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Ordering number : ENN7042

N-Channel Silicon MOSFET

# MCH6610

## Ultrahigh-Speed Switching Applications

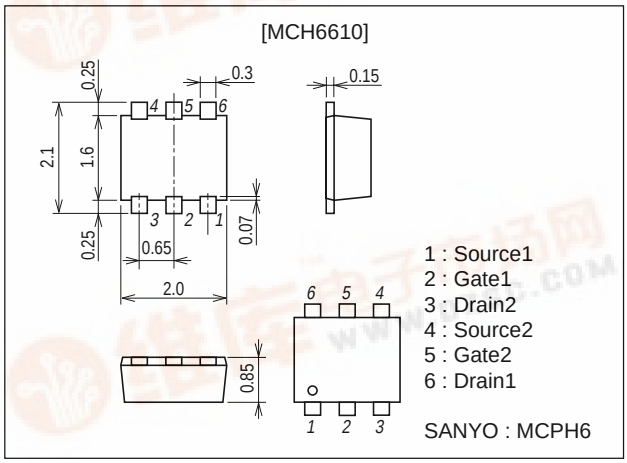
## Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.
- Composite type with 2 MOSFETs contained in a single package, facilitating high-density mounting.

## Package Dimensions

unit : mm

2173A




## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DSS}$ | | 50 | V |
| Gate-to-Source Voltage | $V_{GSS}$ | | ±10 | V |
| Drain Current (DC) | $I_D$ | | 0.45 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10µs, duty cycle≤1% | 1.8 | A |
| Allowable Power Dissipation | $P_D$ | Mounted on a ceramic board (900mm²×0.8mm)1unit | 0.8 | W |
| Channel Temperature | Tch | | 150 | °C |
| Storage Temperature | Tstg | | -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 | 50 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=50V, $V_{GS}$=0 | | | 10 | µA |
| Gate-to-Source Leakage Current | $I_{GSS}$ | $V_{GS}$=±8V, $V_{DS}$=0 | | | ±10 | µA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=10V, $I_D$=100µA | 0.4 | | 1.3 | V |
| Forward Transfer Admittance | \|yfs\| | $V_{DS}$=10V, $I_D$=100mA | 340 | 490 | | mS |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on)1 | $I_D$=100mA, $V_{GS}$=4V | | 1.9 | 2.4 | Ω |
| | $R_{DS}$(on)2 | $I_D$=50mA, $V_{GS}$=2.5V | | 2.2 | 3 | Ω |
| | $R_{DS}$(on)3 | $I_D$=10mA, $V_{GS}$=1.5V | | 3.2 | 6.4 | Ω |

Marking : FJ

Continued on next page.

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■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.



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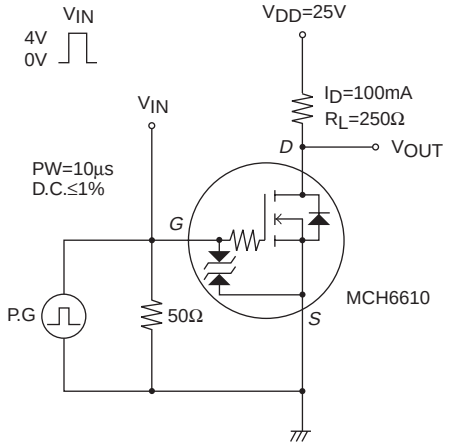
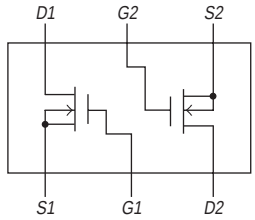
Continued from preceding page.

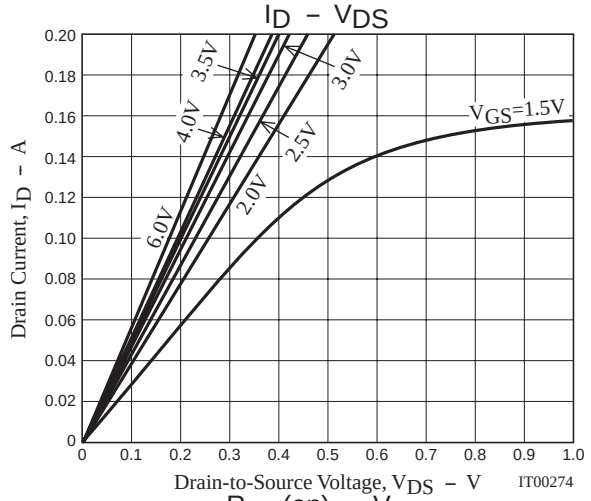
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Input Capacitance | Ciss | $V_{DS}$=10V, f=1MHz | | 25 | | pF |
| Output Capacitance | Coss | $V_{DS}$=10V, f=1MHz | | 12 | | pF |
| Reverse Transfer Capacitance | Crss | $V_{DS}$=10V, f=1MHz | | 4.5 | | pF |
| Turn-ON Delay Time | $t_d$(on) | See specified Test Circuit. | | 25 | | ns |
| Rise Time | $t_r$ | See specified Test Circuit. | | 75 | | ns |
| Turn-OFF Delay Time | $t_d$(off) | See specified Test Circuit. | | 350 | | ns |
| Fall Time | $t_f$ | See specified Test Circuit. | | 170 | | ns |
| Total Gate Charge | Qg | $V_{DS}$=10V, $V_{GS}$=10V, $I_D$=200mA | | 2.18 | | nC |
| Gate-to-Source Charge | Qgs | $V_{DS}$=10V, $V_{GS}$=10V, $I_D$=200mA | | 0.28 | | nC |
| Gate-to-Drain “Miller” Charge | Qgd | $V_{DS}$=10V, $V_{GS}$=10V, $I_D$=200mA | | 0.45 | | nC |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=200mA, $V_{GS}$=0 | | 0.83 | 1.2 | V |

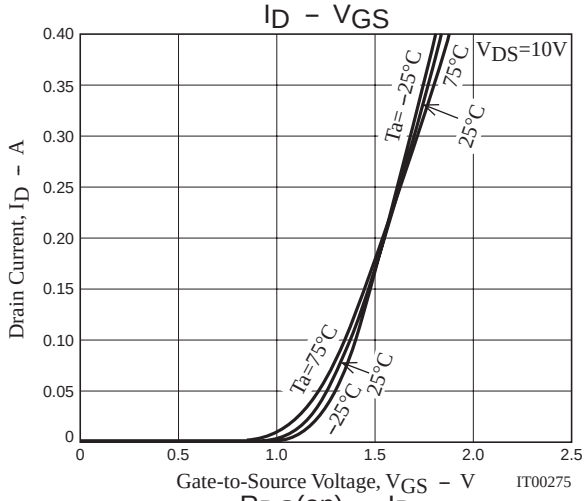
## Switching Time Test Circuit

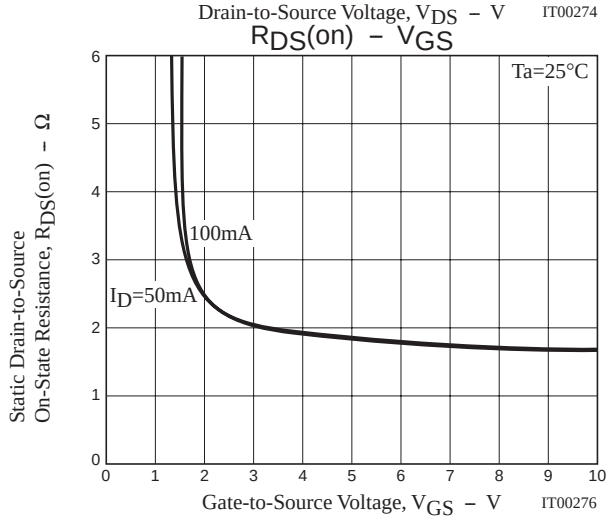


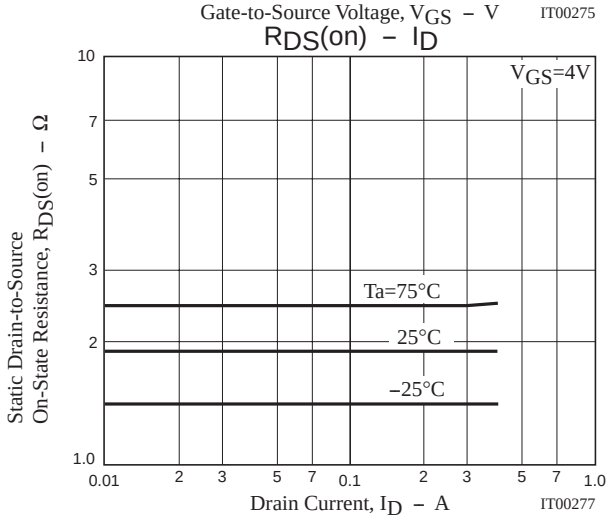

## Electrical Connection

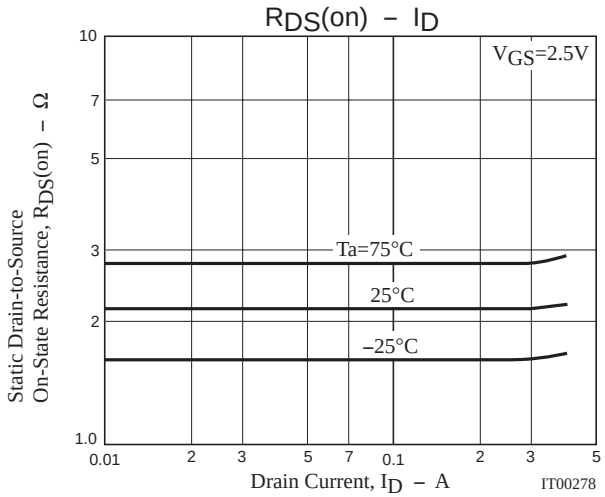


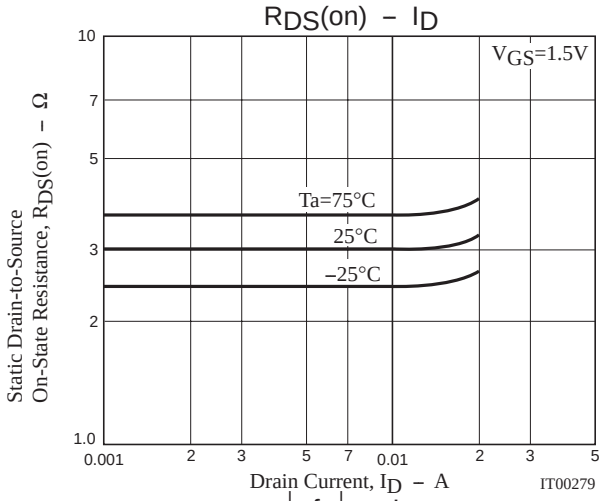



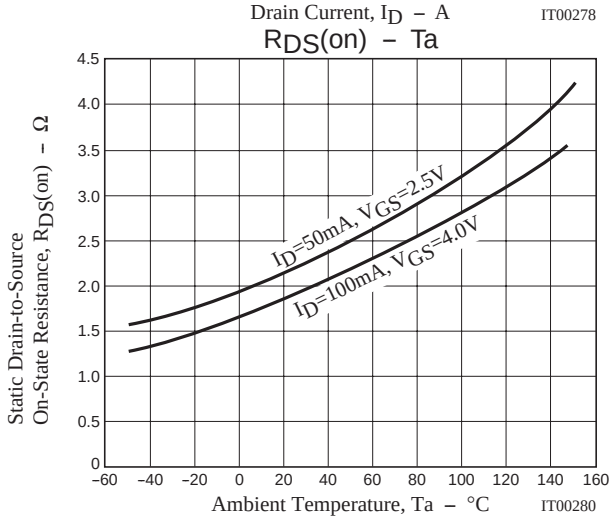



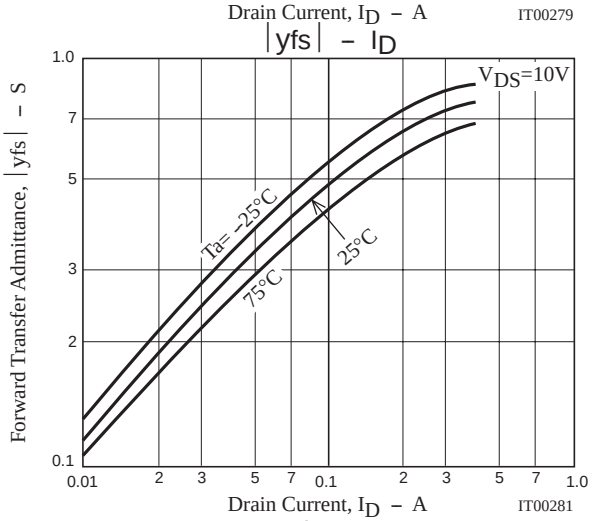



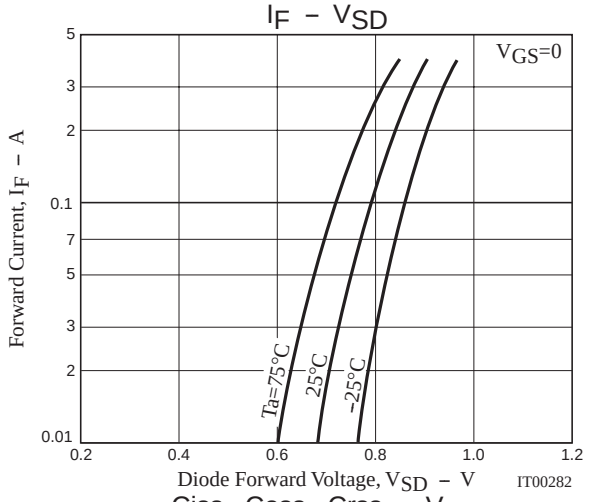



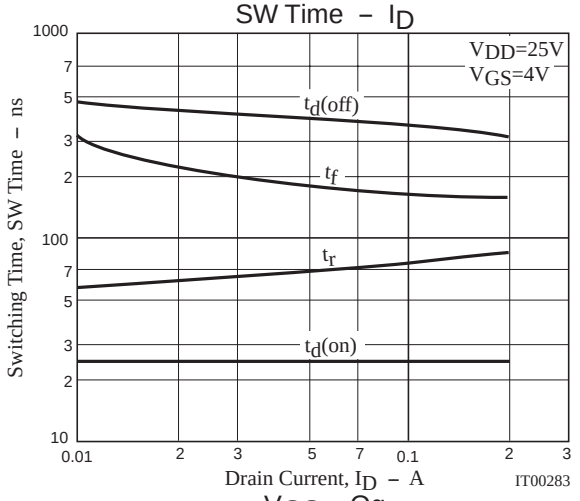

RDS(on) – ID
VGS=2.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00278

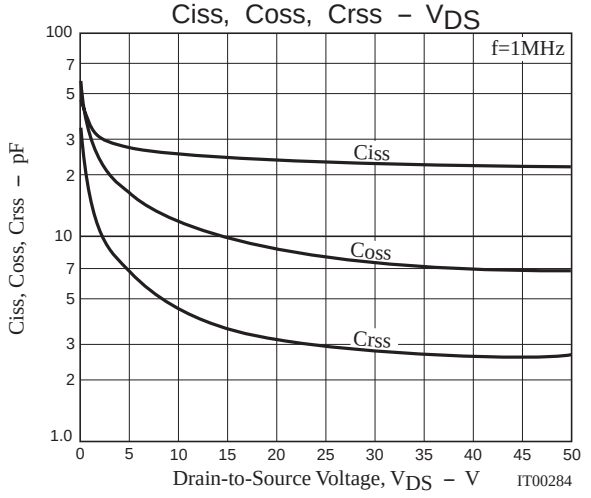

RDS(on) – ID
VGS=1.5V
Ta=75°C
25°C
–25°C
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Drain Current, ID – A
IT00279

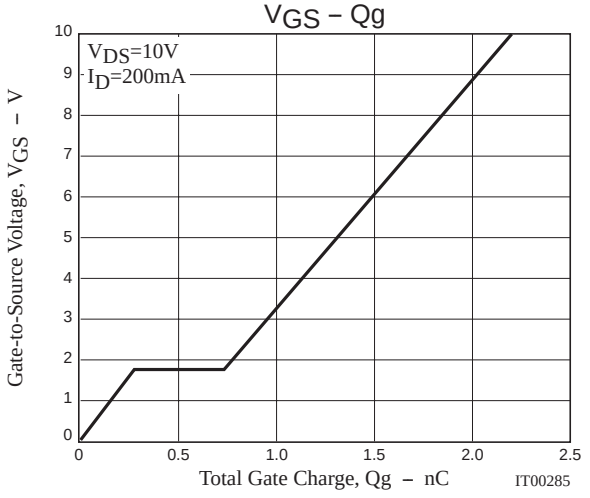

RDS(on) – Ta
ID=50mA, VGS=2.5V
ID=100mA, VGS=4.0V
Static Drain-to-Source On-State Resistance, RDS(on) – Ω
Ambient Temperature, Ta – °C
IT00280

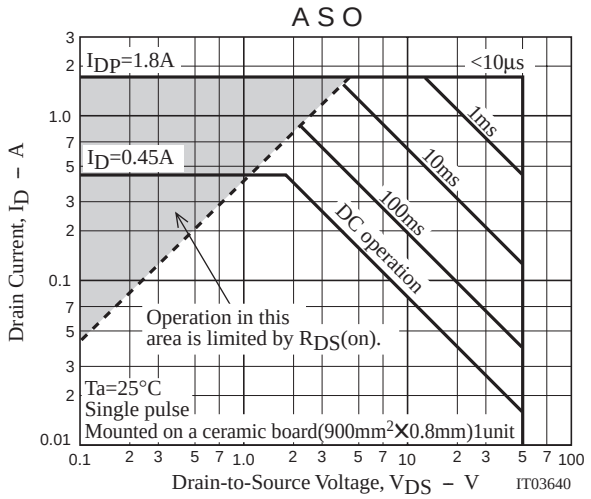

|yfs| – ID
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT00281

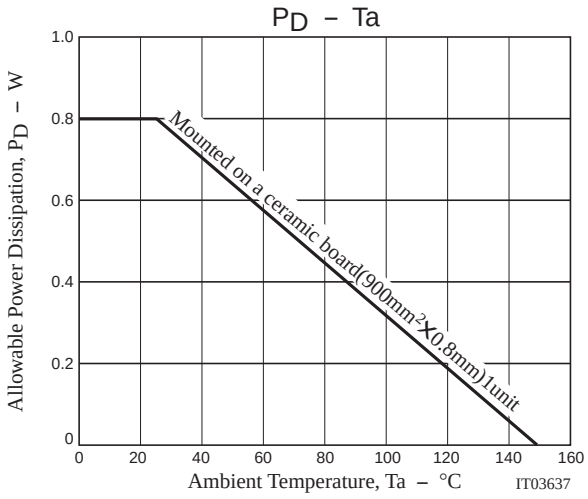

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT00282


SW Time – ID
VDD=25V
VGS=4V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT00283


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT00284


VGS – Qg
VDS=10V
ID=200mA
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT00285




Note on usage : Since the MCH6610 is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.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