



N-Channel Silicon MOSFET

ECH8602R — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- 2.5V drive.
- Best suited for LiB charging and discharging switch.
- Common-drain type.

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 | | 5 | 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) 1unit | 1.4 | W |
| Total Dissipation | P _T | Mounted on a ceramic board (900mm ² ×0.8mm) | 1.5 | 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 | 0.5 | | 1.3 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} =10V, I _D =2.5A | 5.5 | 9 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =4A, V _{GS} =4.5V | 15.4 | 22 | 30 | mΩ |
| | R _{DS(on)2} | I _D =4A, V _{GS} =4.0V | 16.1 | 23 | 31 | mΩ |
| | R _{DS(on)3} | I _D =2A, V _{GS} =2.5V | 18 | 30 | 44 | mΩ |

Marking : WC

Continued on next page.

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ECH8602R

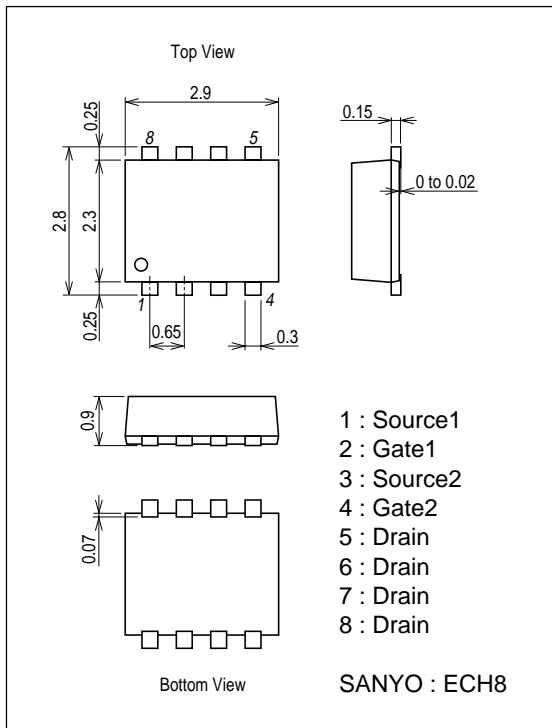
Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|-------------------------------|---------------------|--|---------|------|-----|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | V _{DS} =10V, f=1MHz | | 1130 | | pF |
| Output Capacitance | Coss | V _{DS} =10V, f=1MHz | | 165 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =10V, f=1MHz | | 130 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit. | | 412 | | ns |
| Rise Time | t _r | See specified Test Circuit. | | 1200 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit. | | 4480 | | ns |
| Fall Time | t _f | See specified Test Circuit. | | 2420 | | ns |
| Total Gate Charge | Q _g | V _{DS} =10V, V _{GS} =10V, I _D =5A | | 26.6 | | nC |
| Gate-to-Source Charge | Q _{gs} | V _{DS} =10V, V _{GS} =10V, I _D =5A | | 2 | | nC |
| Gate-to-Drain "Miller" Charge | Q _{gd} | V _{DS} =10V, V _{GS} =10V, I _D =5A | | 3 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =5A, V _{GS} =0V | | 0.75 | 1.2 | V |

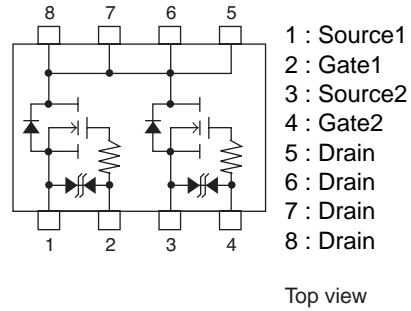
Package Dimensions

unit : mm (typ)

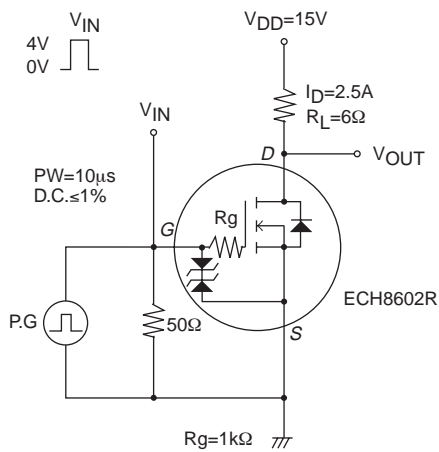
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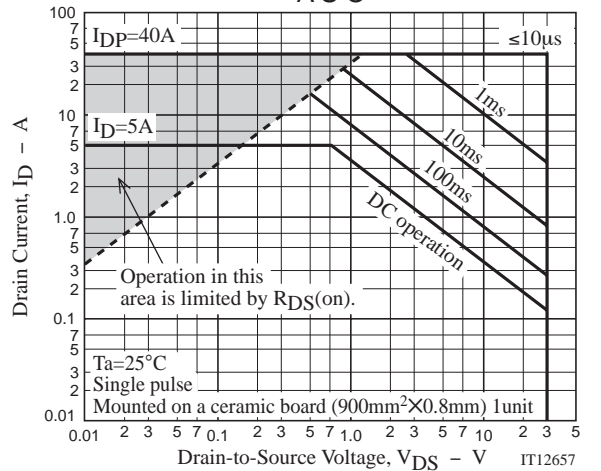
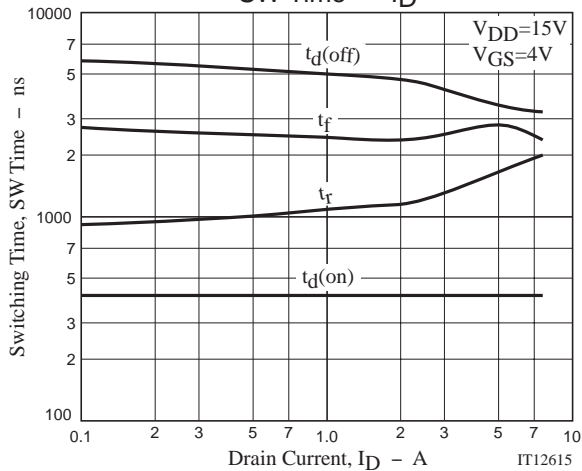
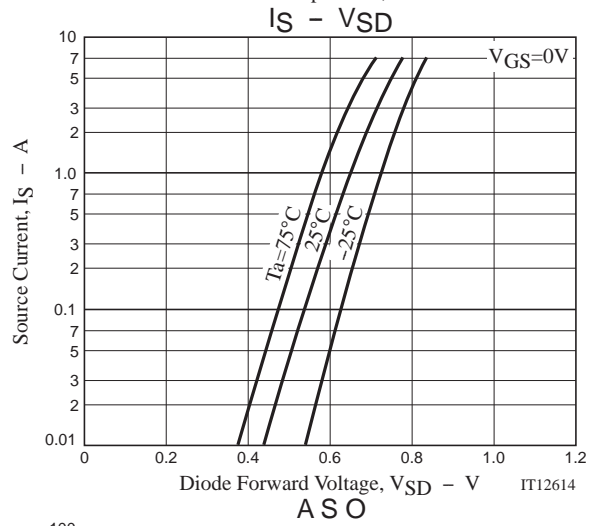
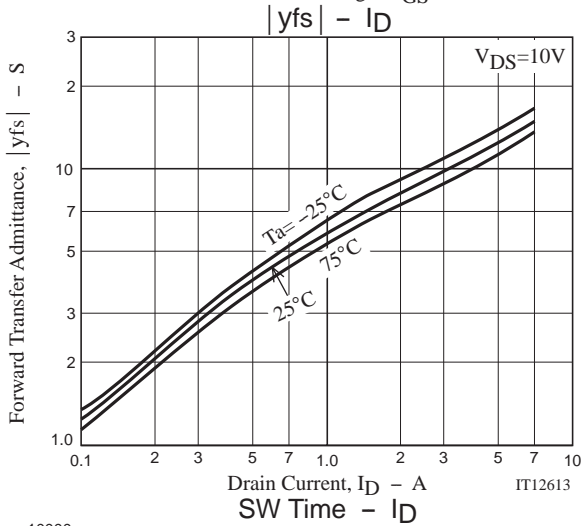
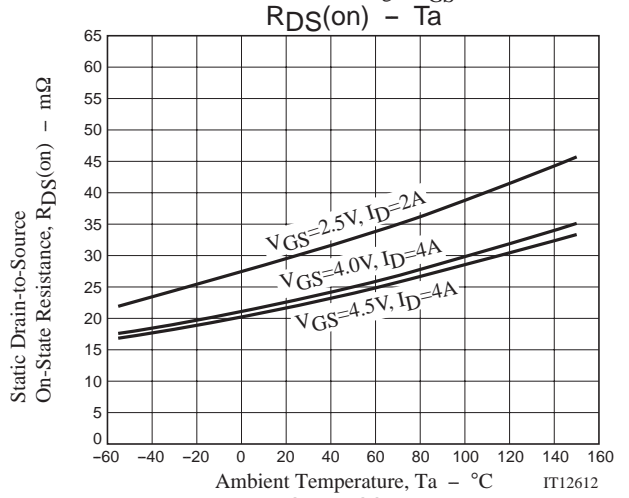
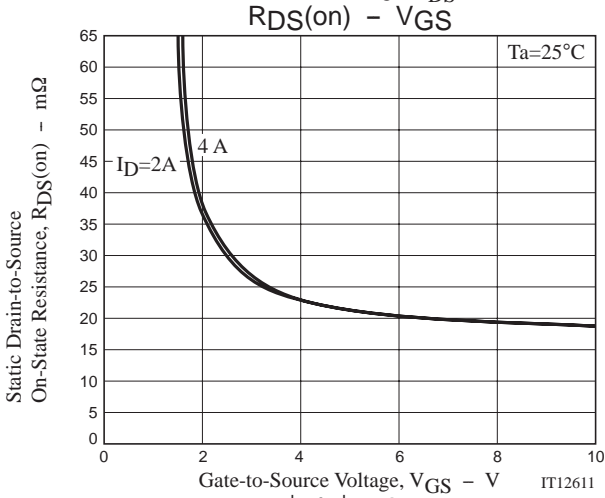
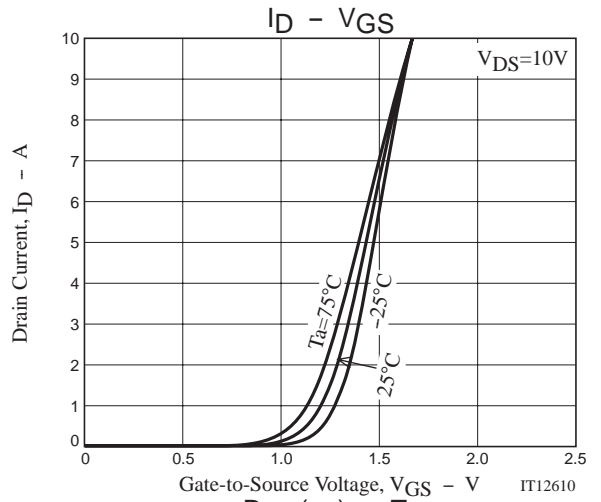
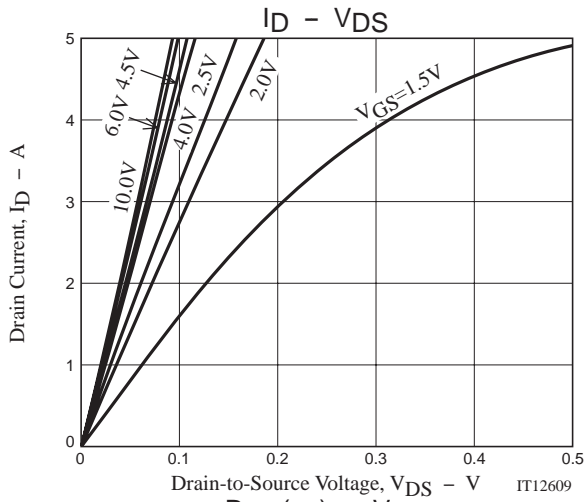
Electrical Connection



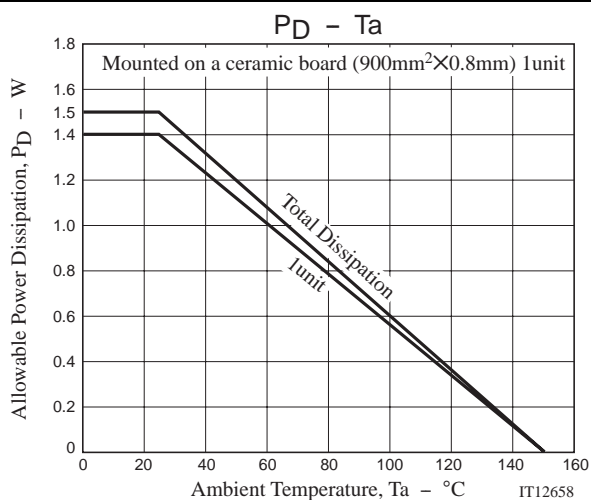
Switching Time Test Circuit



ECH8602R



ECH8602R



Note on usage : Since the ECH8602R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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