

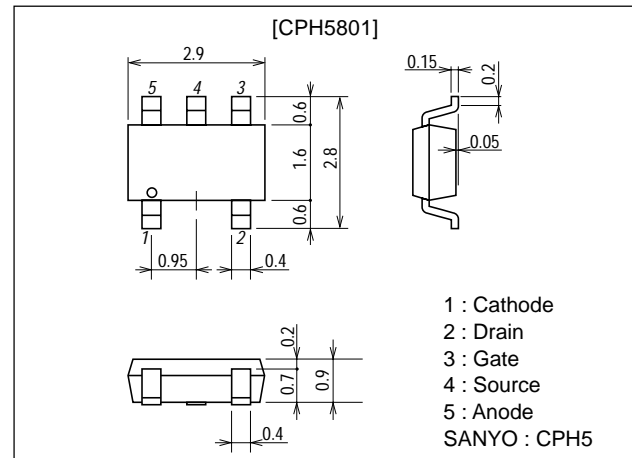
**CPH5801****DC/DC Converter Applications****Features**

- The CPH5801 composite device consists of following two devices to facilitate high-density mounting. One is an N-channel MOSFET that features low ON resistance, high-speed switching, and low driving voltage. The other is a schottky barrier diode that features short reverse recovery time and low forward voltage.
- Each device incorporated in the CPH5801 is equivalent to the 2SK3119 and to the SBS005, respectively.

**Package Dimensions**

unit:mm

2171

**Specifications****Absolute Maximum Ratings** at Ta = 25°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)	$I_D$		1.4	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	5.6	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (600mm <sup>2</sup> ×0.8mm) 1unit	0.9	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	$V_{RRM}$		30	V
Non-repetitive Peak Reverse Surge Voltage	$V_{RSM}$		30	V
Average Output Current	$I_O$		1	A
Surge Current	$I_{FSM}$	50Hz sine wave, 1 cycle	10	A
Junction Temperature	Tj		-55 to +125	°C
Storage Temperature	Tstg		-55 to +125	°C

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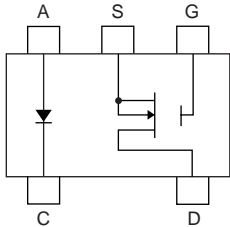
# CPH5801

## 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		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=700mA$	1.8	2.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=700mA, V_{GS}=4V$		200	260	$m\Omega$
	$R_{DS(on)2}$	$I_D=400mA, V_{GS}=2.5V$		260	360	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		90		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		60		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		28		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		10		ns
Rise Time	$t_r$	See specified Test Circuit		20		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		20		ns
Fall Time	$t_f$	See specified Test Circuit		20		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		6		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		1		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		2		nC
Diode Forward Voltage	$V_{SD}$	$I_S=1.4A, V_{GS}=0$		0.9	1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=1mA$	30			V
Forward Voltage	$V_{F1}$	$I_F=0.5A$		0.35	0.4	V
	$V_{F2}$	$I_F=2A$		0.42	0.47	V
Reverse Current	$I_R$	$V_R=15V$			500	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz$ cycle		35		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

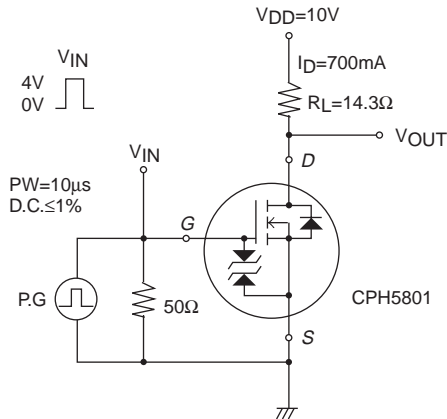
Marking : QA

## Electrical Connection (Top view)



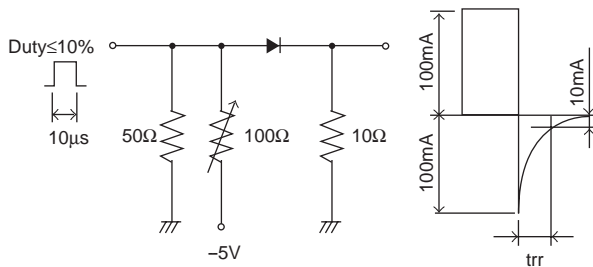
## Switching Time Test Circuit

[MOSFET block]

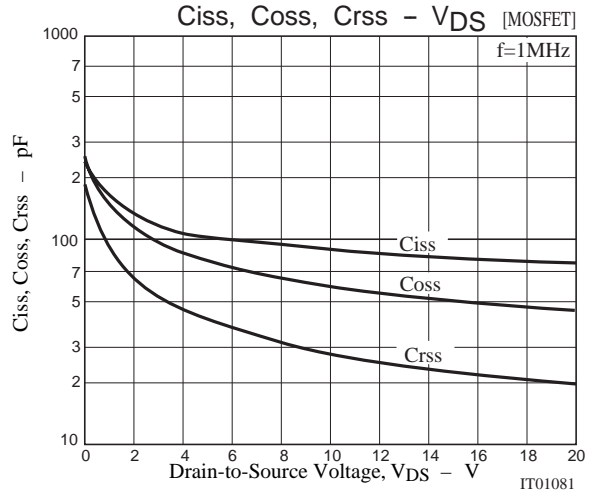
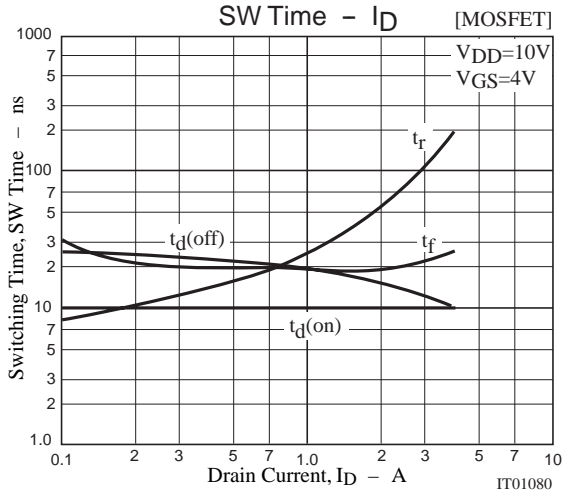
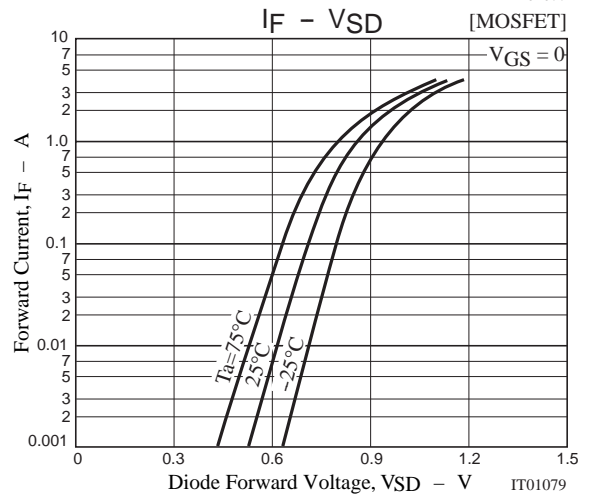
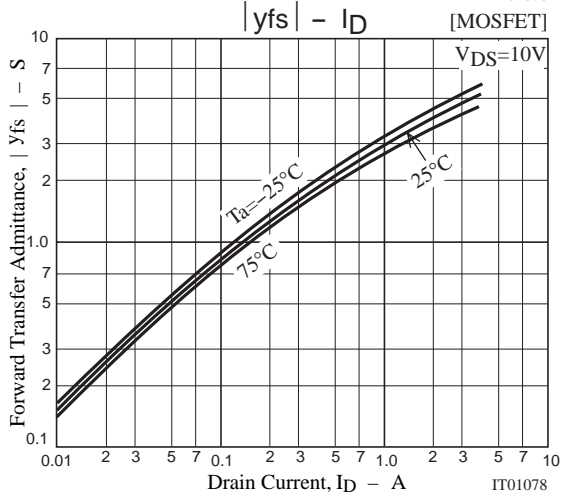
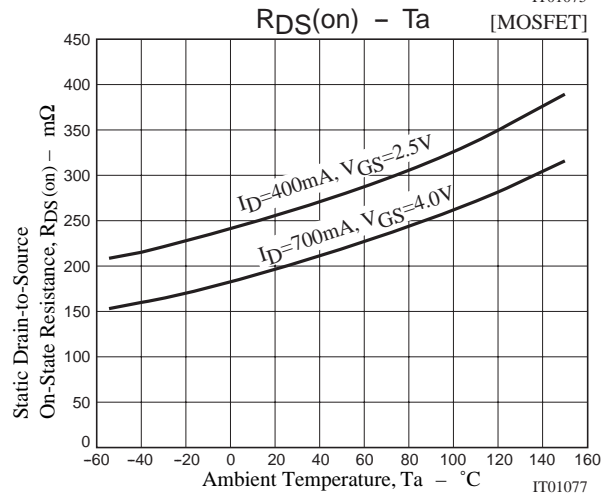
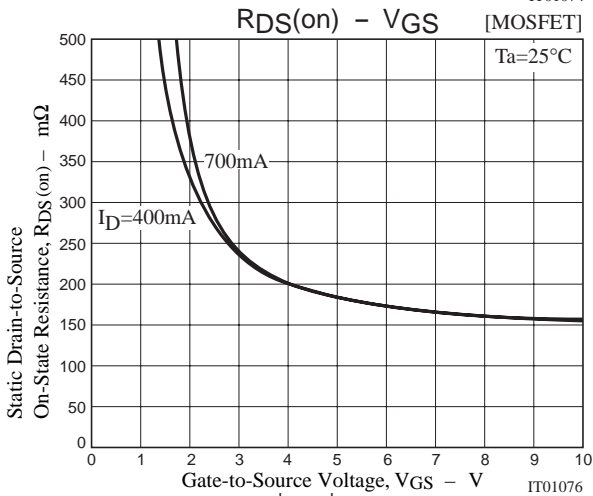
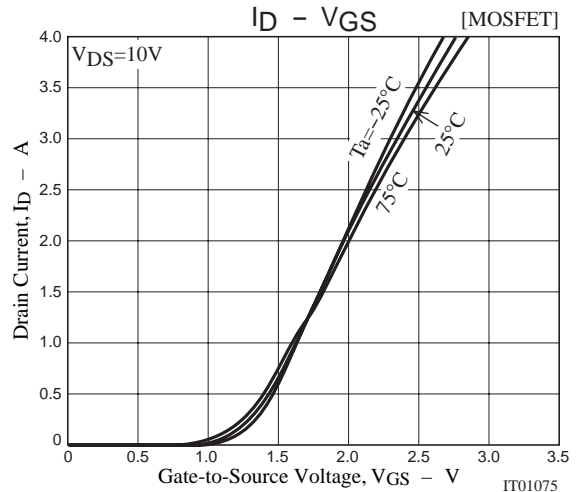
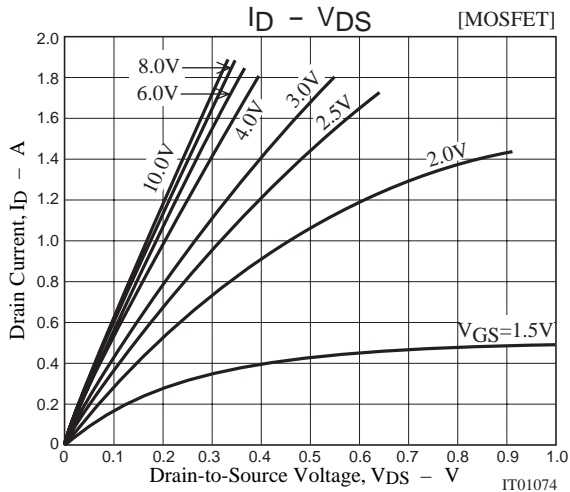


## Reverse Recovery Time Test Circuit

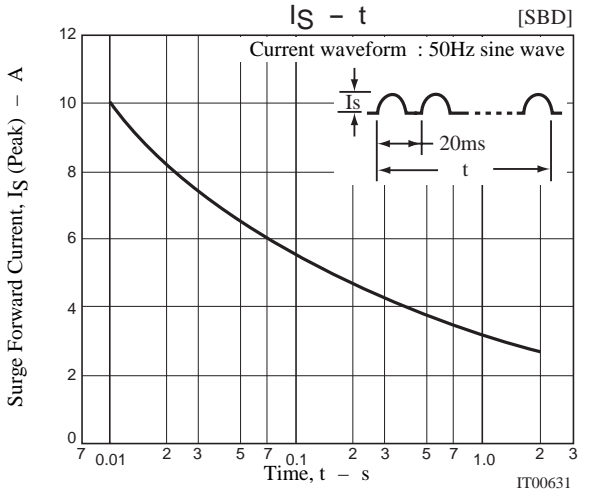
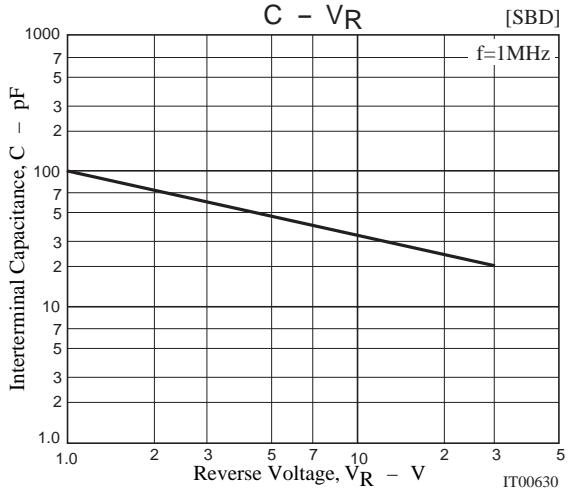
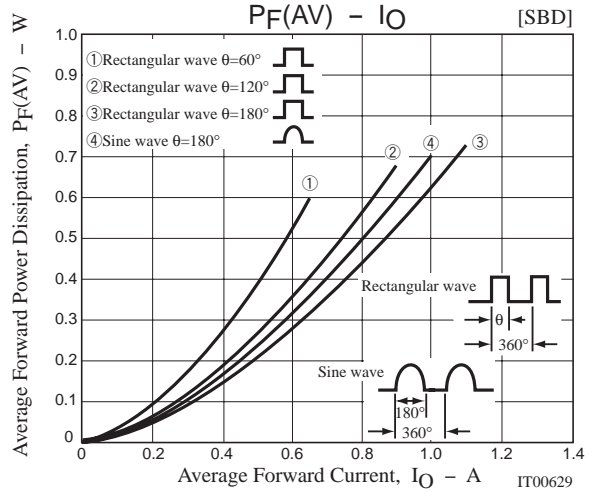
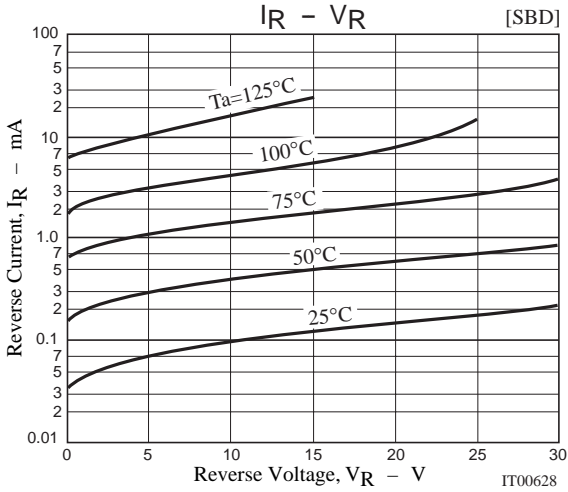
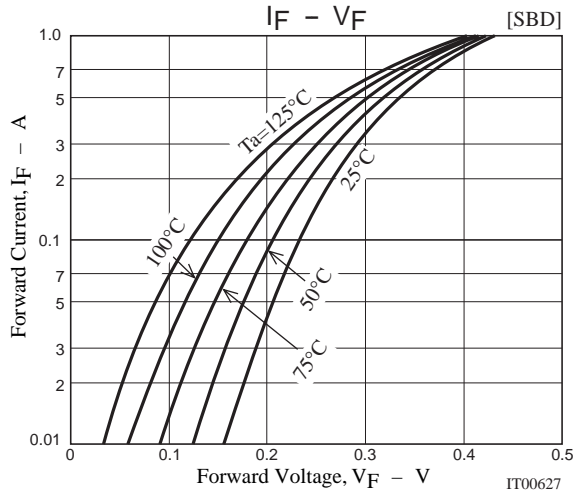
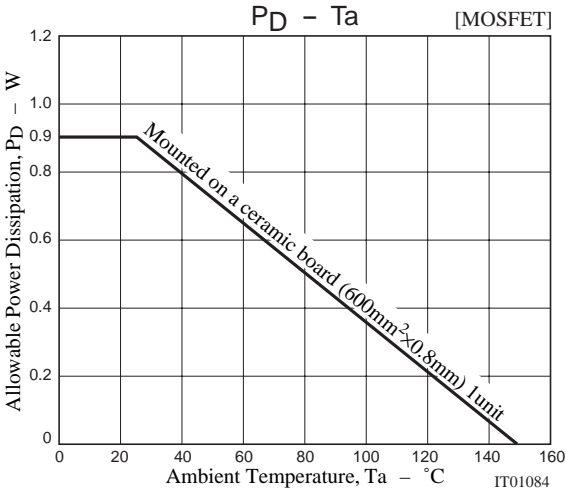
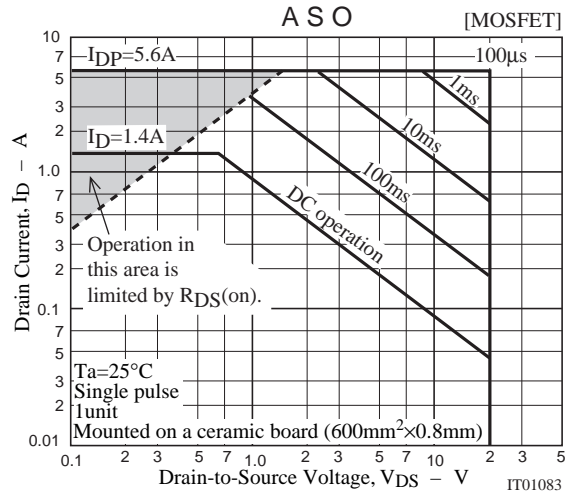
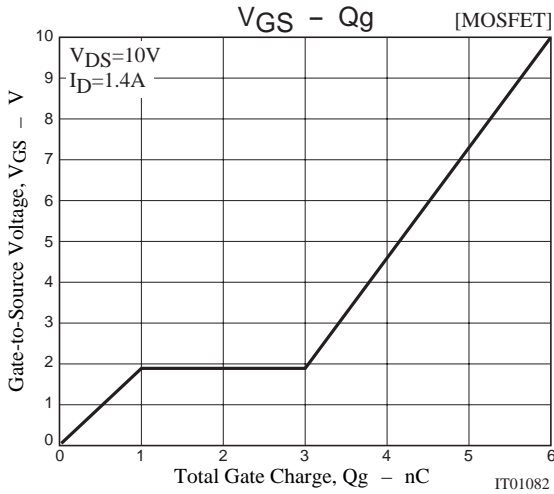
[SBD block]



# CPH5801



# CPH5801



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