



FW905 — N-Channel and P-Channel Silicon MOSFETs

General-Purpose Switching Device Applications

Features

- Composite type with an N-channel MOSFET and a P-channel MOSFET driving from a 2.5V supply voltage contained in a single package.
- High-density mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | N-channel | P-channel | Unit |
|-----------------------------|------------------|--|-------------|-----------|------|
| Drain-to-Source Voltage | V _{DSS} | | 20 | -20 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±10 | ±10 | V |
| Drain Current (DC) | I _D | | 7 | -6 | A |
| Drain Current (PW≤10μs) | I _{DP} | Duty cycle≤1% | 52 | -52 | A |
| Allowable Power Dissipation | P _D | Mounted on a ceramic board (1500mm ² ×0.8mm)1unit, PW≤10s | 2.3 | | W |
| Total Dissipation | P _T | Mounted on a ceramic board (1500mm ² ×0.8mm), PW≤10s | 2.5 | | 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 | |
| [N-channel] | | | | | | |
| Drain-to-Source Breakdown Voltage | V(BR)DSS | I _D =1mA, V _{GS} =0V | 20 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =20V, 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 =7A | 9 | 15 | | S |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =7A, V _{GS} =4V | | 18 | 24 | mΩ |
| | R _{DS(on)2} | I _D =3A, V _{GS} =2.5V | | 20 | 33 | mΩ |
| Input Capacitance | C _{iss} | V _{DS} =10V, f=1MHz | | 1530 | | pF |
| Output Capacitance | C _{oss} | V _{DS} =10V, f=1MHz | | 230 | | pF |
| Reverse Transfer Capacitance | C _{rss} | V _{DS} =10V, f=1MHz | | 215 | | pF |

Marking : W905

Continued on next page.

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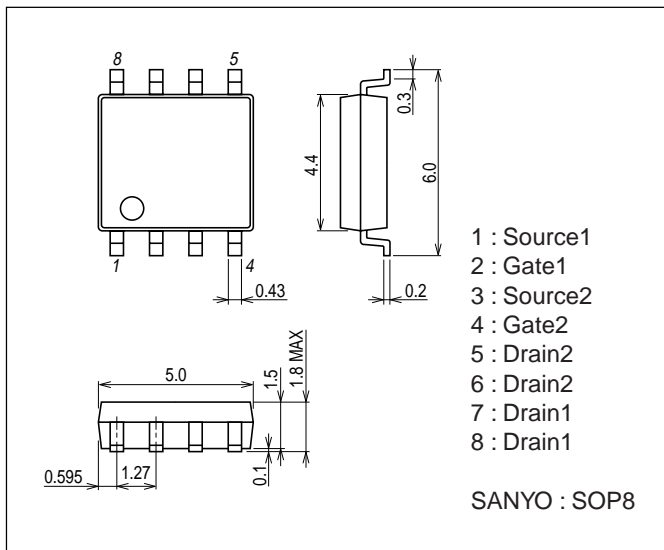
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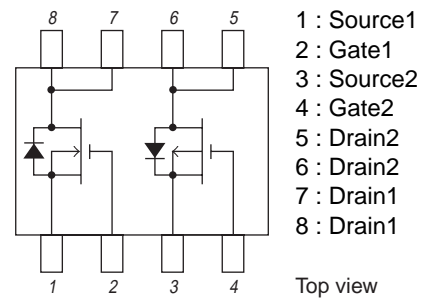
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|------------------------------------|---------|-------|----------|-----------|
| | | | min | typ | max | |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 19 | | ns |
| Rise Time | t_r | See specified Test Circuit. | | 225 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit. | | 125 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 125 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=10V, V_{GS}=4V, I_D=7A$ | | 18.5 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=10V, V_{GS}=4V, I_D=7A$ | | 3.4 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=10V, V_{GS}=4V, I_D=7A$ | | 4.8 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=7A, V_{GS}=0V$ | | 0.79 | 1.2 | V |
| [P-channel] | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=-1mA, V_{GS}=0V$ | -20 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20V, V_{GS}=0V$ | | | -1 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 8V, V_{DS}=0V$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}=-10V, I_D=-1mA$ | -0.4 | | -1.4 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=-10V, I_D=-6A$ | 7.8 | 13 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-6A, V_{GS}=-4V$ | | 30 | 40 | $m\Omega$ |
| | $R_{DS(on)2}$ | $I_D=-3A, V_{GS}=-2.5V$ | | 42 | 59 | $m\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS}=-10V, f=1MHz$ | | 1720 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-10V, f=1MHz$ | | 260 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=-10V, f=1MHz$ | | 245 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 19 | | ns |
| Rise Time | t_r | See specified Test Circuit. | | 390 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit. | | 110 | | ns |
| Fall Time | t_f | See specified Test Circuit. | | 145 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=-10V, V_{GS}=-4V, I_D=-6A$ | | 18.4 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=-10V, V_{GS}=-4V, I_D=-6A$ | | 3.2 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=-10V, V_{GS}=-4V, I_D=-6A$ | | 5.2 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=-6A, V_{GS}=0V$ | | -0.82 | -1.2 | V |

Package Dimensions

unit : mm
7005-003

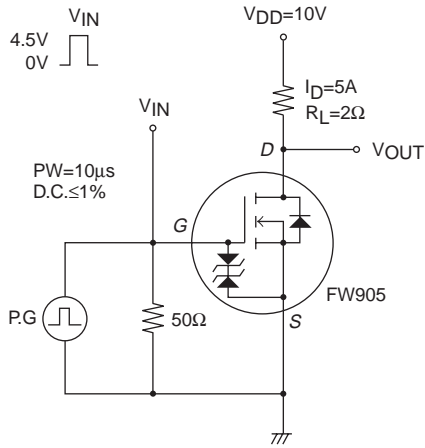


Electrical Connection

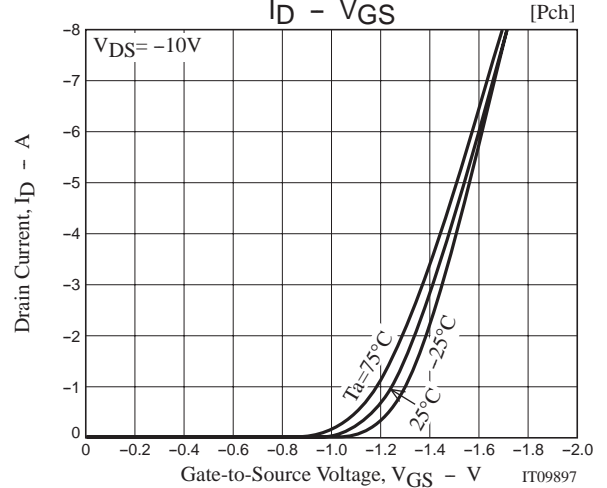
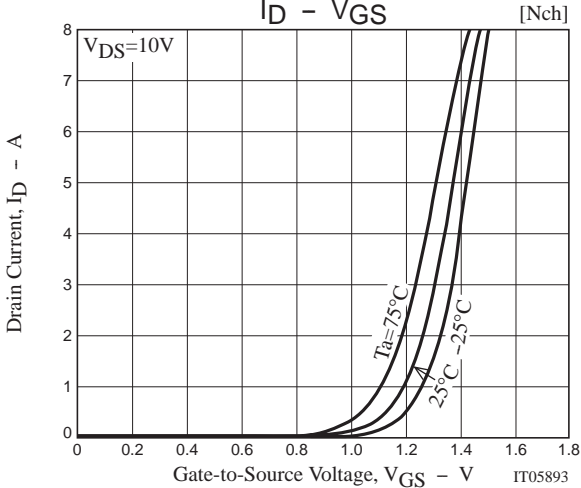
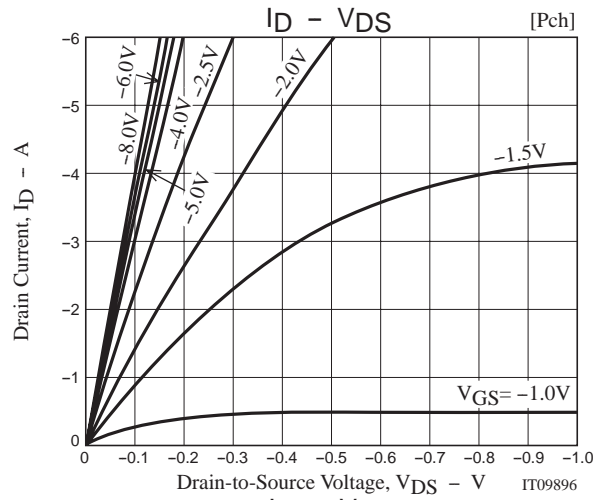
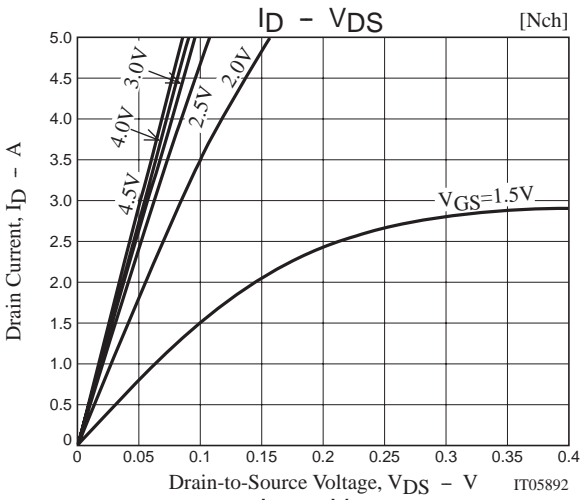
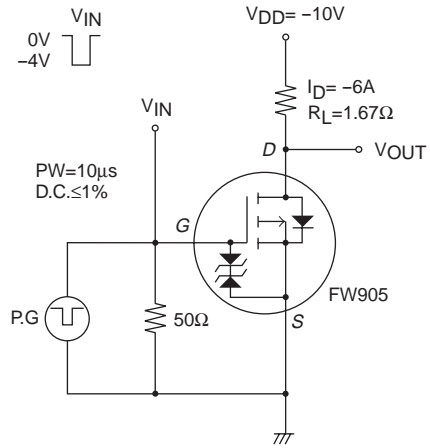


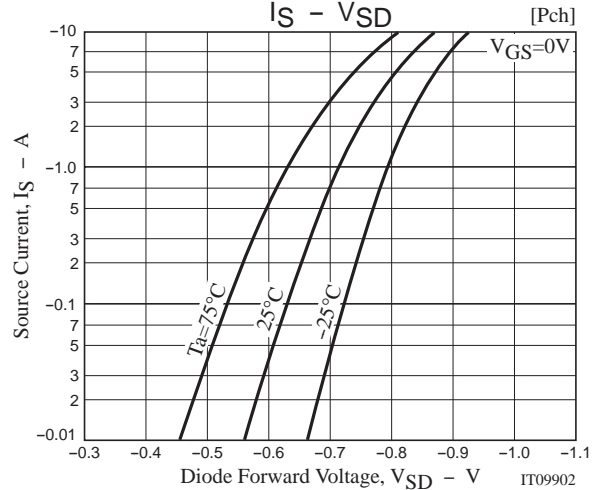
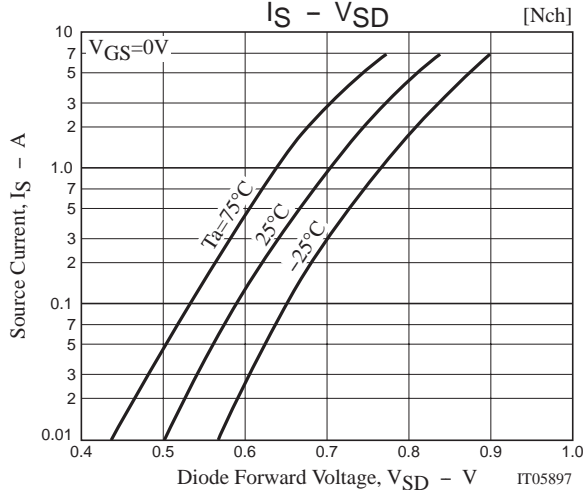
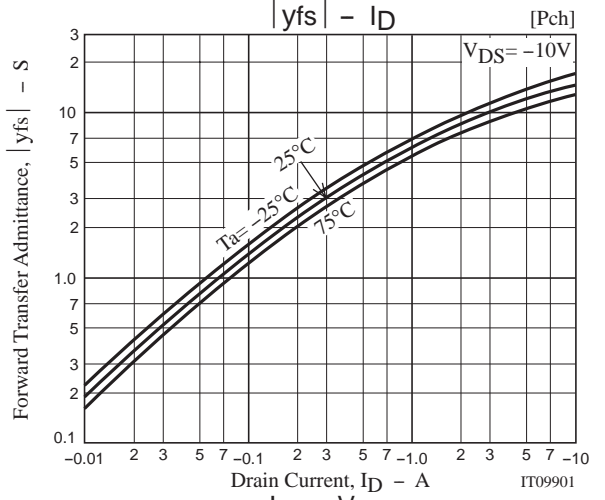
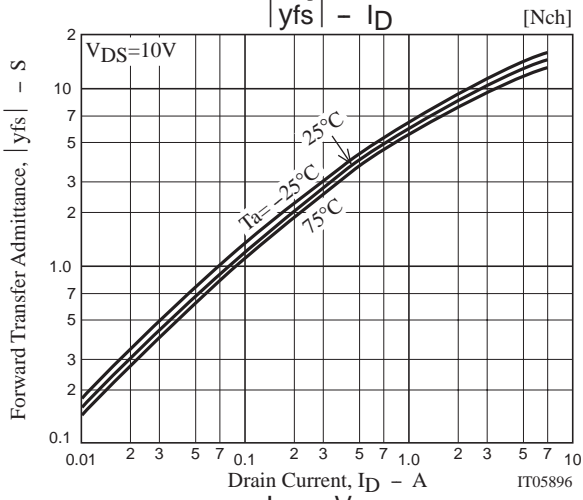
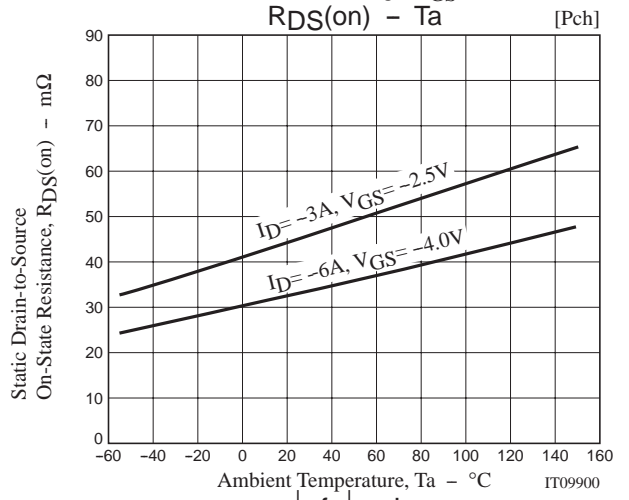
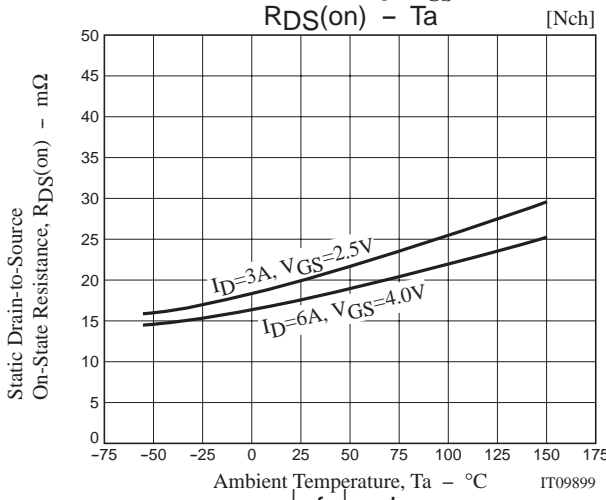
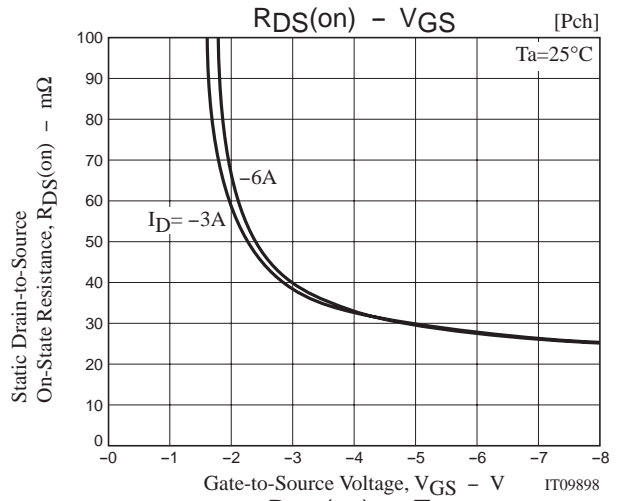
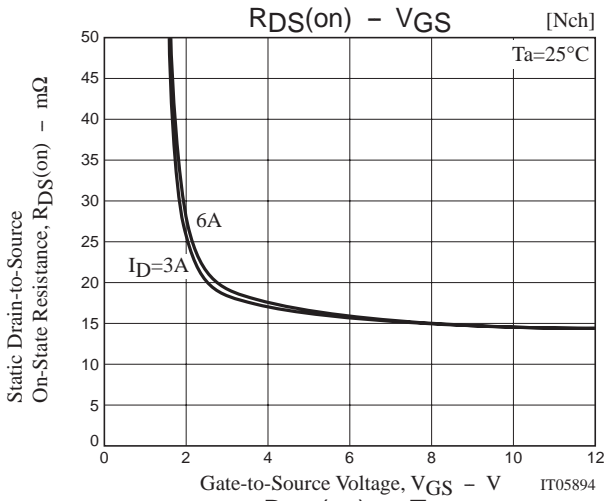
Switching Time Test Circuit

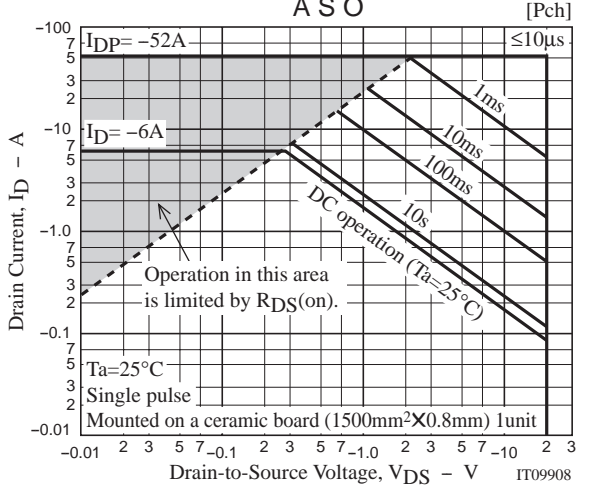
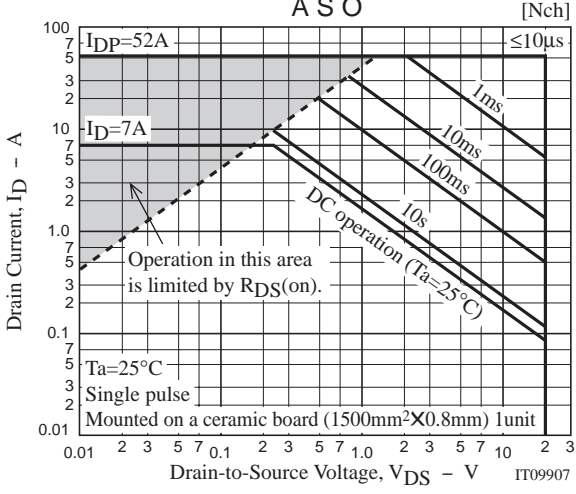
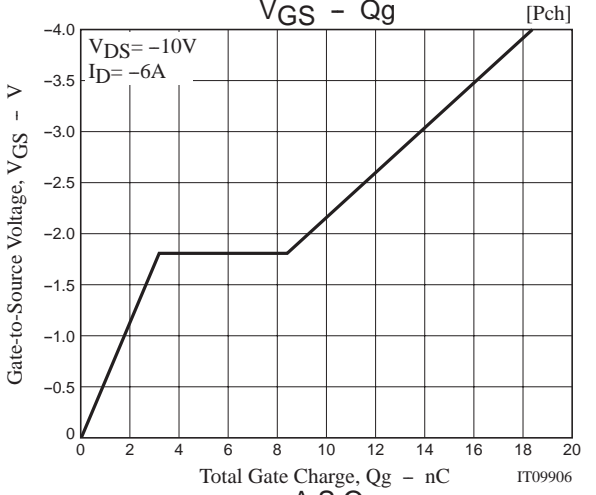
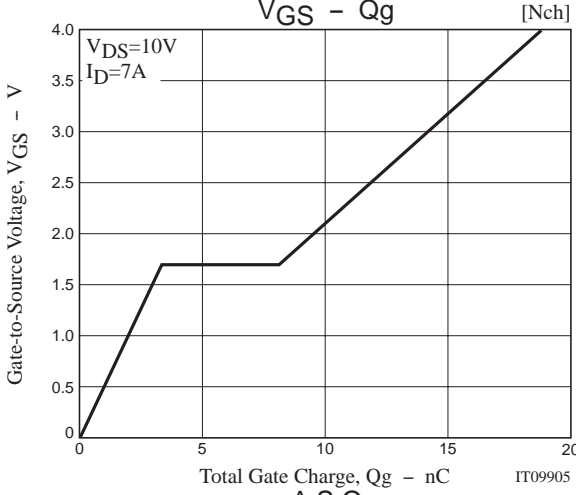
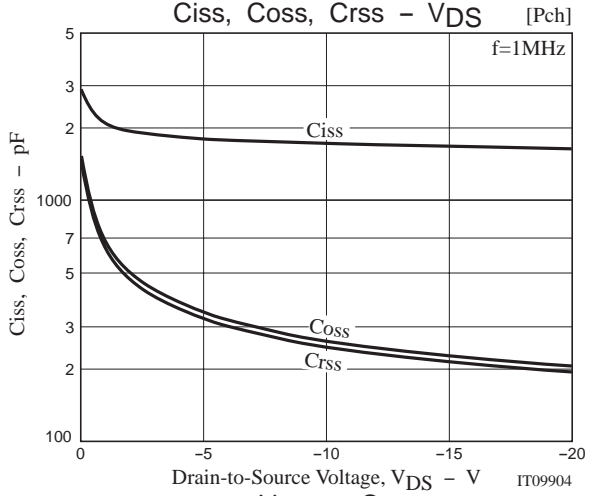
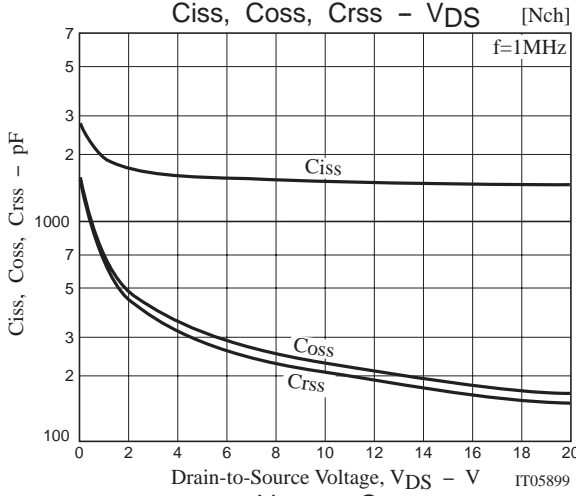
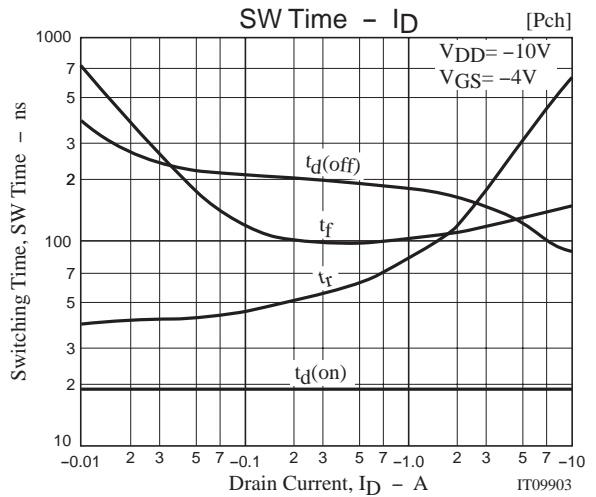
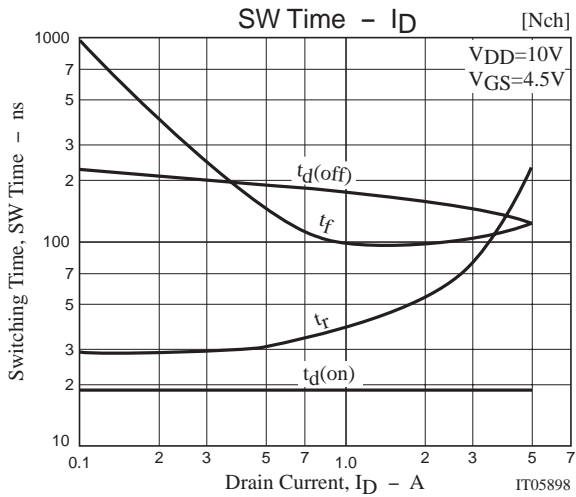
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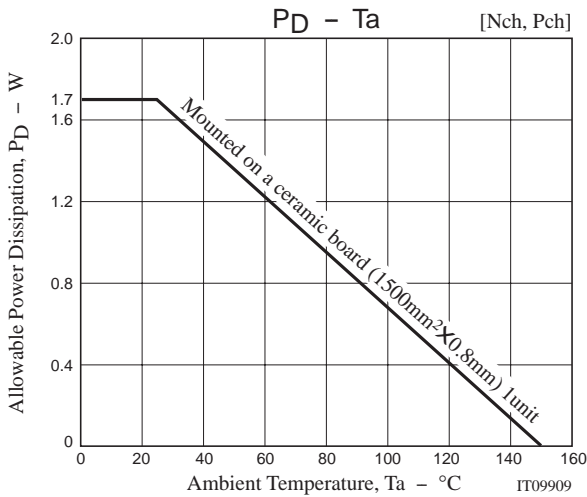


[P-channel]









Note on usage : Since the FW905 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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