



SANYO Semiconductors

DATA SHEET

MCH3431

N-Channel Silicon MOSFET

General-Purpose Switching Device Applications

Features

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

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------------|------------------|---|-------------|------|
| Drain-to-Source Voltage | V _{DSS} | | 30 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±12 | V |
| Drain Current (DC) | I _D | | 3.5 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 14 | A |
| Allowable Power Dissipation | P _D | When mounted on ceramic substrate (900mm ² ×0.8mm) | 1 | 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} =0V | 30 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, V _{GS} =0V | | | 1 | μA |
| Gate-to-Source Leakage Current | I _{GSS} | V _{GS} =±8V, V _{DS} =0V | | | ±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 =1.8A | 2.8 | 4.8 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =1.8A, V _{GS} =4V | | 55 | 72 | mΩ |
| | R _{DS(on)2} | I _D =1A, V _{GS} =2.5V | | 70 | 98 | mΩ |

Marking : ZG

Continued on next page.

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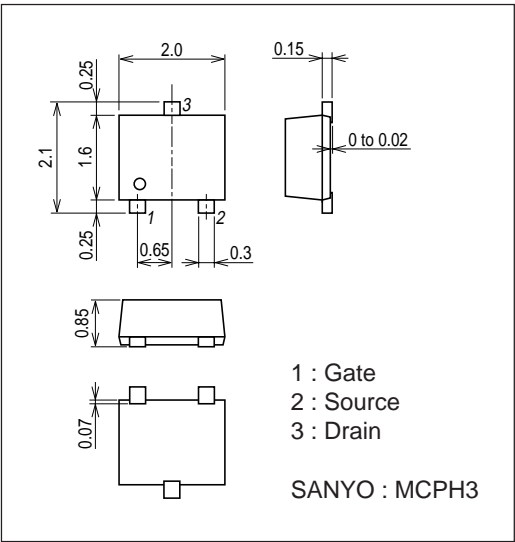
MCH3431

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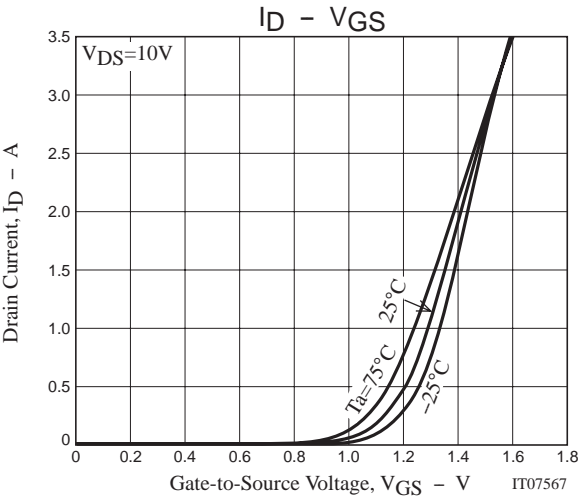
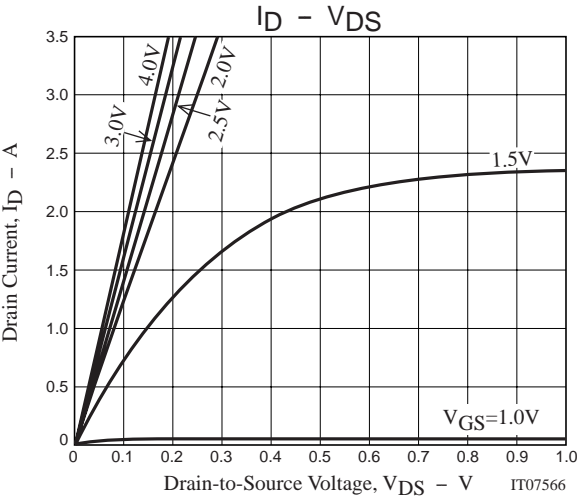
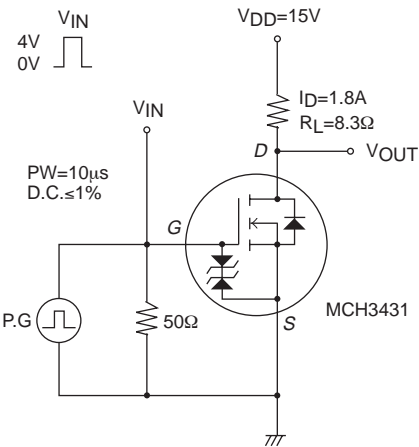
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|---------------------|---|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | V _{DS} =10V, f=1MHz | | 415 | | pF |
| Output Capacitance | Coss | V _{DS} =10V, f=1MHz | | 60 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =10V, f=1MHz | | 55 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit. | | 11 | | ns |
| Rise Time | t _r | See specified Test Circuit. | | 65 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit. | | 54 | | ns |
| Fall Time | t _f | See specified Test Circuit. | | 61 | | ns |
| Total Gate Charge | Q _g | V _{DS} =10V, V _{GS} =4V, I _D =3.5A | | 5.1 | | nC |
| Gate-to-Source Charge | Q _{gs} | V _{DS} =10V, V _{GS} =4V, I _D =3.5A | | 0.95 | | nC |
| Gate-to-Drain "Miller" Charge | Q _{gd} | V _{DS} =10V, V _{GS} =4V, I _D =3.5A | | 1.4 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =3.5A, V _{GS} =0V | | 0.87 | 1.2 | V |

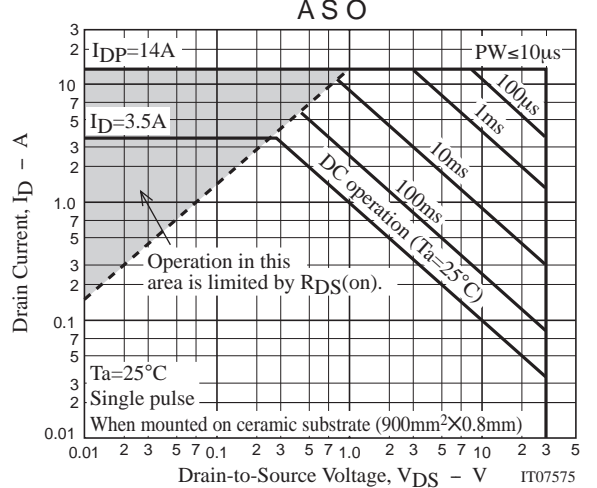
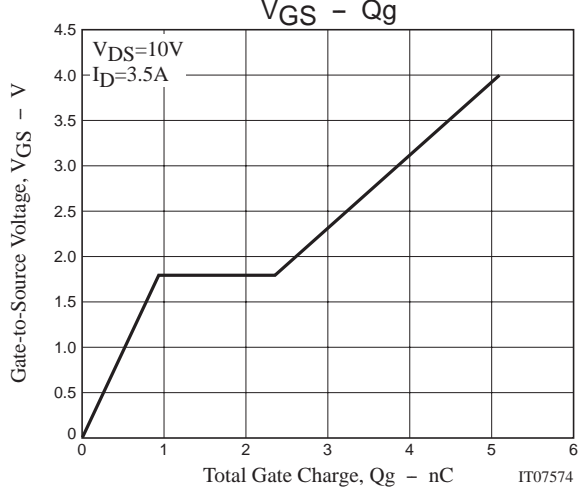
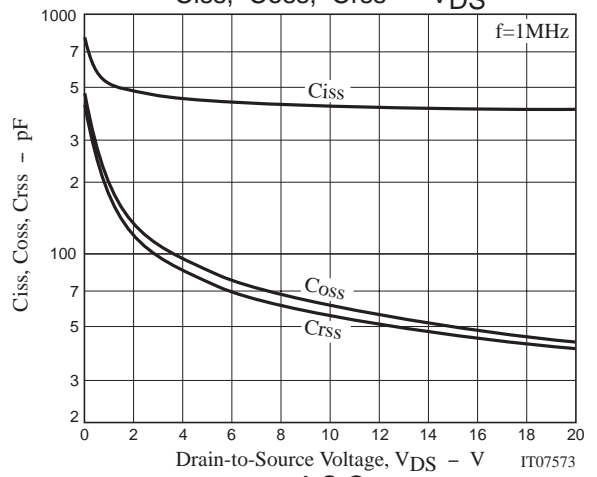
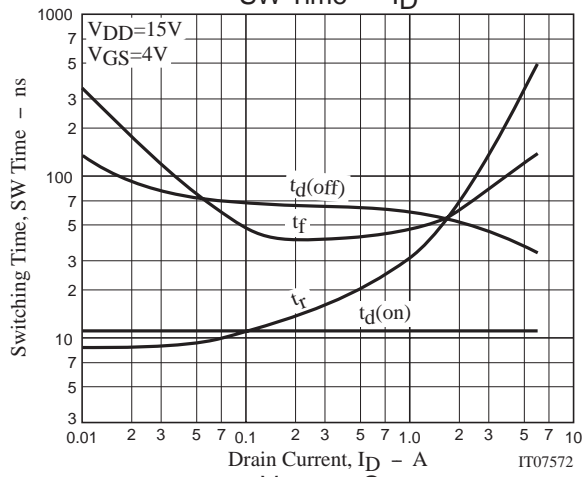
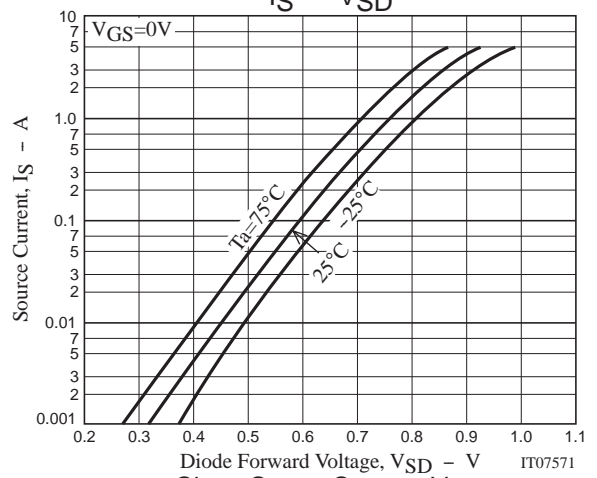
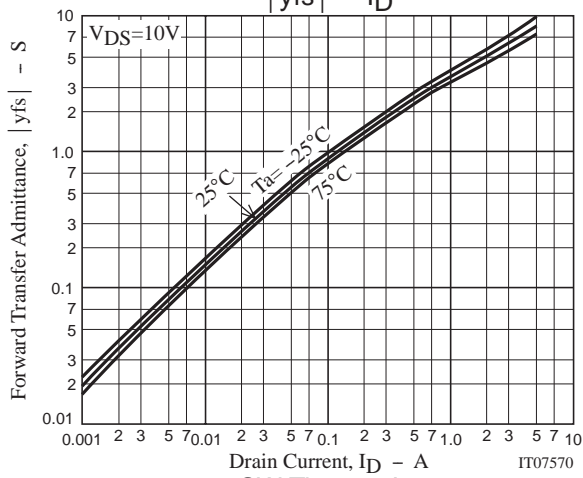
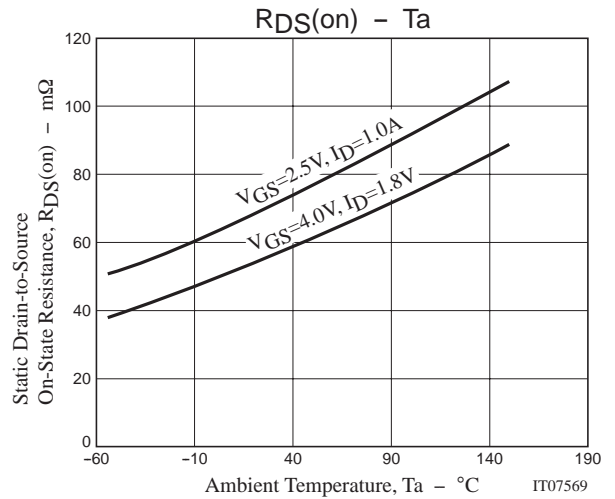
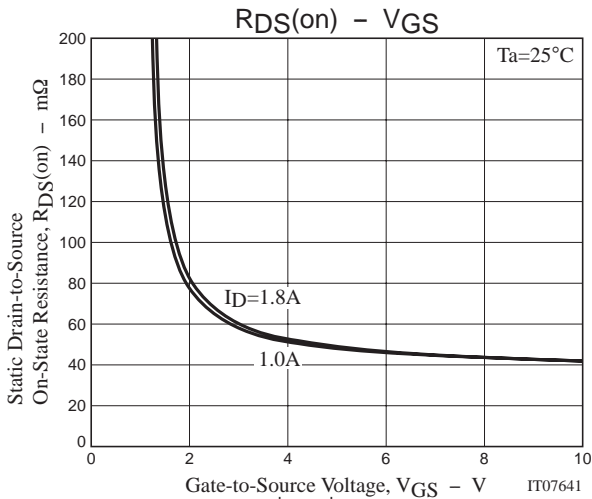
Package Dimensions

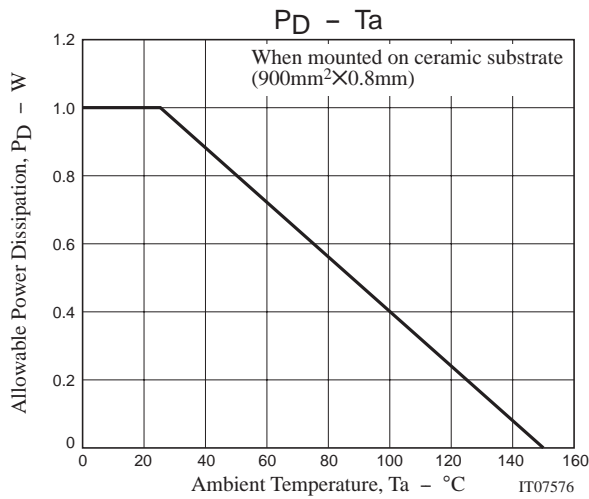
unit : mm (typ)
7019A-003



Switching Time Test Circuit







Note on usage : Since the MCH3431 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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