



MCH6615

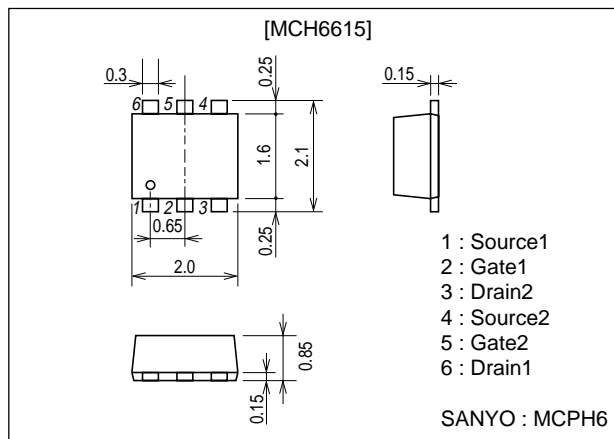
Ultrahigh-Speed Switching Applications

Features

- The MCH6615 incorporates two elements in the same package which are N-channel and P-channel low ON resistance and high-speed switching MOSFETs, thereby enabling high-density mounting.
- Low ON-resistance.
- 2.5V drive.

Package Dimensions

unit : mm
2173



Specifications

Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | N-channel | P-channel | Unit |
|-----------------------------|------------------|---|-------------|-----------|------|
| Drain-to-Source Voltage | V _{DSS} | | 30 | -30 | V |
| Gate-to-Source Voltage | V _{GSS} | | ±10 | ±10 | V |
| Drain Current (DC) | I _D | | 0.65 | -0.4 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 2.6 | -1.6 | A |
| Allowable Power Dissipation | P _D | Mounted on a ceramic board (90mm²×0.8mm)1unit | 0.8 | | 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} =0 | 30 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =30V, 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 | y _{fs} | V _{DS} =10V, I _D =150mA | 400 | 560 | | mS |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =150mA, V _{GS} =4V | | 0.9 | 1.2 | Ω |
| | R _{DS(on)2} | I _D =80mA, V _{GS} =2.5V | | 1.2 | 1.7 | Ω |
| | R _{DS(on)3} | I _D =10mA, V _{GS} =1.5V | | 2.6 | 5.2 | Ω |

Marking : FP

Continued on next page.

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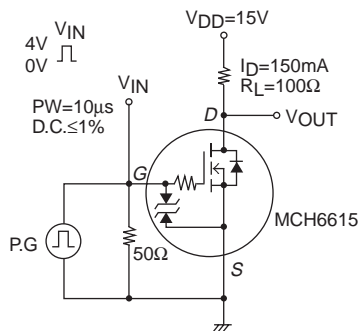
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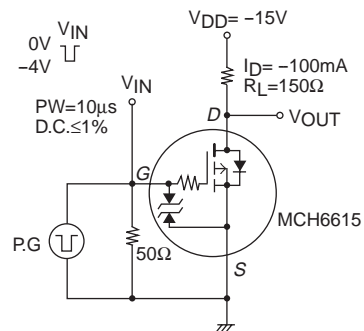
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|----------------------|--|---------|-------|------|------|
| | | | min | typ | max | |
| Input Capacitance | Ciss | V _{DS} =10V, f=1MHz | | 30 | | pF |
| Output Capacitance | Coss | V _{DS} =10V, f=1MHz | | 15 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =10V, f=1MHz | | 10 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit | | 32 | | ns |
| Rise Time | t _r | See specified Test Circuit | | 110 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit | | 250 | | ns |
| Fall Time | t _f | See specified Test Circuit | | 160 | | ns |
| Total Gate Charge | Qg | V _{DS} =10V, V _{GS} =10V, I _D =300mA | | 2.34 | | nC |
| Gate-to-Source Charge | Qgs | V _{DS} =10V, V _{GS} =10V, I _D =300mA | | 0.38 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | V _{DS} =10V, V _{GS} =10V, I _D =300mA | | 0.45 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =300mA, V _{GS} =0 | | 0.8 | 1.2 | V |
| [P-channel] | | | | | | |
| Drain-to-Source Breakdown Voltage | V(BR)DSS | I _D =-1mA, V _{GS} =0 | -30 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =-30V, 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 | | -1.4 | V |
| Forward Transfer Admittance | y _{fs} | V _{DS} =-10V, I _D =-100mA | 210 | 300 | | mS |
| Static Drain-to-Source On-State Resistance | R _{DS(on)1} | I _D =-100mA, V _{GS} =-4V | | 2.4 | 3.1 | Ω |
| | R _{DS(on)2} | I _D =-50mA, V _{GS} =-2.5V | | 3.5 | 4.9 | Ω |
| | R _{DS(on)3} | I _D =-10mA, V _{GS} =-1.5V | | 10 | 20 | Ω |
| Input Capacitance | Ciss | V _{DS} =-10V, f=1MHz | | 28 | | pF |
| Output Capacitance | Coss | V _{DS} =-10V, f=1MHz | | 15 | | pF |
| Reverse Transfer Capacitance | Crss | V _{DS} =-10V, f=1MHz | | 5.2 | | pF |
| Turn-ON Delay Time | t _{d(on)} | See specified Test Circuit | | 24 | | ns |
| Rise Time | t _r | See specified Test Circuit | | 75 | | ns |
| Turn-OFF Delay Time | t _{d(off)} | See specified Test Circuit | | 200 | | ns |
| Fall Time | t _f | See specified Test Circuit | | 150 | | ns |
| Total Gate Charge | Qg | V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA | | 2 | | nC |
| Gate-to-Source Charge | Qgs | V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA | | 0.25 | | nC |
| Gate-to-Drain "Miller" Charge | Qgd | V _{DS} =-10V, V _{GS} =-10V, I _D =-200mA | | 0.35 | | nC |
| Diode Forward Voltage | V _{SD} | I _S =-200mA, V _{GS} =0 | | -0.82 | -1.2 | V |

Switching Time Test Circuit

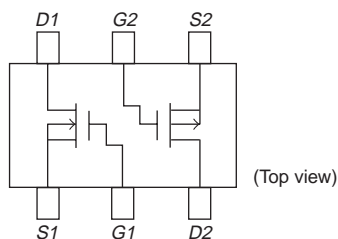
[N-channel]



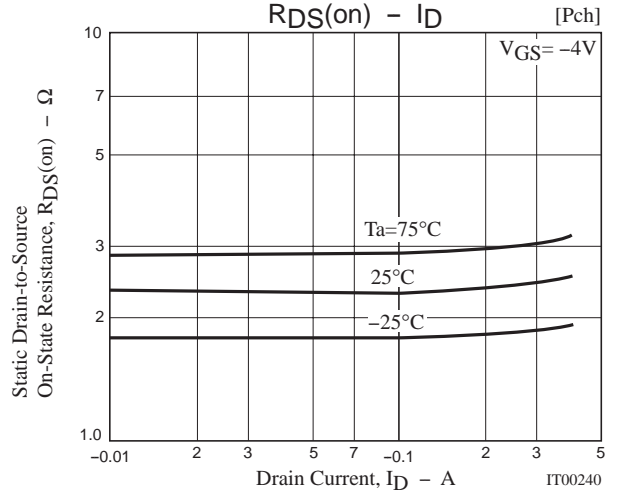
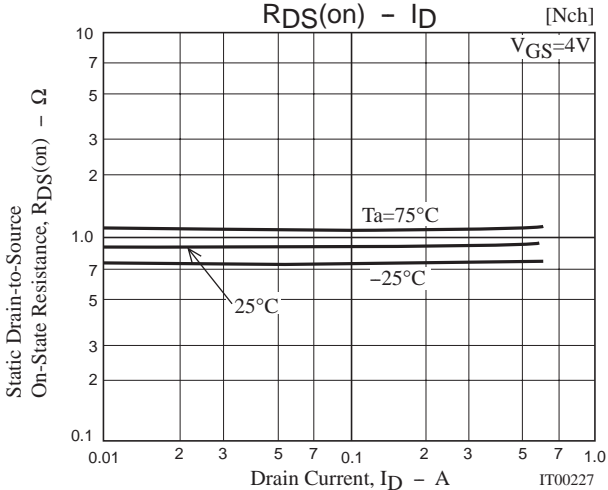
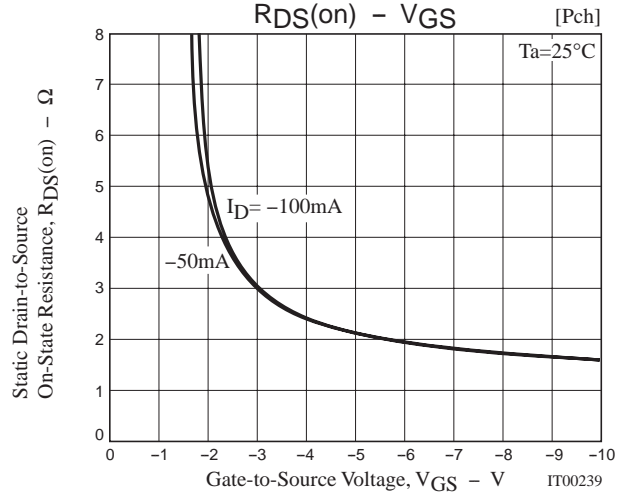
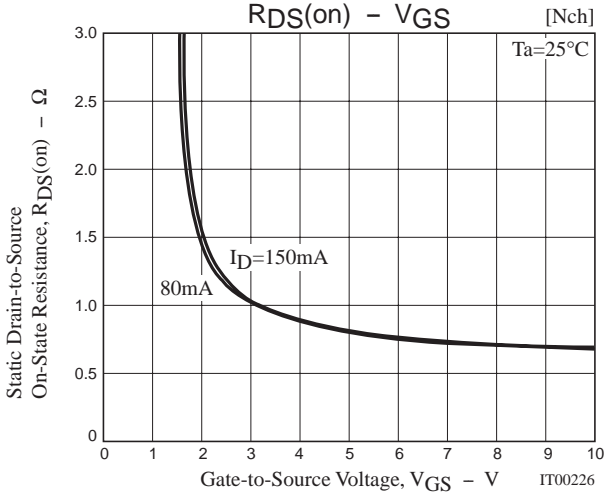
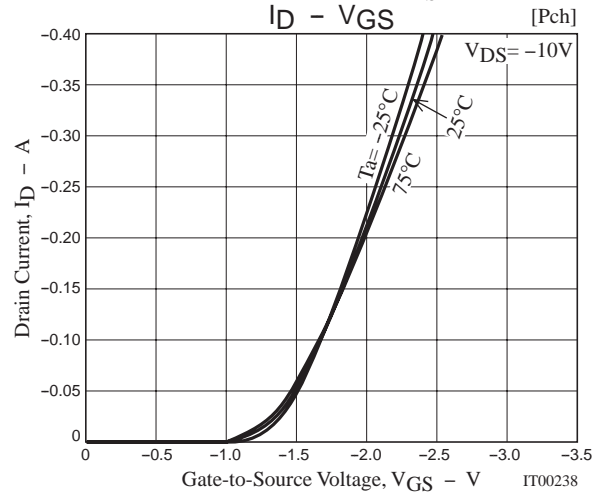
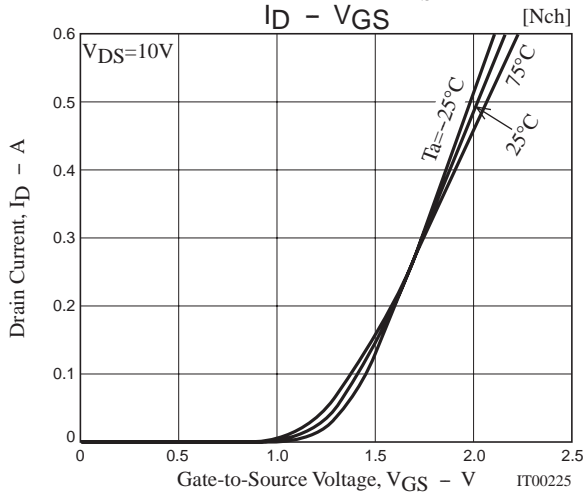
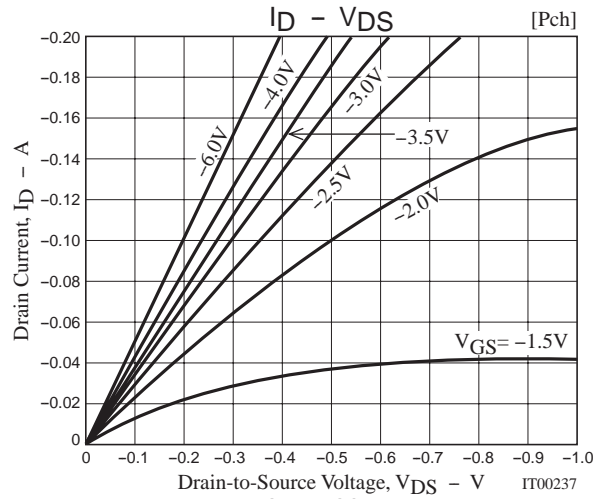
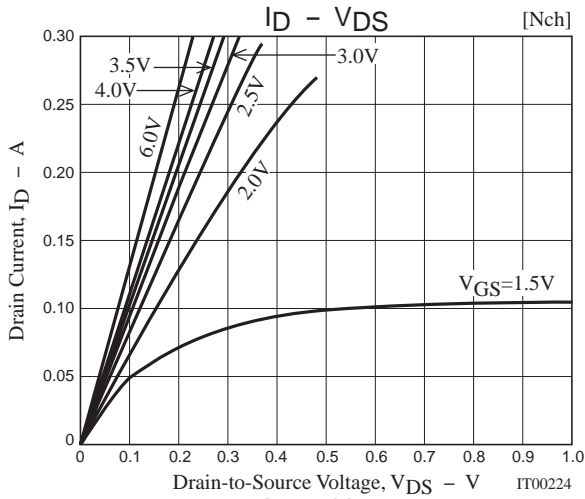
[P-channel]



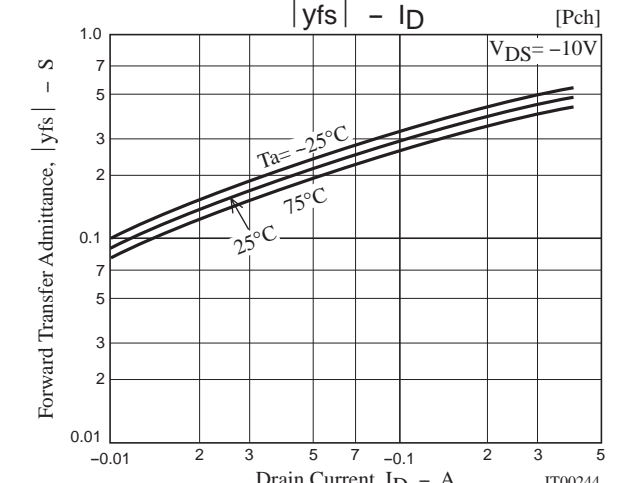
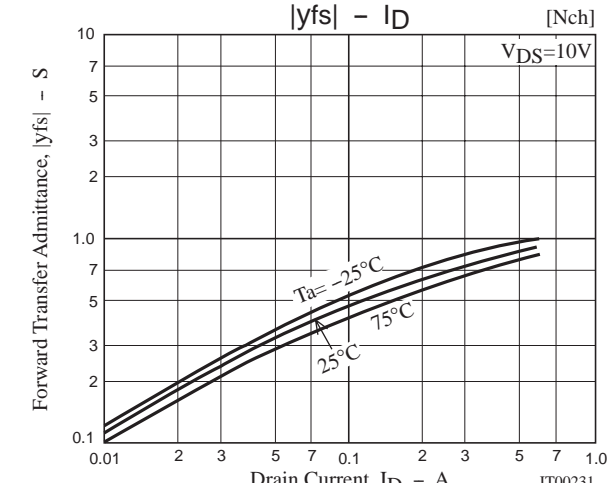
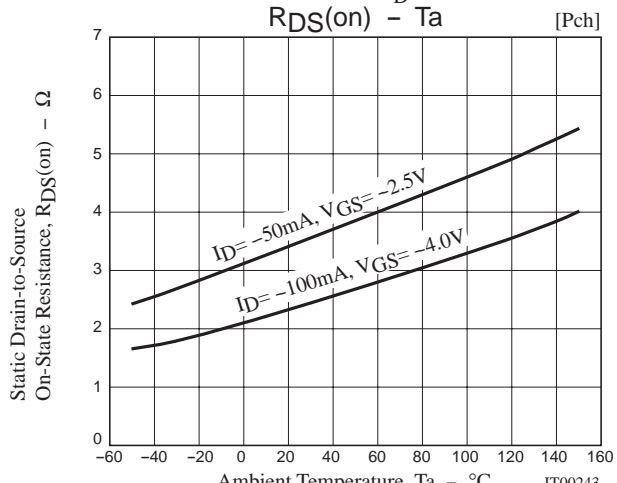
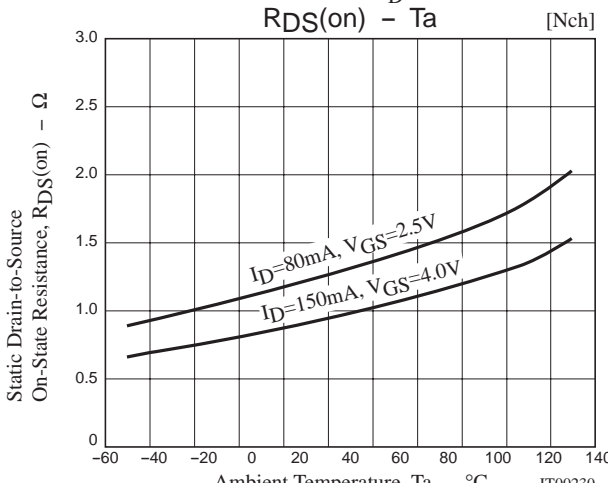
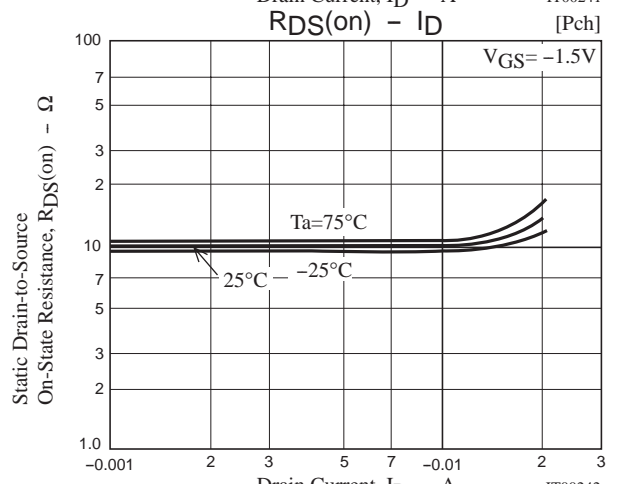
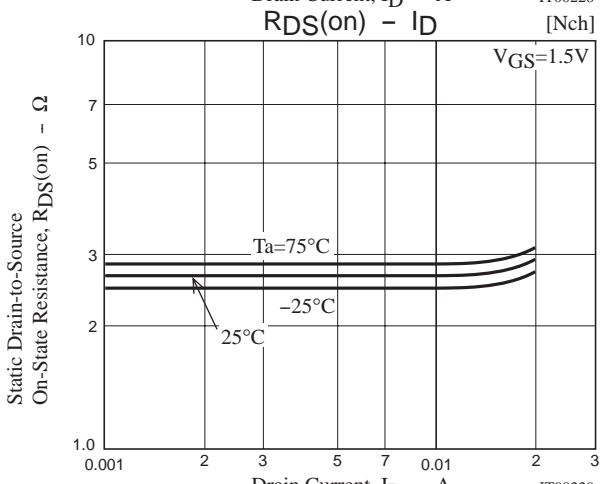
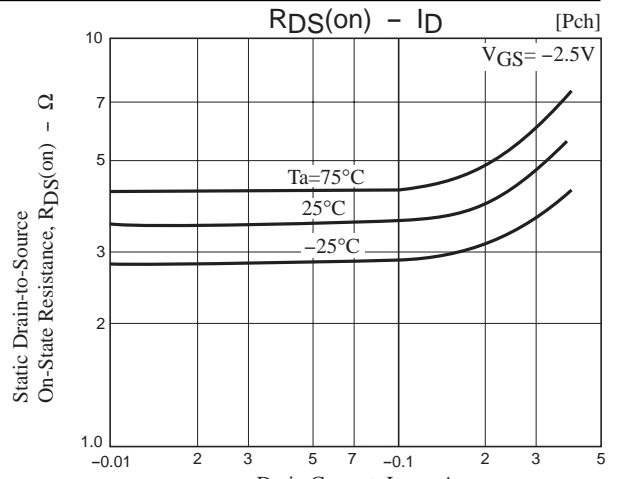
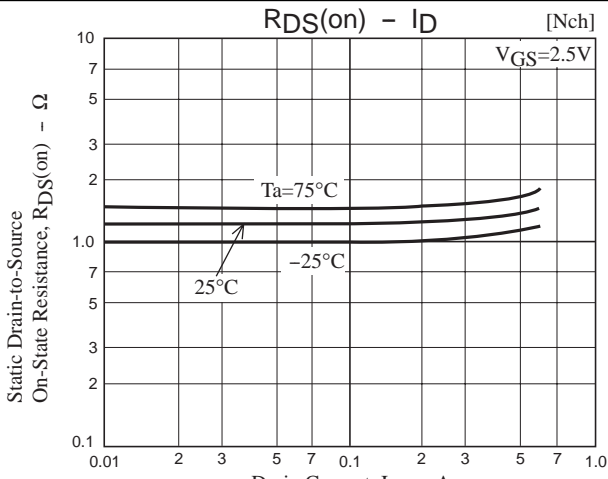
Electrical Connection



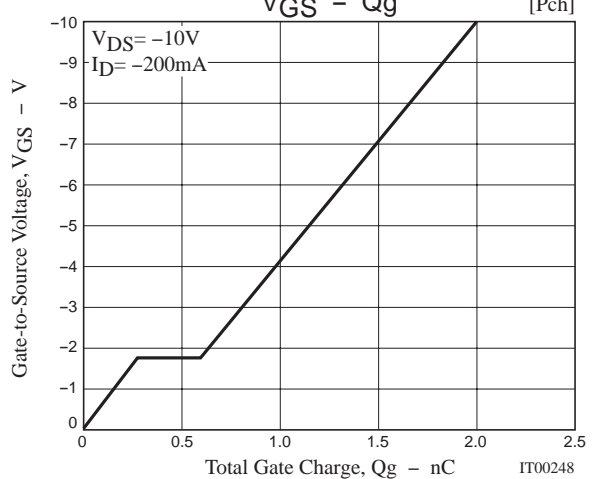
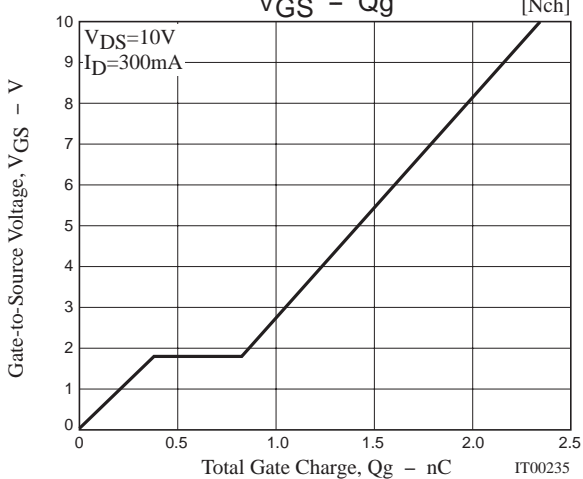
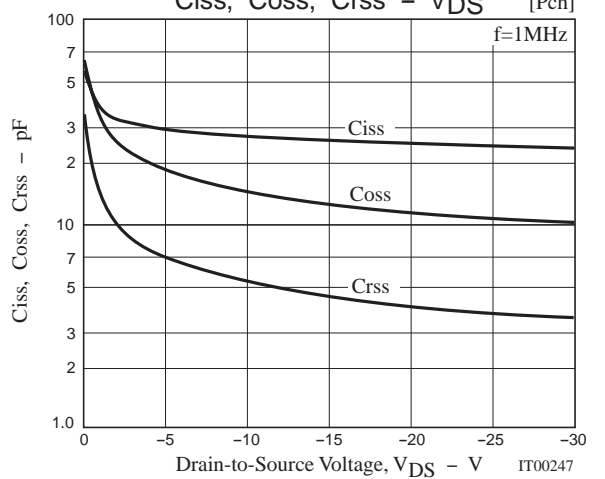
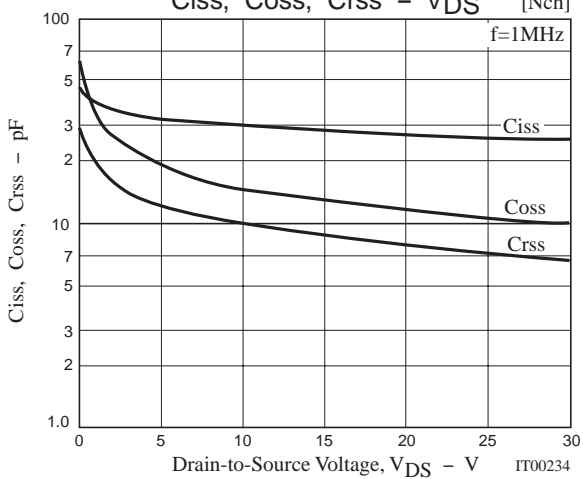
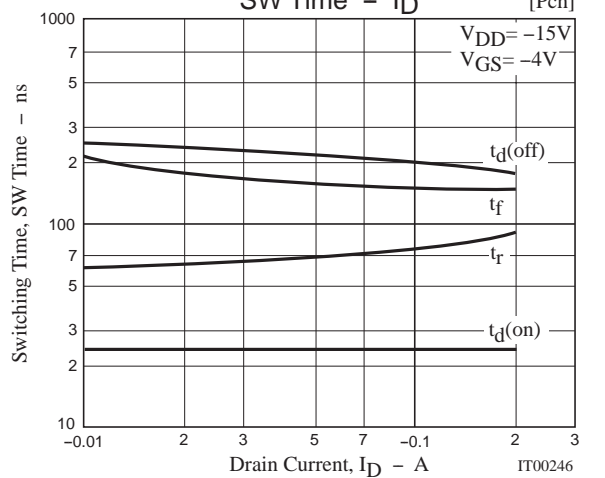
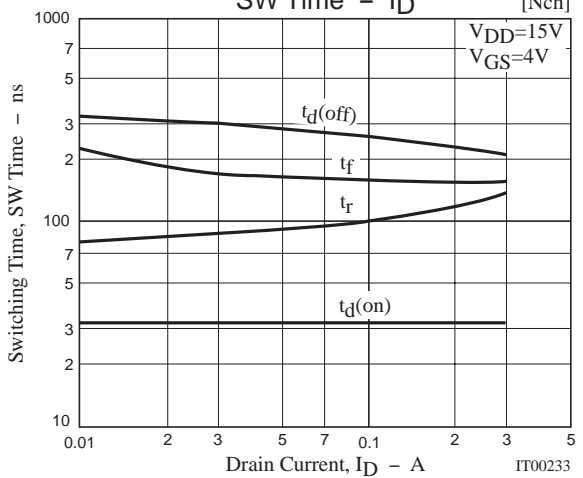
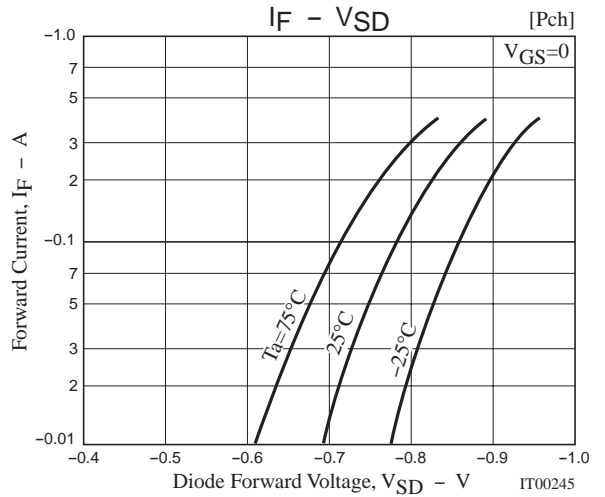
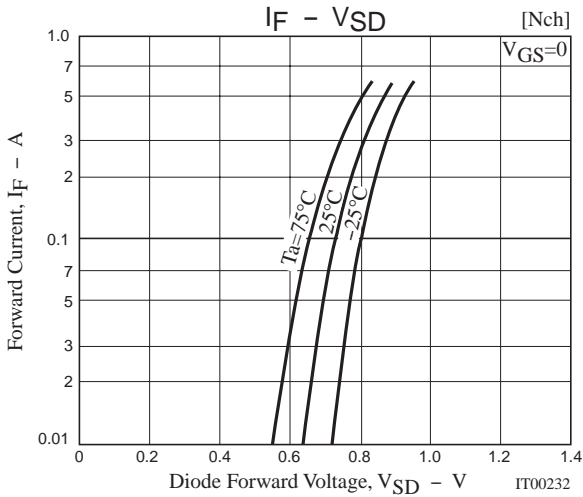
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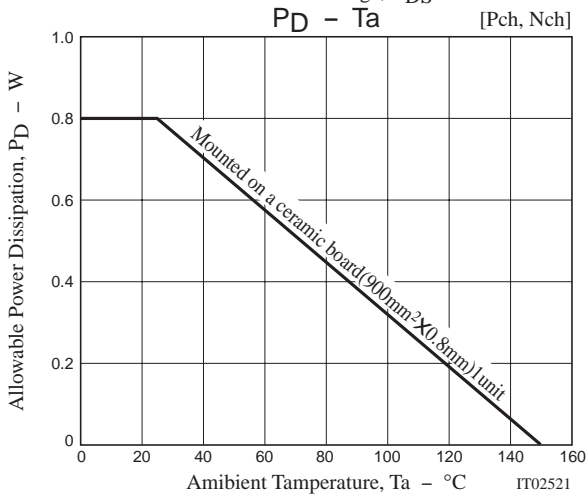
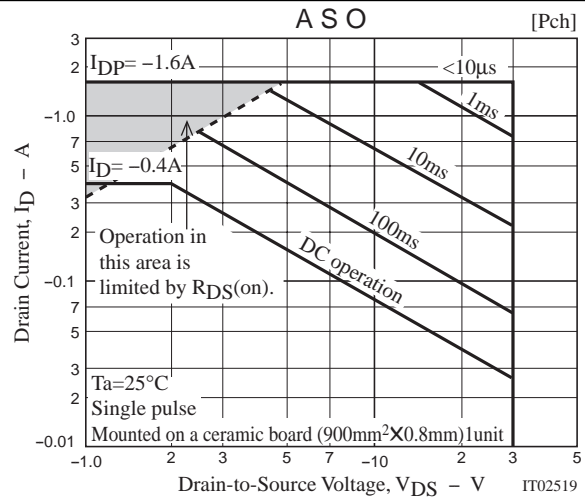
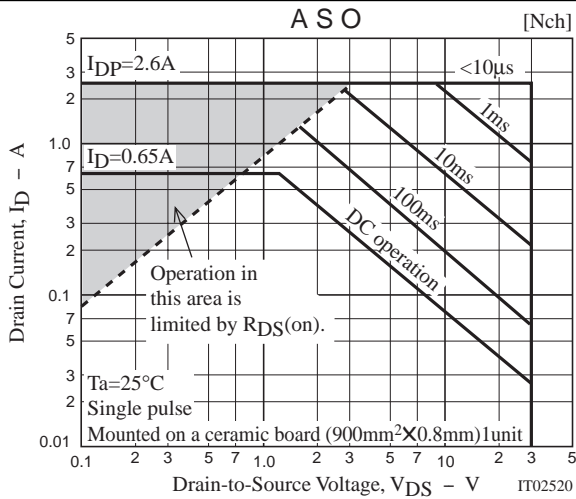
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Note on usage : Since the MCH6615 is designed for high-speed switching applications, please avoid using this device in the vicinity of highly charged objects.

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