

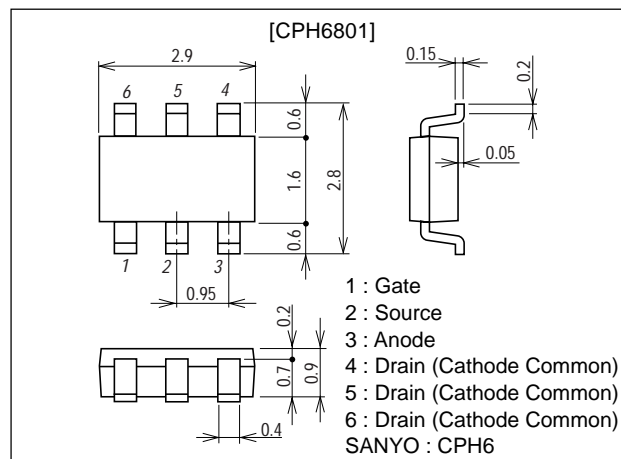
**CPH6801****DC/DC Converter Applications****Features**

- The CPH6801 consists of a P-channel MOSFET that features low ON resistance, ultrahigh-speed switching, and low-voltage drive, and a schottky barrier diode that features short reverse recovery time and low forward voltage, therefore enabling high-density mounting.
- Each device incorporated in the CPH6801 is equivalent with the 2SJ560 and the SBS004, respectively.

Package Dimensions

unit:mm

2172

**Specifications****Absolute Maximum Ratings** at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|-----------|--|-------------|------------------|
| [MOSFET] | | | | |
| Drain-to-Source Voltage | V_{DSS} | | -20 | V |
| Gate-to-Source Voltage | V_{GSS} | | ± 10 | V |
| Drain Current (DC) | I_D | | -1 | A |
| Drain Current (pulse) | I_{DP} | $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$ | -4 | A |
| Allowable Power Dissipation | P_D | Mounted on a ceramic board (600mm ² ×0.8mm) | 0.9 | W |
| Channel Temperature | T_{ch} | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +125 | $^\circ\text{C}$ |
| [SBD] | | | | |
| Repetitive Peak Reverse Voltage | V_{RRM} | | 15 | V |
| Non-repetitive Peak Reverse Surge Voltage | V_{RSM} | | 15 | V |
| Average Output Current | I_O | | 1 | A |
| Surge Current | I_{FSM} | 50Hz sine wave, 1 cycle | 10 | A |
| Junction Temperature | T_J | | -55 to +125 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +125 | $^\circ\text{C}$ |

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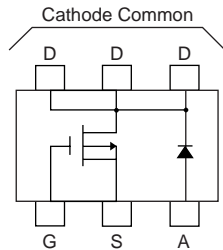
CPH6801

Electrical Characteristics at Ta = 25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|--|---------------|---|---------|------|----------|------------------|
| | | | min | typ | max | |
| [MOSFET] | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=-1\text{mA}$, $V_{GS}=0$ | -20 | | | V |
| Zero-Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20\text{V}$, $V_{GS}=0$ | | | -10 | μA |
| Gate-to-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 8\text{V}$, $V_{DS}=0$ | | | ± 10 | μA |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS}=-10\text{V}$, $I_D=-1\text{mA}$ | -0.4 | | -1.4 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS}=-10\text{V}$, $I_D=-500\text{mA}$ | 1.0 | 1.4 | | S |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D=-500\text{mA}$, $V_{GS}=-4\text{V}$ | | 420 | 550 | $\text{m}\Omega$ |
| | $R_{DS(on)2}$ | $I_D=-300\text{mA}$, $V_{GS}=-2.5\text{V}$ | | 630 | 890 | $\text{m}\Omega$ |
| Input Capacitance | C_{iss} | $V_{DS}=-10\text{V}$, $f=1\text{MHz}$ | | 100 | | pF |
| Output Capacitance | C_{oss} | $V_{DS}=-10\text{V}$, $f=1\text{MHz}$ | | 60 | | pF |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS}=-10\text{V}$, $f=1\text{MHz}$ | | 25 | | pF |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit | | 10 | | ns |
| Rise Time | t_r | See specified Test Circuit | | 25 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | See specified Test Circuit | | 27 | | ns |
| Fall Time | t_f | See specified Test Circuit | | 32 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=-10\text{V}$, $V_{GS}=-10\text{V}$, $I_D=1.0\text{A}$ | | 5 | | nC |
| Gate-to-Source Charge | Q_{gs} | $V_{DS}=-10\text{V}$, $V_{GS}=-10\text{V}$, $I_D=1.0\text{A}$ | | 1 | | nC |
| Gate-to-Drain "Miller" Charge | Q_{gd} | $V_{DS}=-10\text{V}$, $V_{GS}=-10\text{V}$, $I_D=1.0\text{A}$ | | 1 | | nC |
| Diode Forward Voltage | V_{SD} | $I_S=-1.0\text{A}$, $V_{GS}=0$ | | -0.9 | -1.5 | V |
| [SBD] | | | | | | |
| Reverse Voltage | V_R | $I_R=1\text{mA}$ | 15 | | | V |
| Forward Voltage | V_{F1} | $I_F=0.5\text{A}$ | | 0.30 | 0.35 | V |
| | V_{F2} | $I_F=1\text{A}$ | | 0.35 | 0.40 | V |
| Reverse Current | I_R | $V_R=6\text{V}$ | | | 500 | μA |
| Interterminal Capacitance | C | $V_R=10\text{V}$, $f=1\text{MHz}$ cycle | | 42 | | pF |
| Reverse Recovery Time | t_{rr} | $I_F=I_R=100\text{mA}$, See specified Test Circuit. | | | 15 | ns |
| Thermal Resistance | R_{thj-a} | Mounted on a ceramic board (600mm ² ×0.8mm) | | 110 | | °C/W |

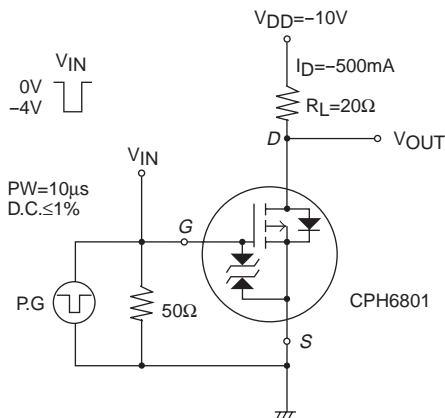
Marking : QB

Electrical Connection (Top view)



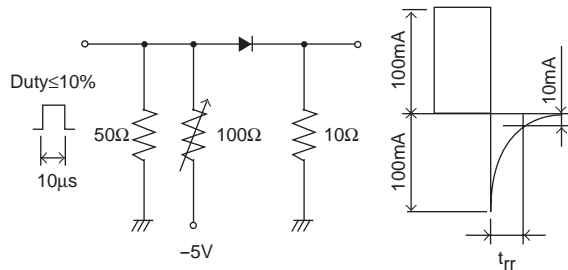
Switching Time Test Circuit

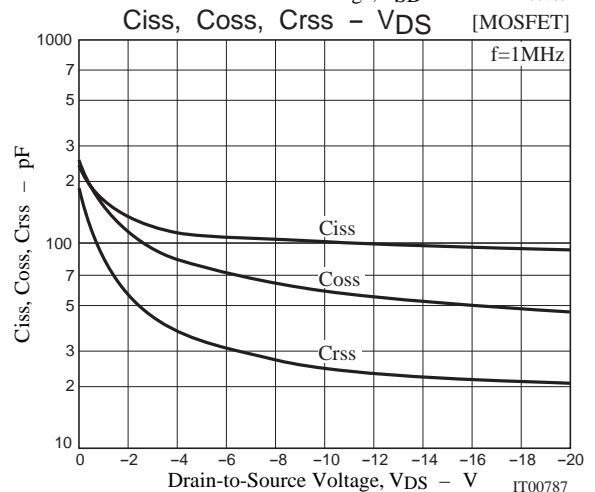
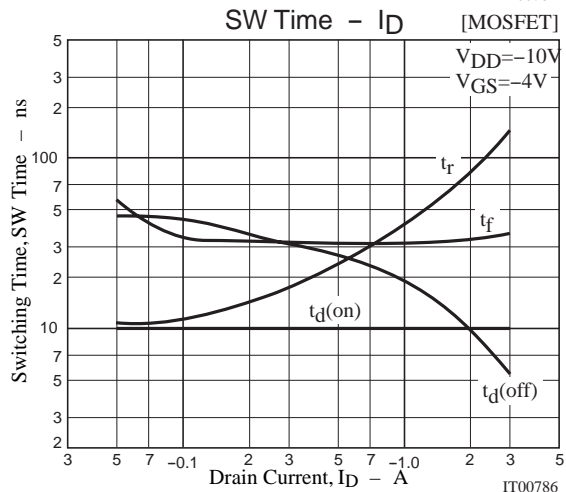
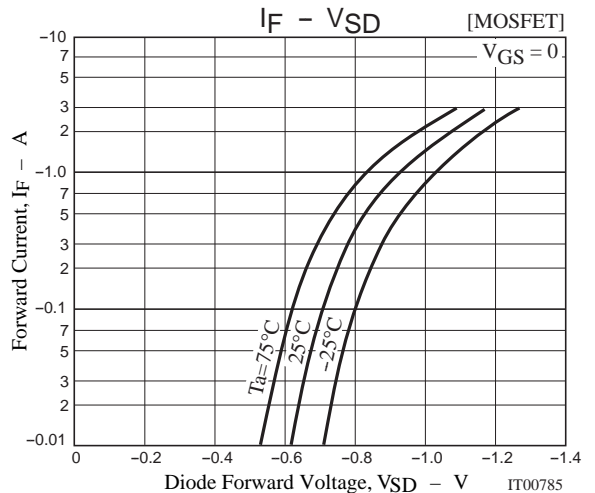
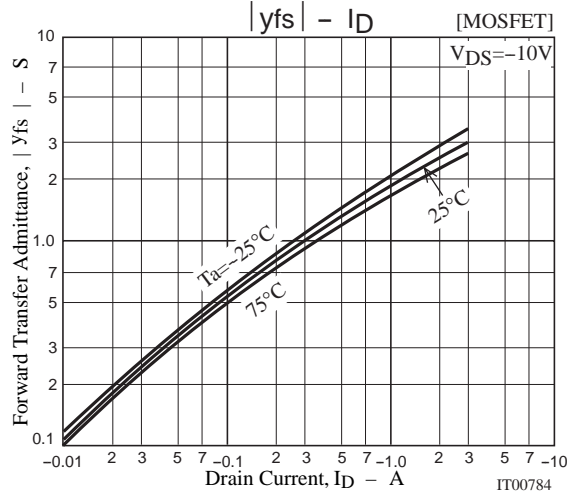
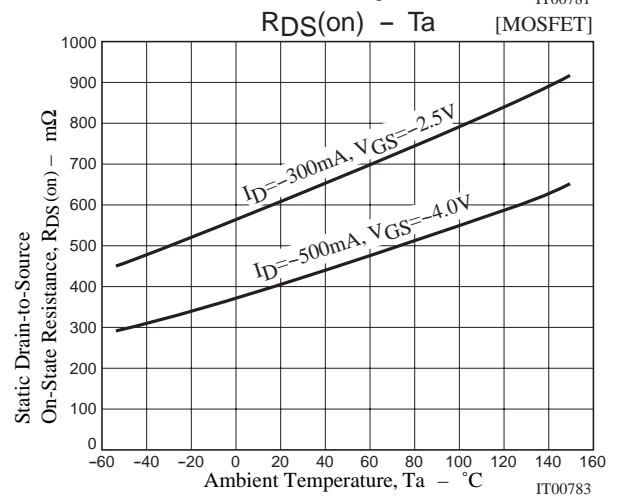
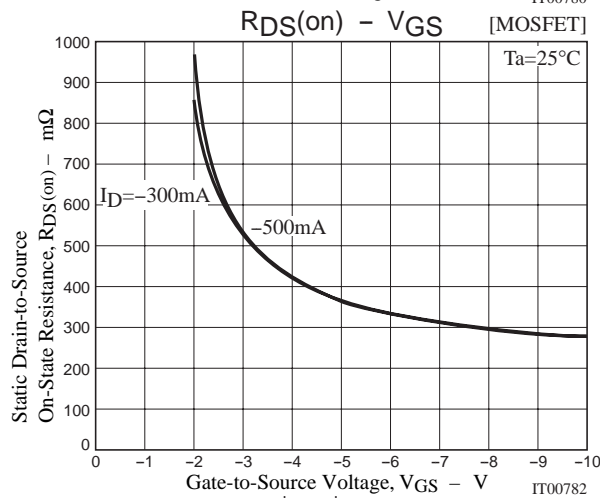
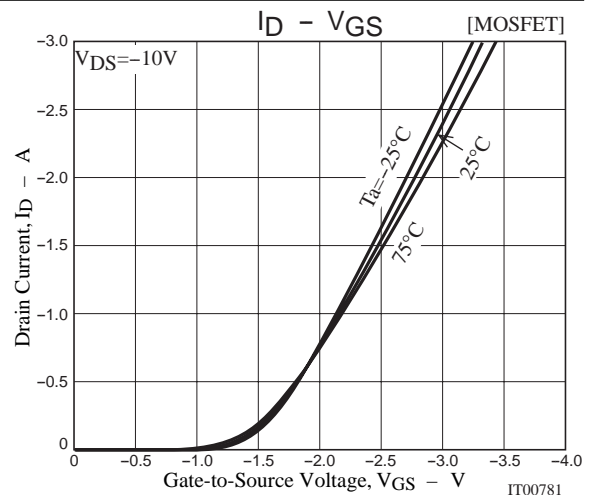
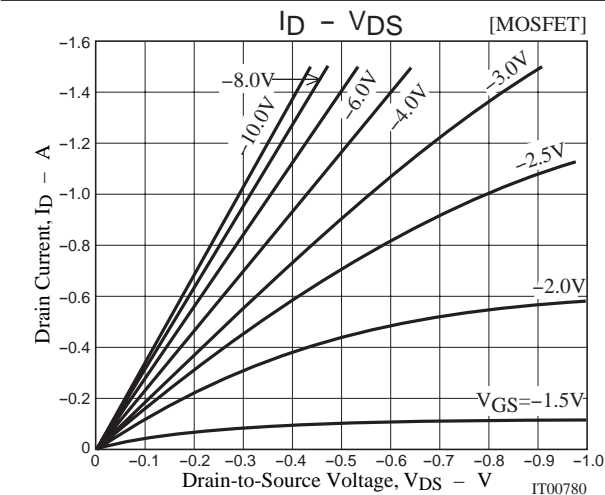
[MOSFET]

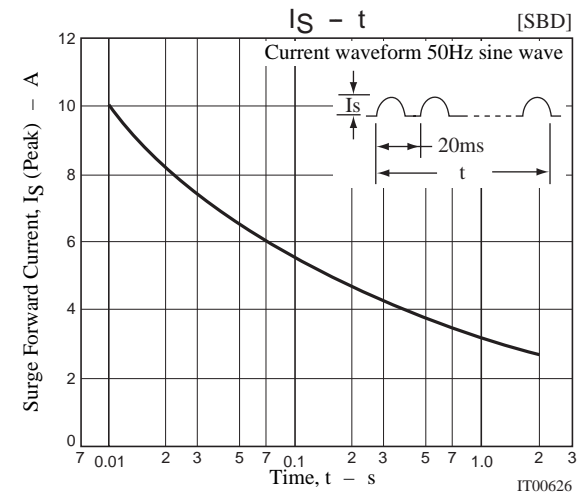
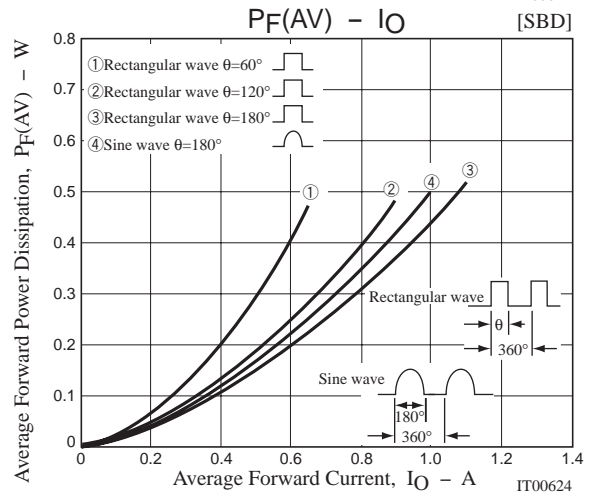
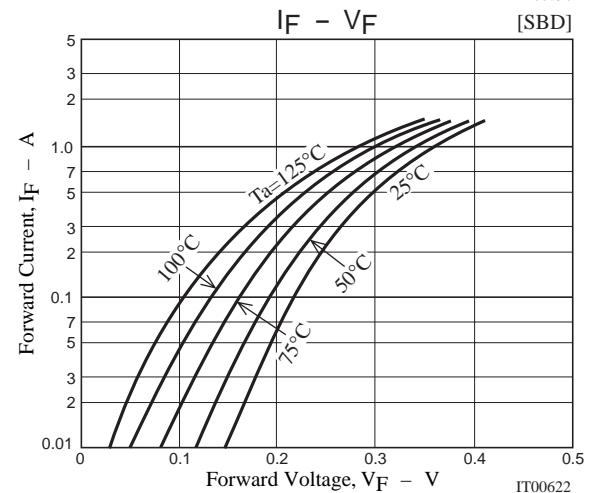
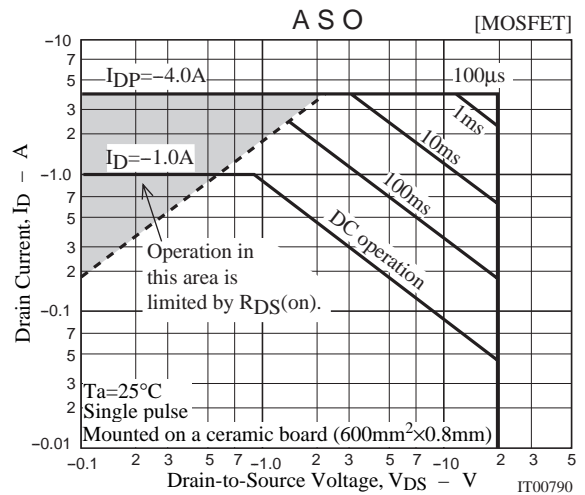
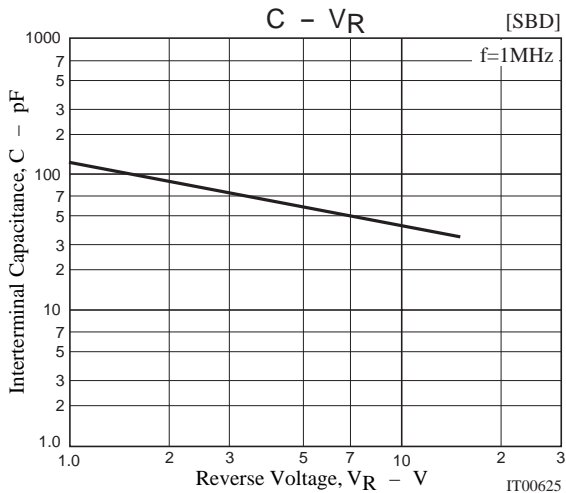
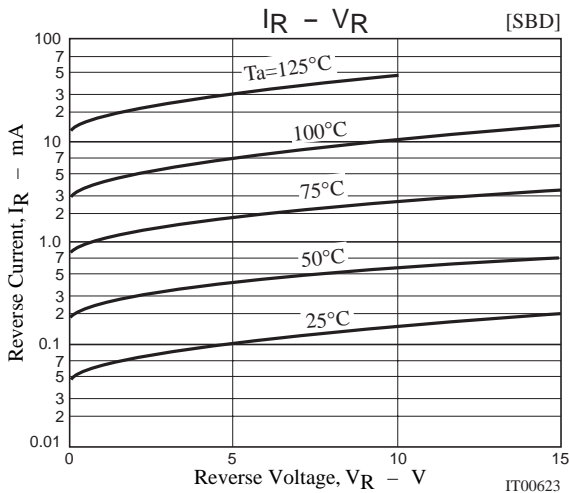
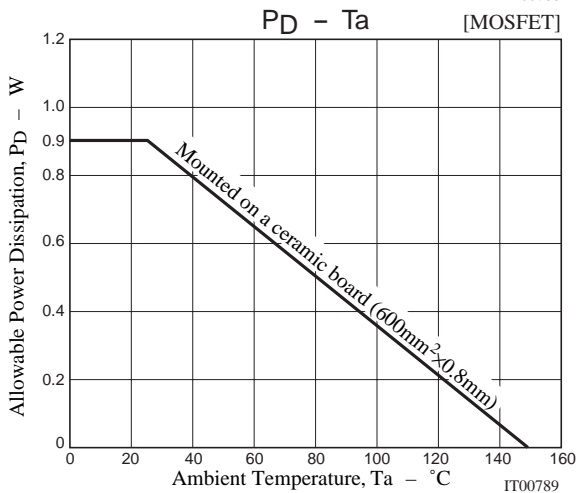
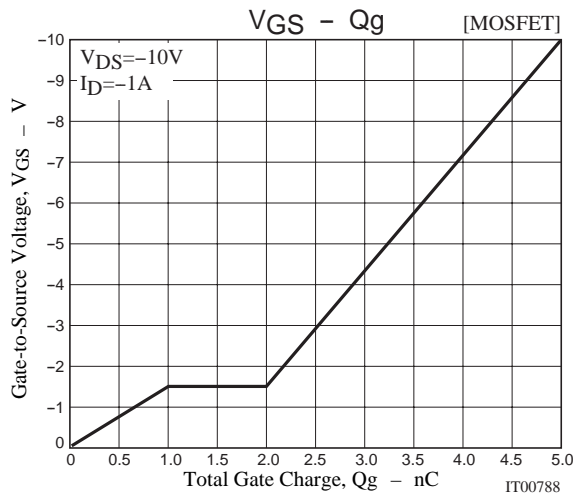


t_{rr} Test Circuit

[SBD]







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