



N-Channel Silicon MOSFET

CPH3437 — 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} | | ± 10 | V |
| Drain Current (DC) | I_D | | 4.5 | A |
| Drain Current (Pulse) | I_{DP} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | 18 | A |
| Allowable Power Dissipation | P_D | Mounted on a ceramic board (900mm ² X0.8mm) | 1.0 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

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 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 8\text{V}$, $V_{DS}=0$ | | | ± 10 | μA |
| 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} $ | $V_{DS}=10\text{V}$, $I_D=2.5\text{A}$ | 4 | 6.8 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=2\text{A}$, $V_{GS}=4.5\text{V}$ | | 28 | 39 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D=2\text{A}$, $V_{GS}=4\text{V}$ | | 29 | 40 | $\text{m}\Omega$ |
| | $R_{DS(on)3}$ | $I_D=1\text{A}$, $V_{GS}=2.5\text{V}$ | | 39 | 55 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS}=10\text{V}$, $f=1\text{MHz}$ | | 755 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=10\text{V}$, $f=1\text{MHz}$ | | 155 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=10\text{V}$, $f=1\text{MHz}$ | | 135 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 17 | | ns |
| Rise Time | t_r | See specified Test Circuit. | | 100 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit. | | 68 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 85 | | ns |

Marking : ZM

Continued on next page.

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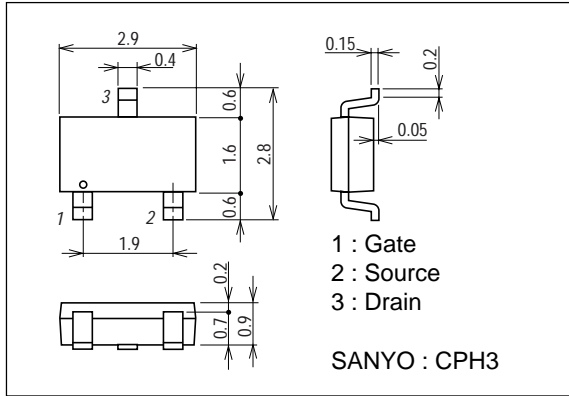
CPH3437

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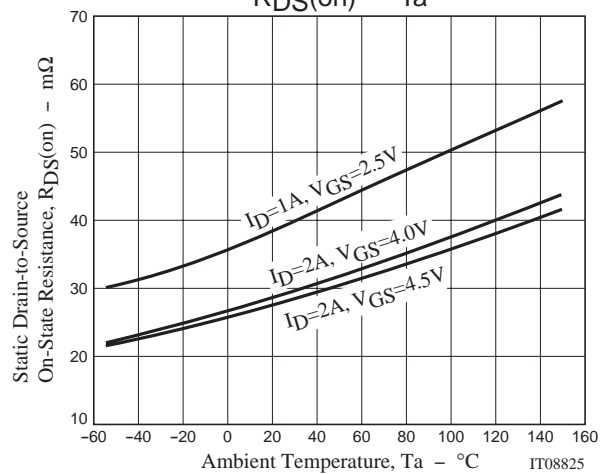
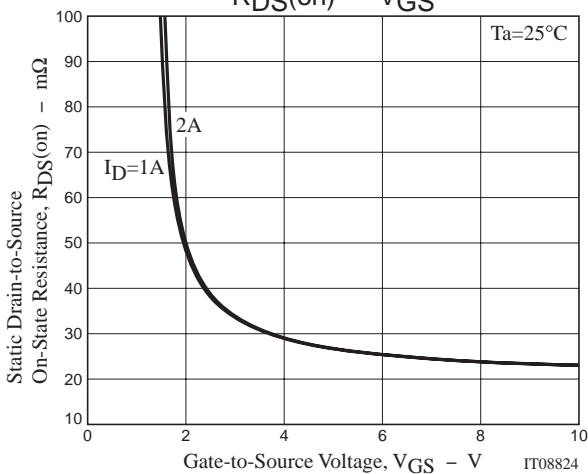
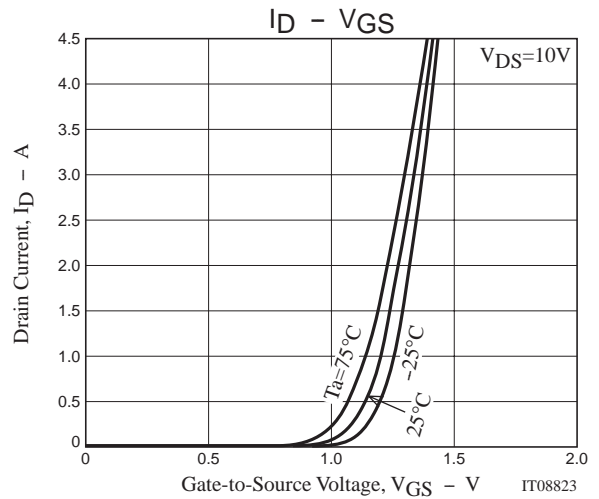
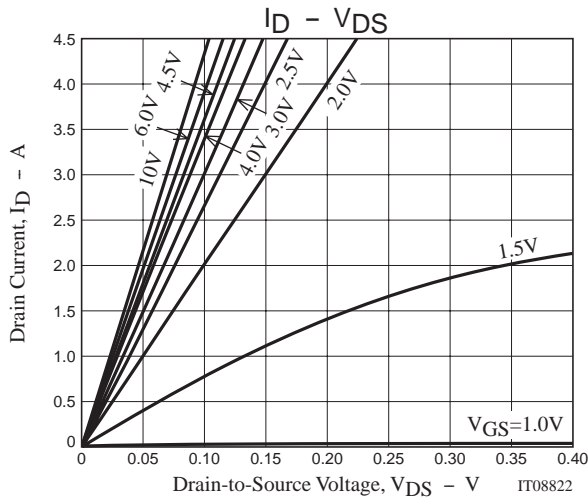
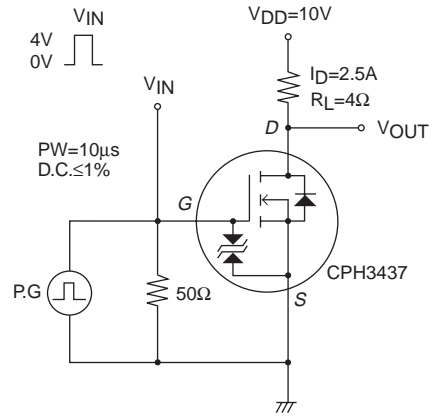
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|-----------------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Total Gate Charge | Qg | V _{DS} =10V, V _{GS} =4V, I _D =4.5A | | 9.9 | | nC |
| Gate-to-Source Charge | Qgs | V _{DS} =10V, V _{GS} =4V, I _D =4.5A | | 1.35 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | V _{DS} =10V, V _{GS} =4V, I _D =4.5A | | 3.5 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =4.5A, V _{GS} =0 | | 0.84 | 1.2 | V |

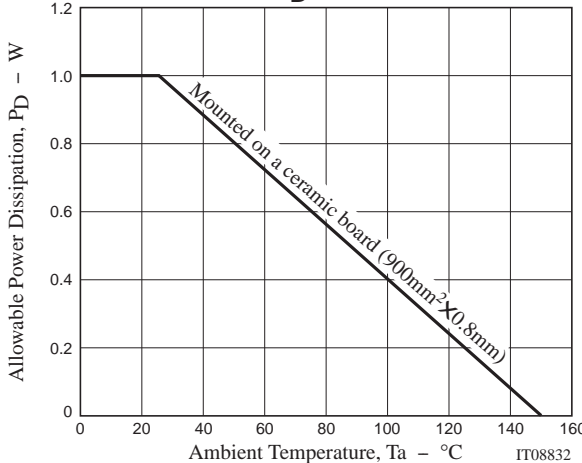
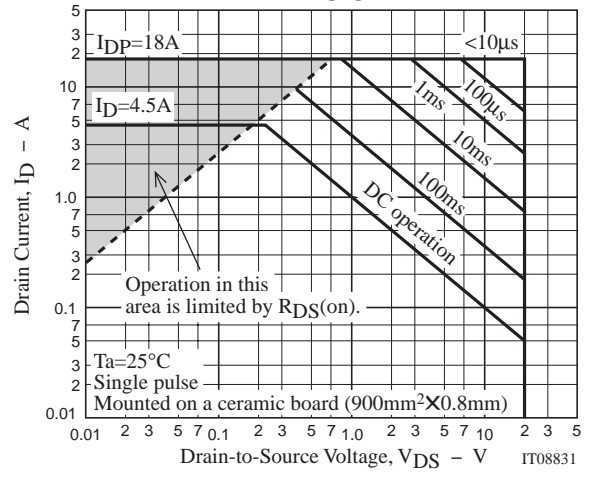
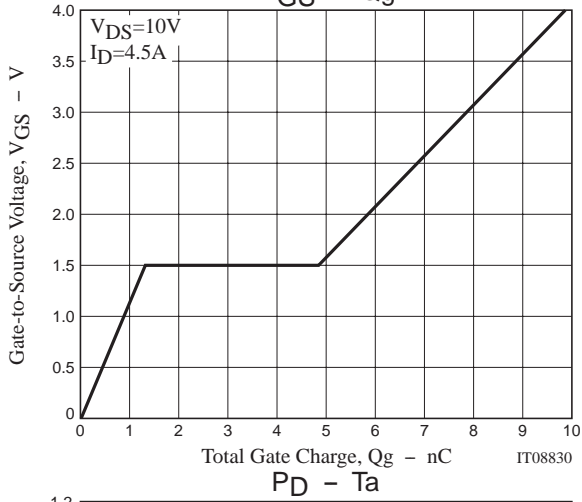
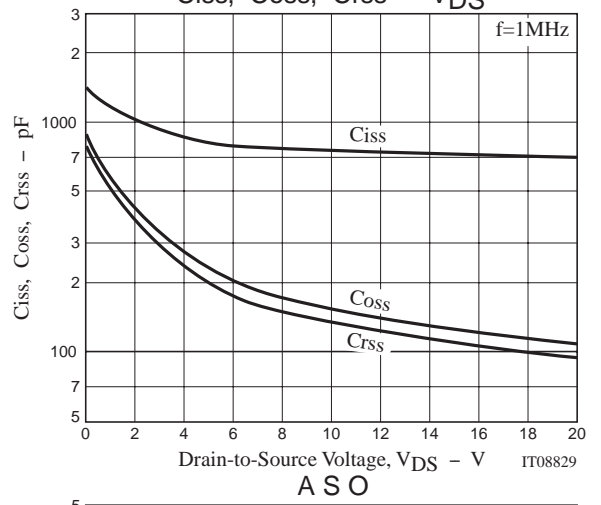
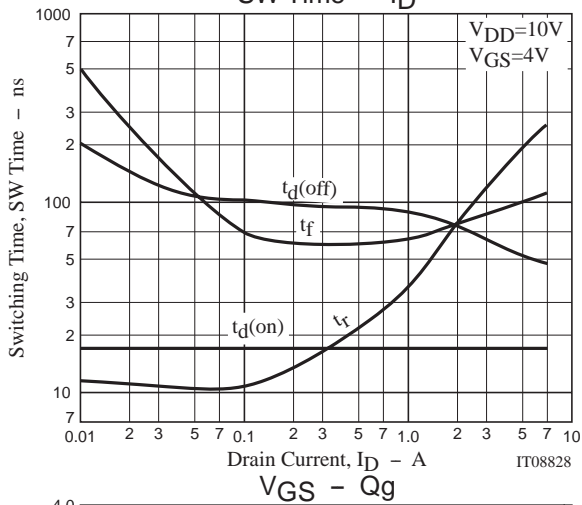
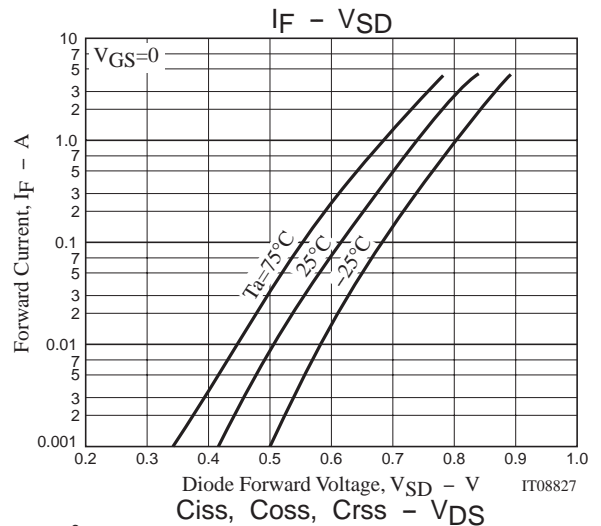
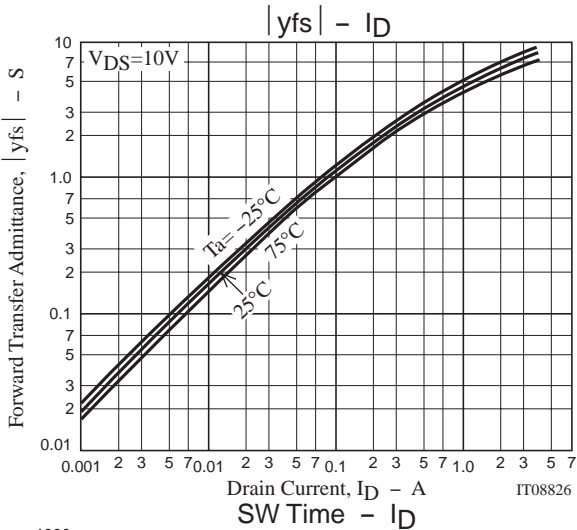
Package Dimensions

unit : mm
2152A



Switching Time Test Circuit





Note on usage : Since the CPH3437 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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