



ECH8401

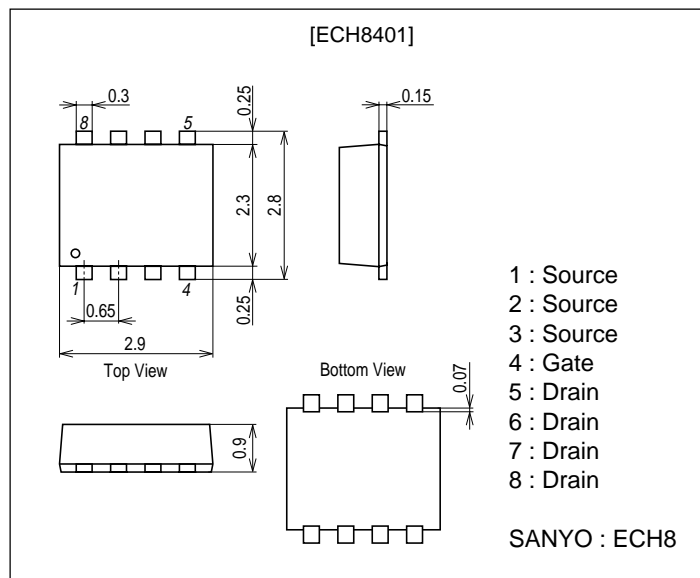
Ultrahigh-Speed Switching Applications

Features

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

Package Dimensions

unit : mm
2222



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} | | ±12 | V |
| Drain Current (DC) | I _D | | 10 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 40 | A |
| Allowable Power Dissipation | P _D | Mounted on a ceramic board (900mm ² ×0.8mm) | 1.6 | 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 | 0.5 | | 1.3 | V |

Marking : KA

Continued on next page.

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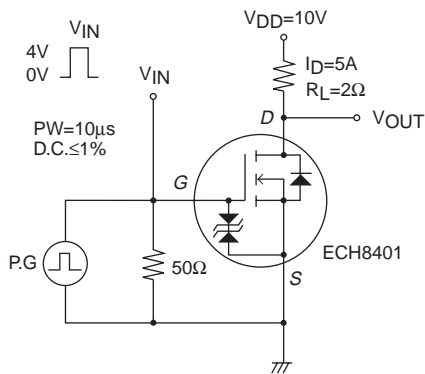
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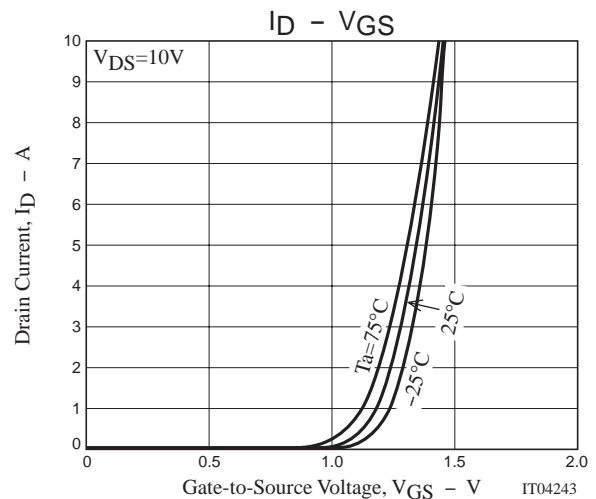
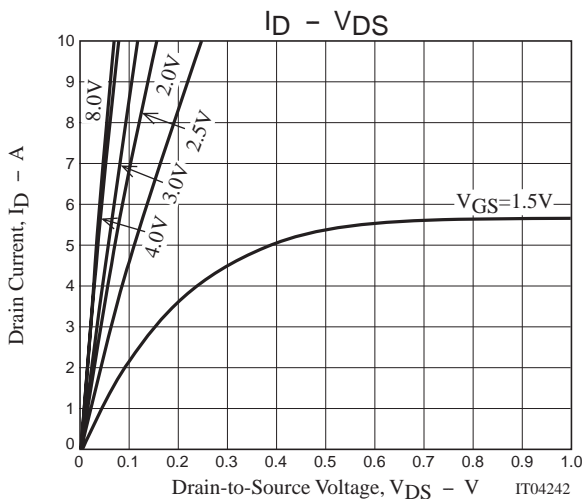
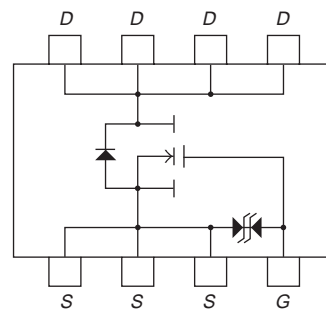
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| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|----------------------------------|---------|------|------|-----------|
| | | | min | typ | max | |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=10V, I_D=5A$ | 14 | 20 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=5A, V_{GS}=4V$ | | 9 | 14 | $m\Omega$ |
| | $R_{DS(on)2}$ | $I_D=5A, V_{GS}=3.1V$ | | 10 | 15.5 | $m\Omega$ |
| | $R_{DS(on)3}$ | $I_D=2A, V_{GS}=2.5V$ | | 12 | 19 | $m\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS}=10V, f=1MHz$ | | 1700 | | μF |
| Output Capacitance | C_{oss} | $V_{DS}=10V, f=1MHz$ | | 330 | | μF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=10V, f=1MHz$ | | 270 | | μF |
| Turn-ON Delay Time | $t_d(on)$ | See specified Test Circuit | | 29 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 150 | | ns |
| Turn-OFF Delay Time | $t_d(off)$ | See specified Test Circuit | | 220 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 160 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ | | 52 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ | | 2.6 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=10V, V_{GS}=10V, I_D=5A$ | | 7.4 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=10A, V_{GS}=0$ | | 0.82 | 1.2 | V |

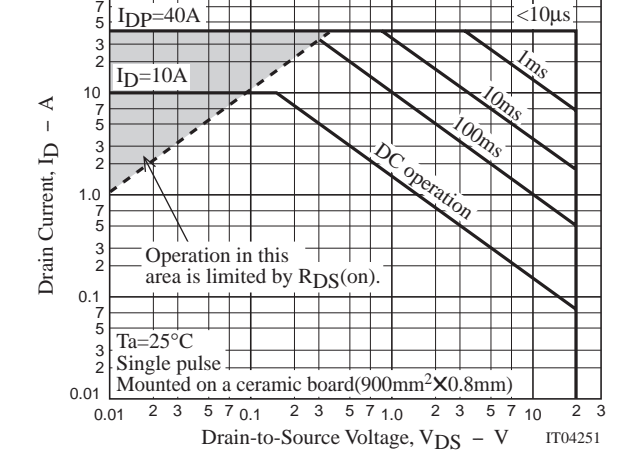
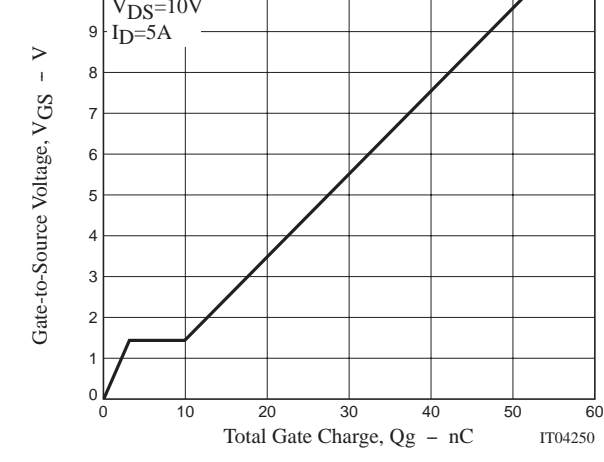
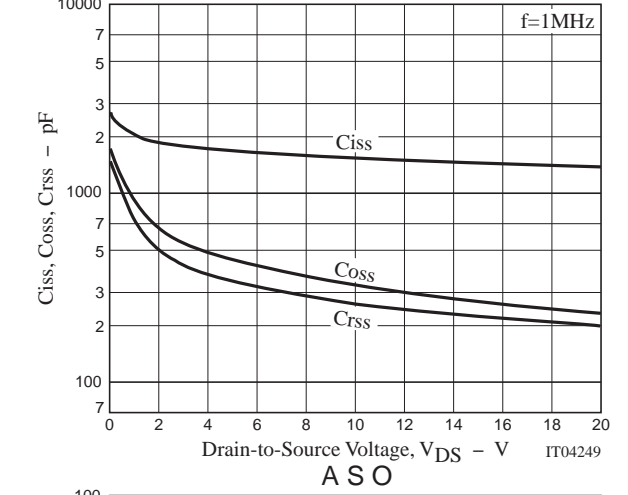
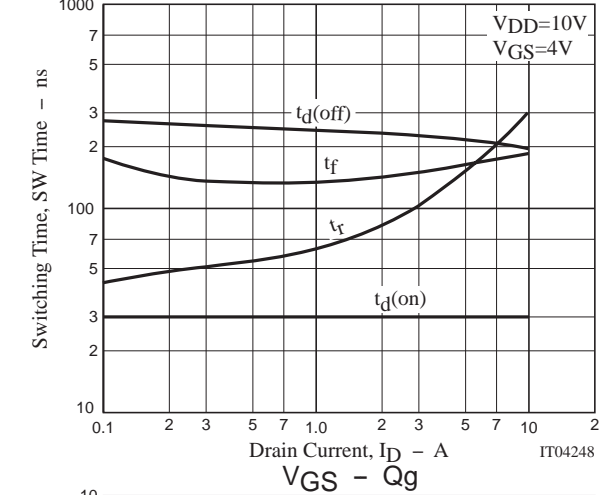
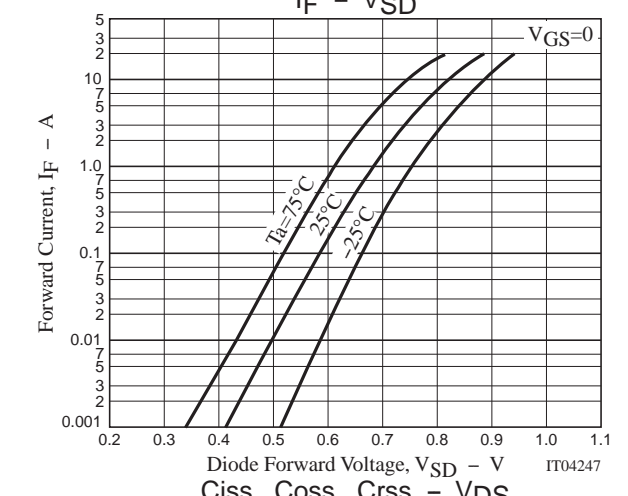
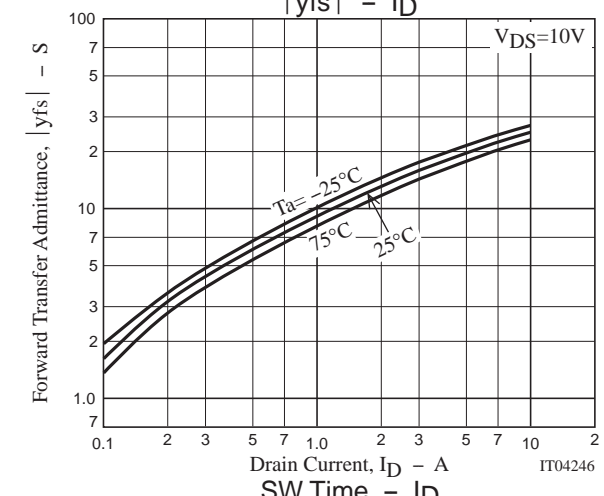
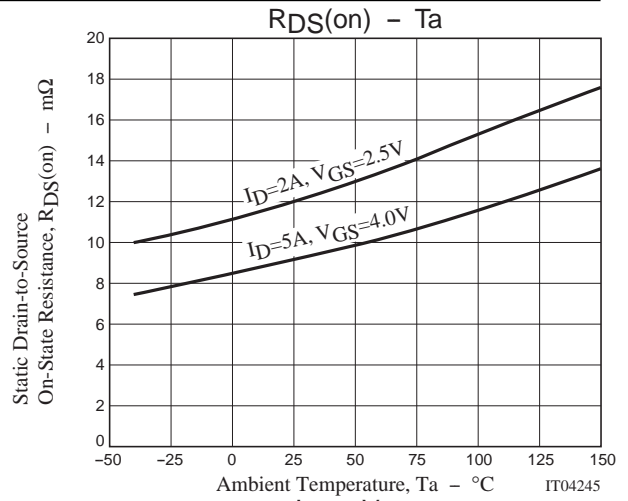
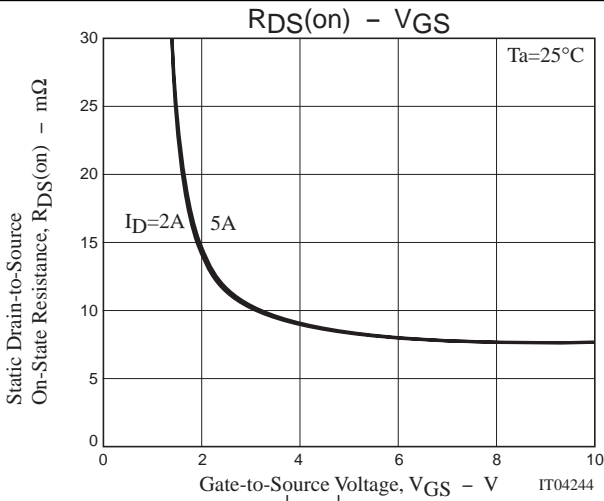
Switching Time Test Circuit

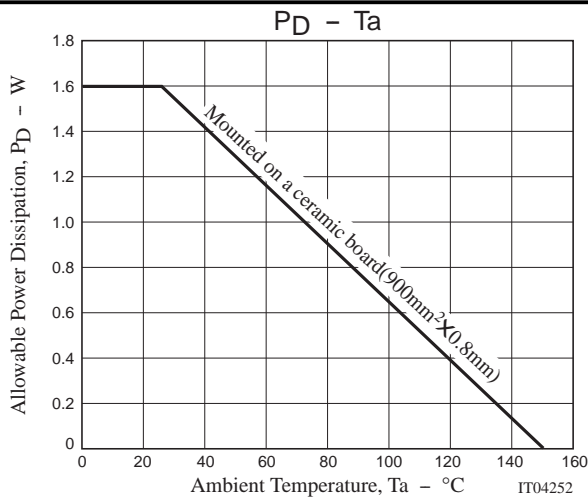


Electrical Connection



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