

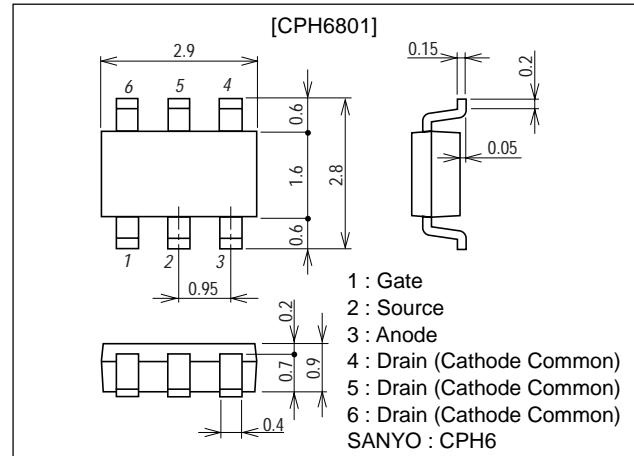
**CPH6801****DC/DC Converter Applications****Features**

- 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	$V_{GSS}$		$\pm 10$	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 <sup>2</sup> ×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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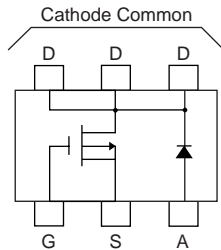
# CPH6801

## Electrical Characteristics at Ta = 25°C

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

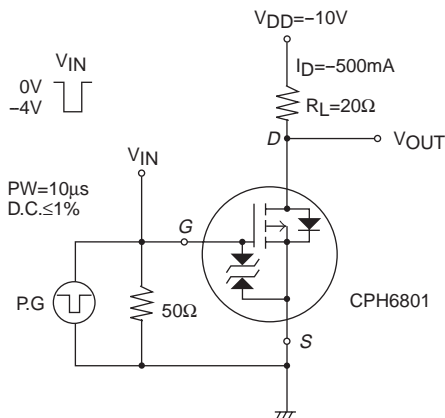
Marking : QB

## Electrical Connection (Top view)



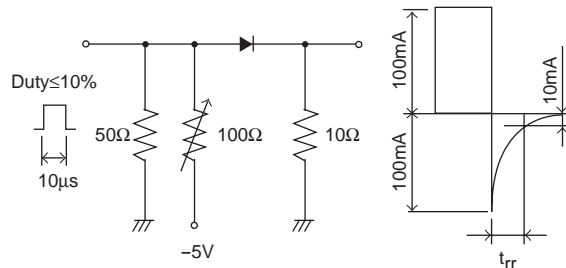
## Switching Time Test Circuit

[MOSFET]

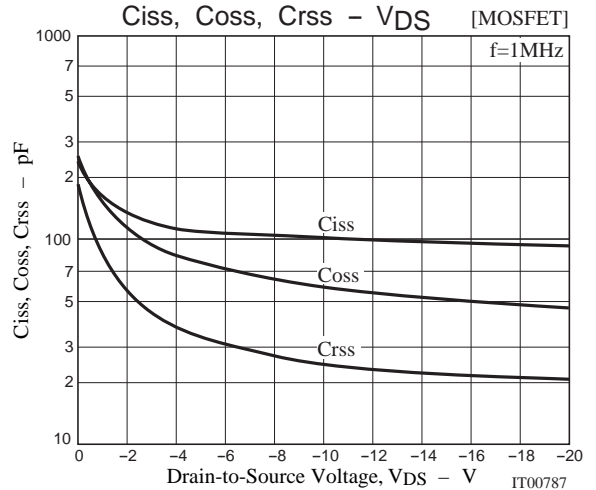
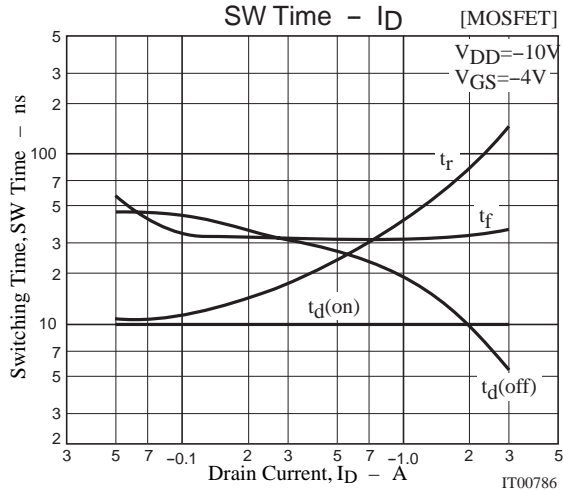
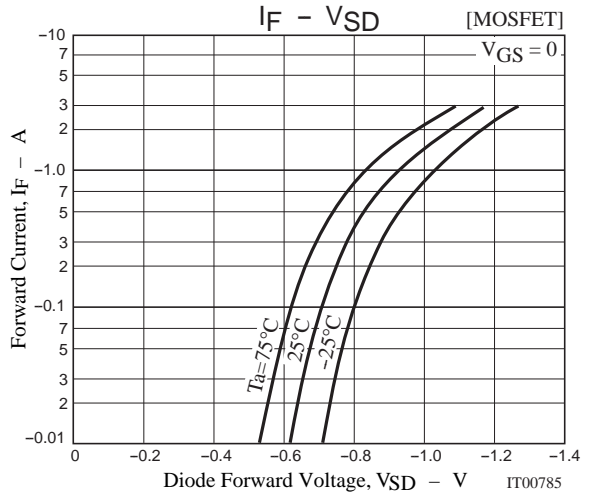
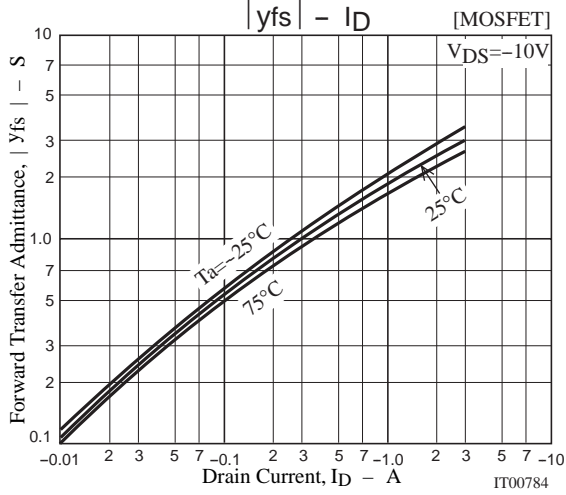
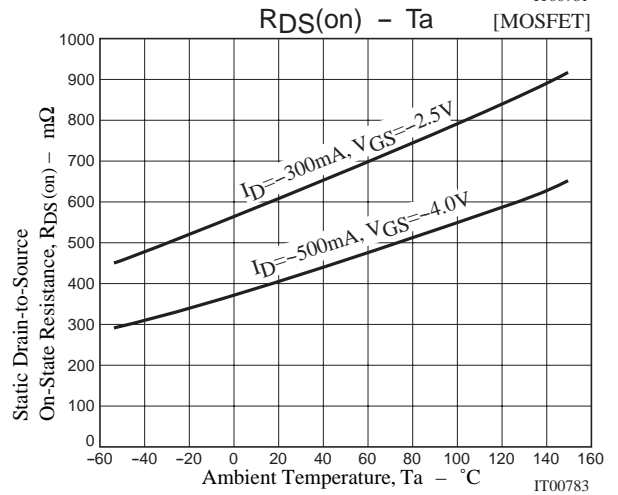
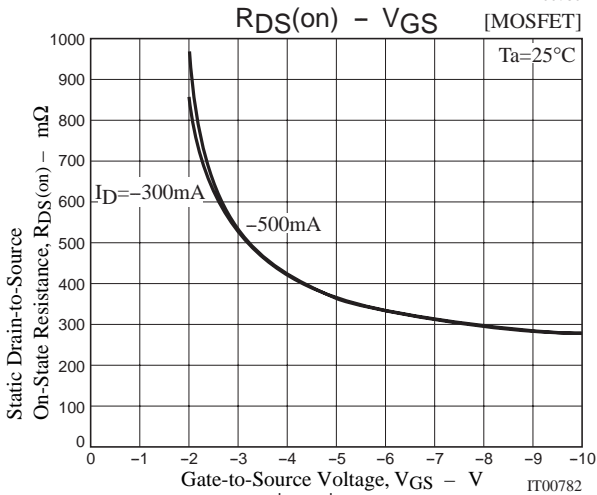
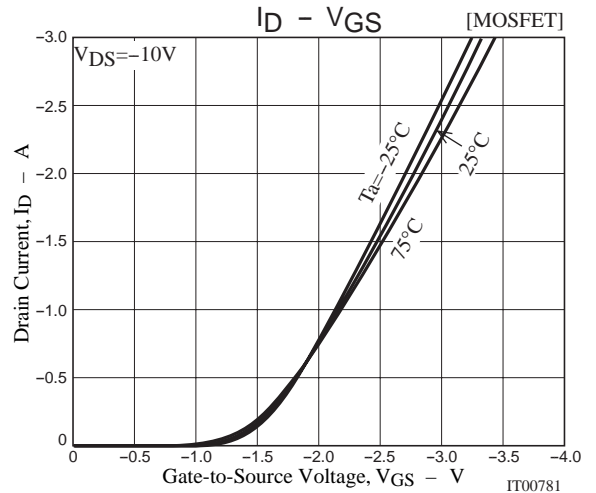
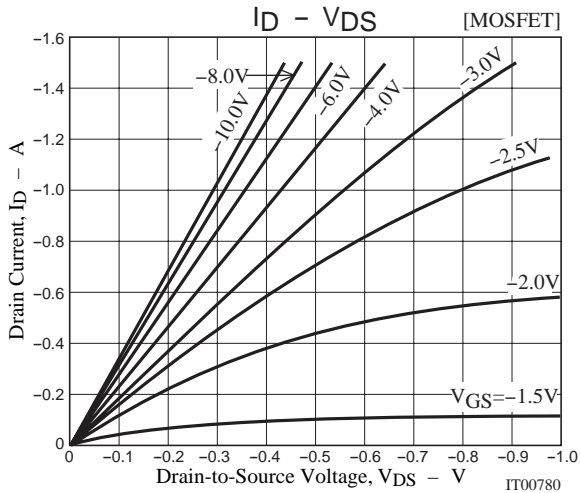


## $t_{rr}$ Test Circuit

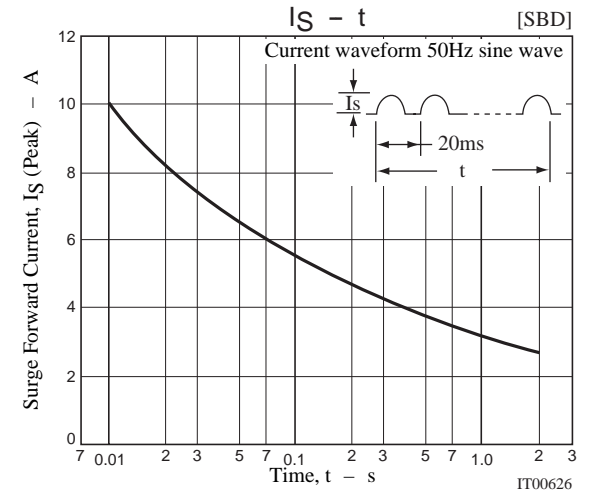
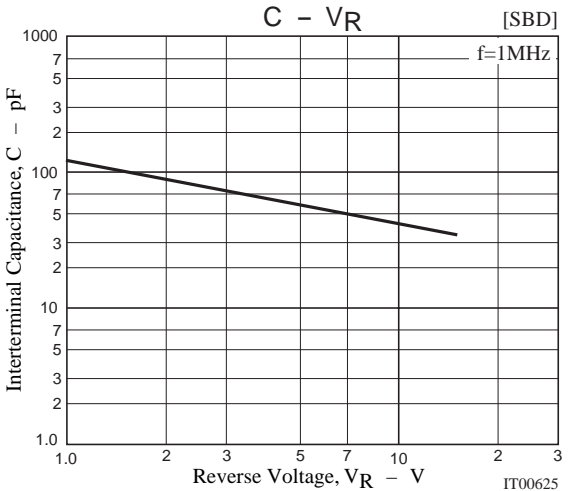
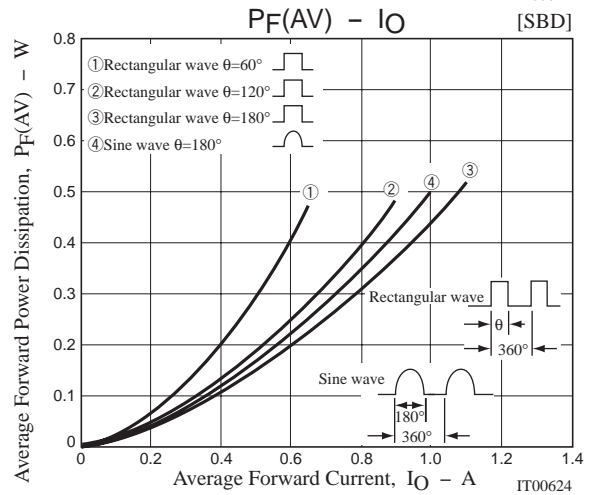
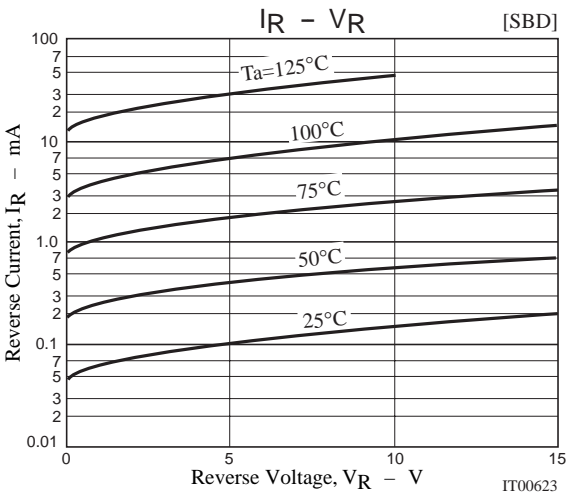
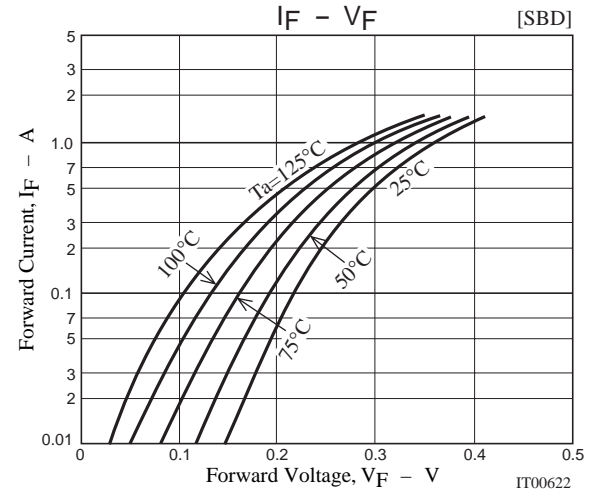
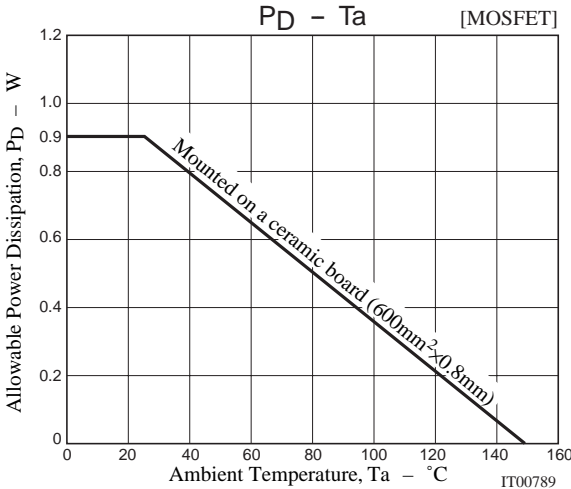
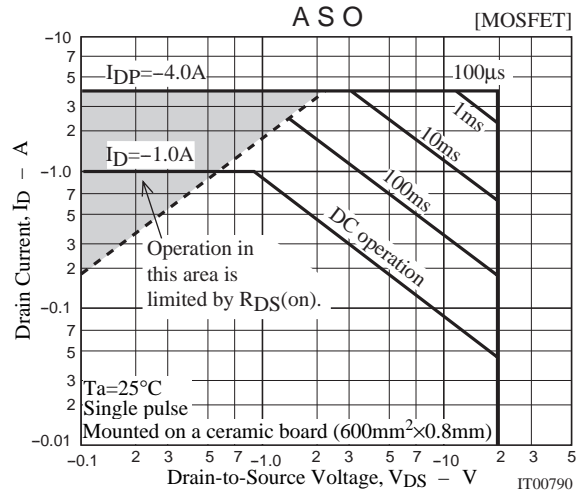
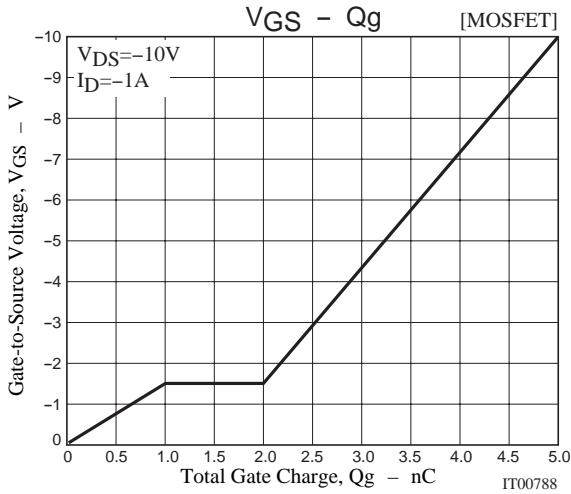
[SBD]



# CPH6801



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