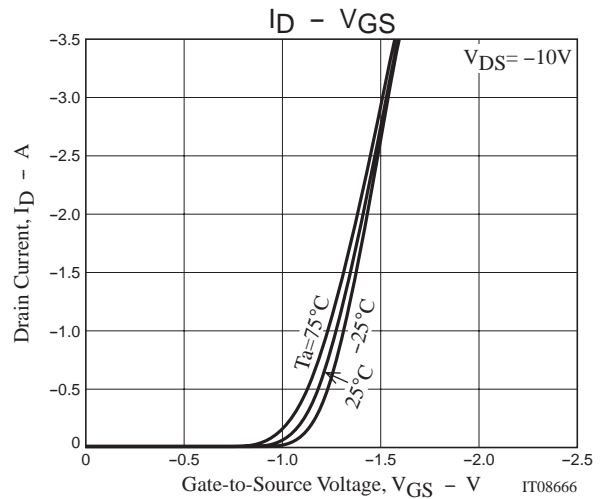
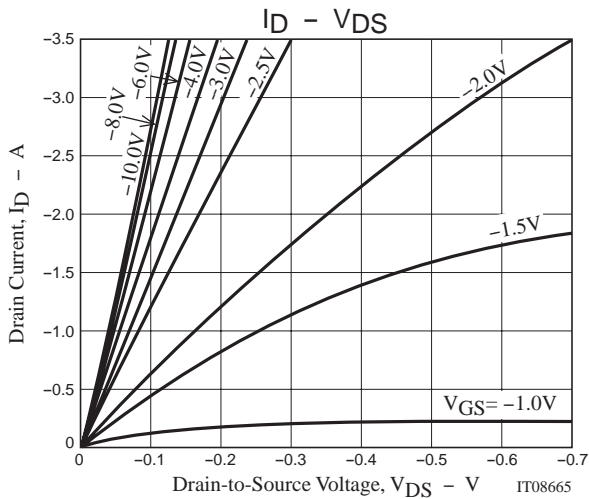
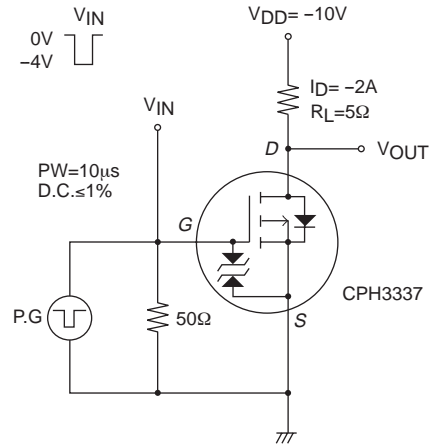
## Package Dimensions

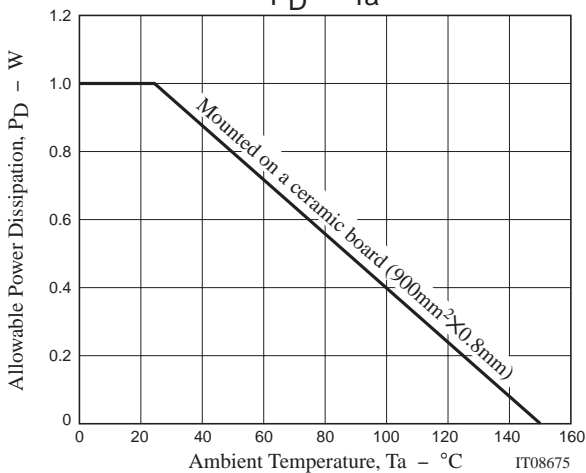
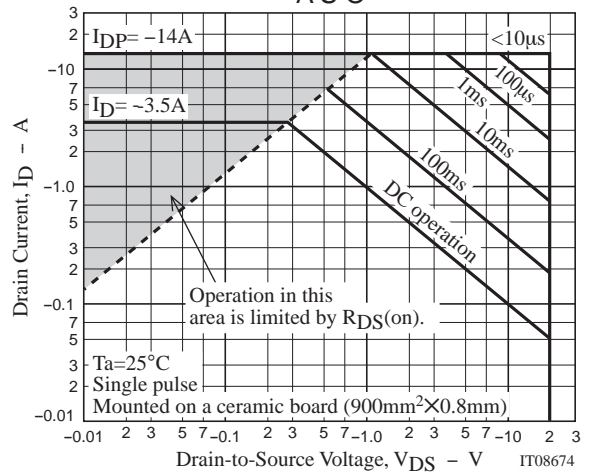
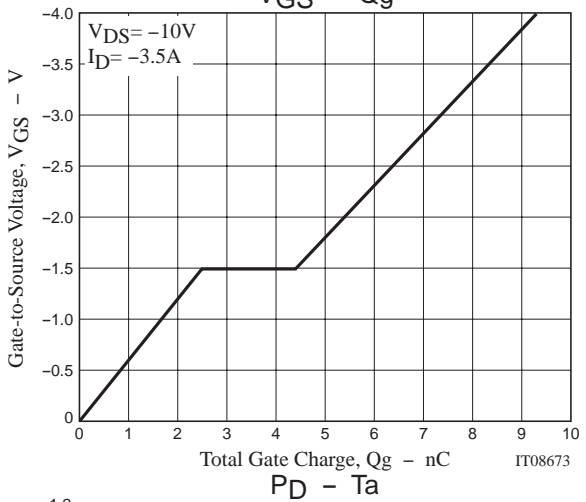
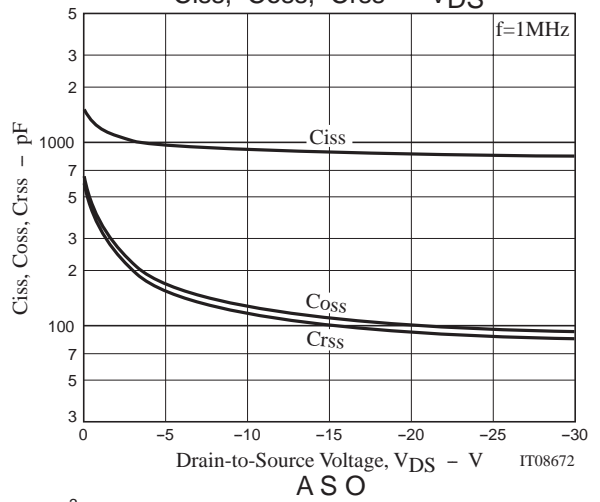
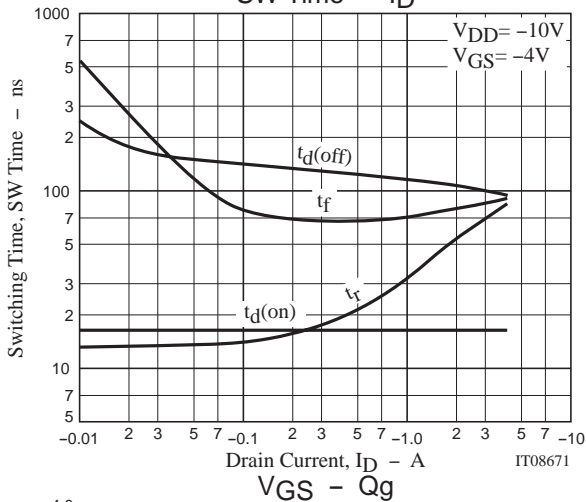
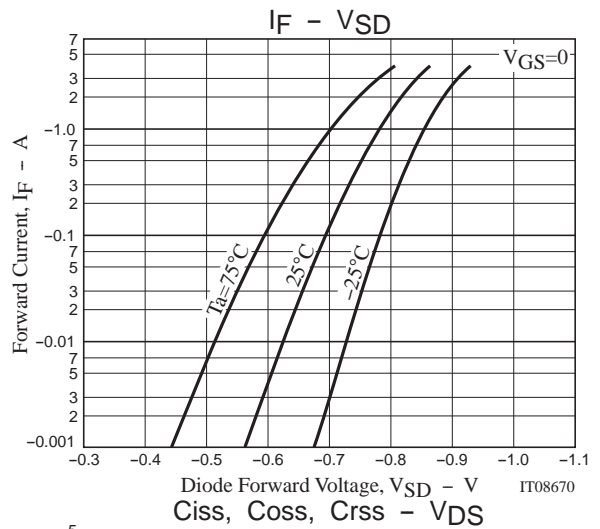
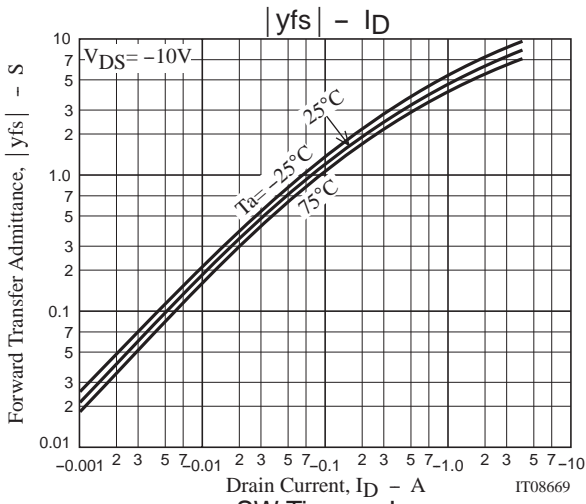
unit : mm

2152A



## Switching Time Test Circuit





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