Ordering number:EN6419

MOSFET : P-Channel Silicon MOSFET
SBD : Schottky Barrier Diode

CPH6801

DC/DC Converter Applications

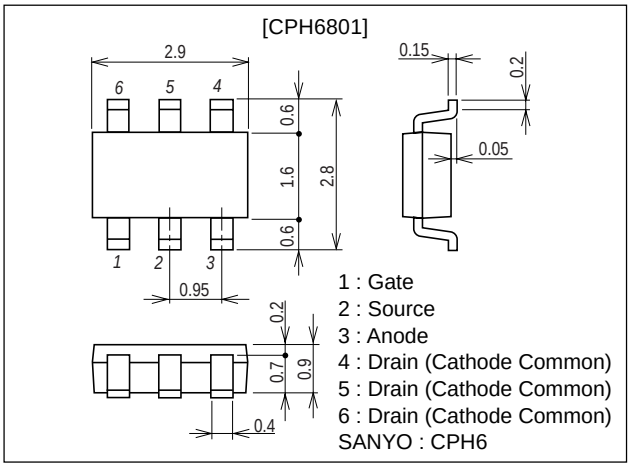
Features

- The CPH6801 consists of a P-channel MOSFET that features low ON resistance, ultrahigh-speed switching, and low-voltage drive, and a shottky 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 Ta = 25˚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≤10μs, duty cycle≤1%	–4	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (600mm²×0.8mm)	0.9	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–55 to +125	˚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	Tj		–55 to +125	˚C
Storage Temperature	Tstg		–55 to +125	˚C

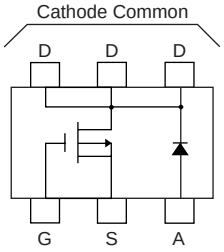
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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	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=–1mA	–0.4		–1.4	V
Forward Transfer Admittance	| yfs |	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	mΩ
	R_{DS}(on)2	I_D=–300mA, V_{GS}=–2.5V		630	890	mΩ
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		100		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	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	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=1.0A		5		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=1.0A		1		nC
Gate-to-Drain "Miller" Charge	Qgd	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	μA
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	Rthj-a	Mounted on a ceramic board (600mm²×0.8mm)		110		˚C/W

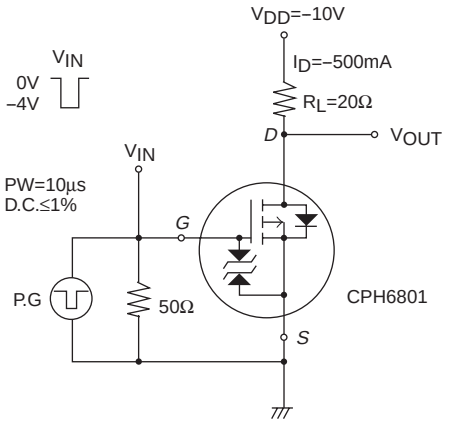
Marking : QB

Electrical Connection (Top view)



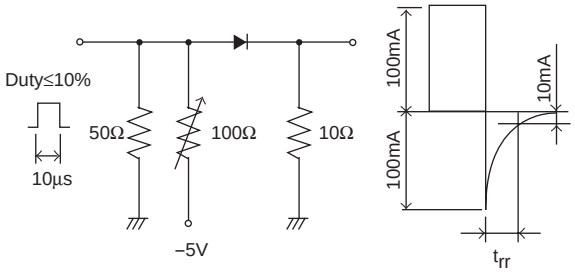
Switching Time Test Circuit

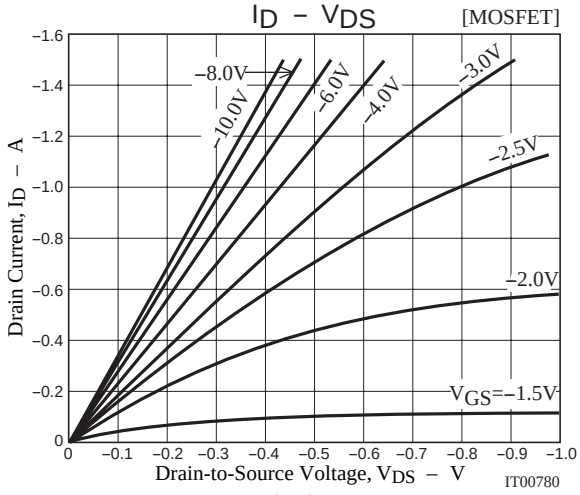
[MOSFET]

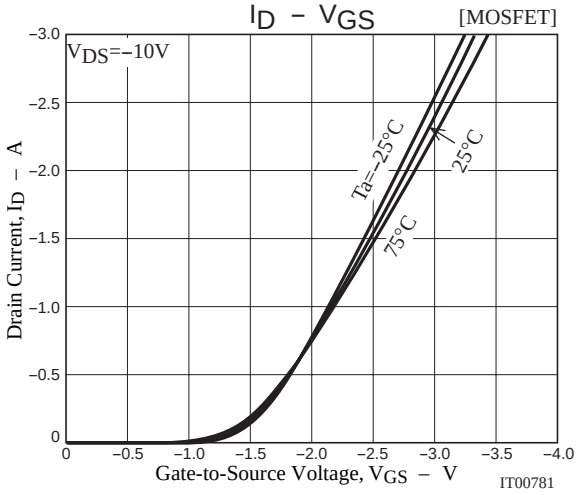


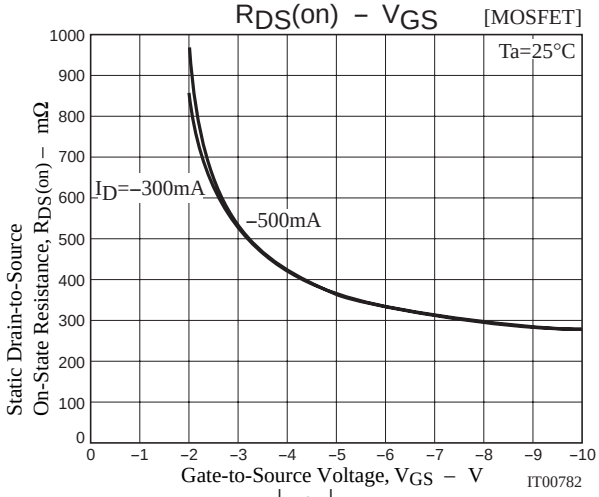
t_{rr} Test Circuit

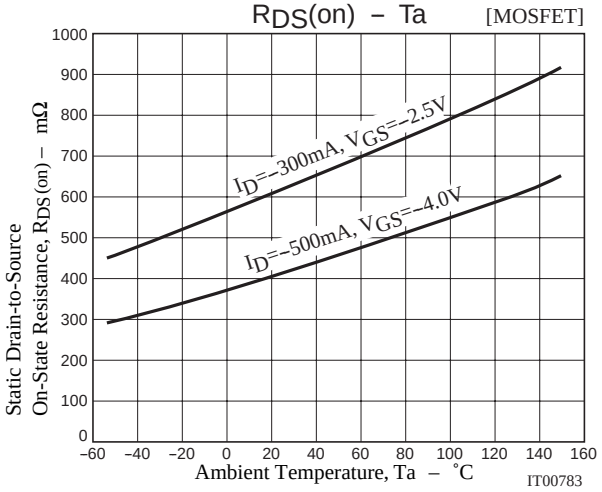
[SBD]

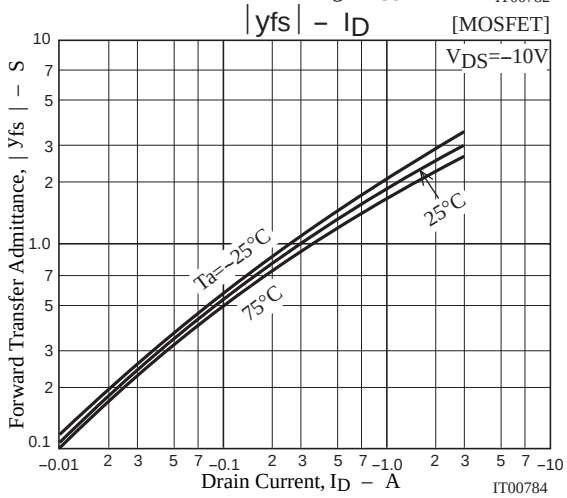


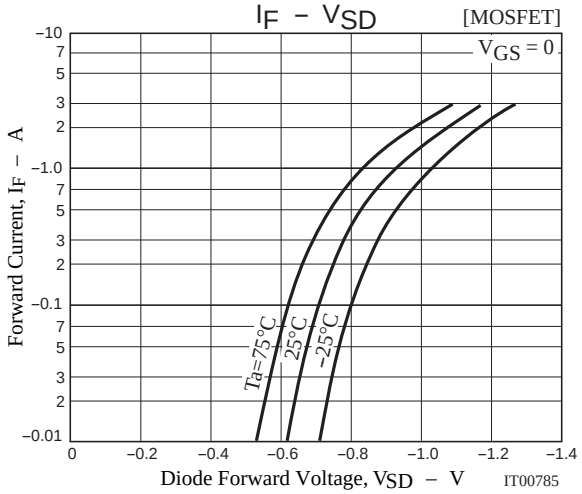

ID – VDS [MOSFET]
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
–8.0V
–10.0V
–6.0V
–4.0V
–3.0V
–2.5V
–2.0V
VGS=–1.5V
IT00780

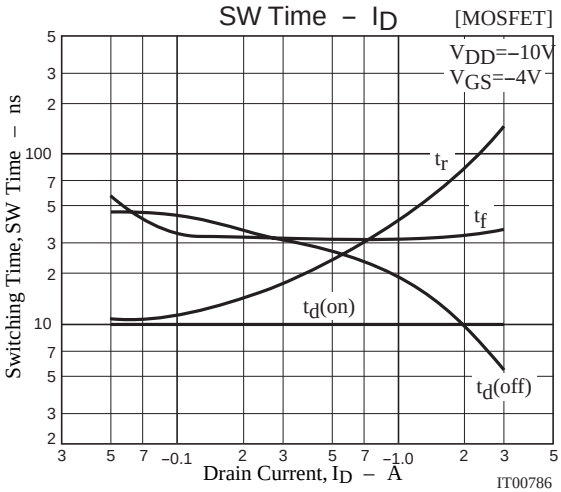

ID – VGS [MOSFET]
VDS=–10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
Ta=–25°C
25°C
75°C
IT00781

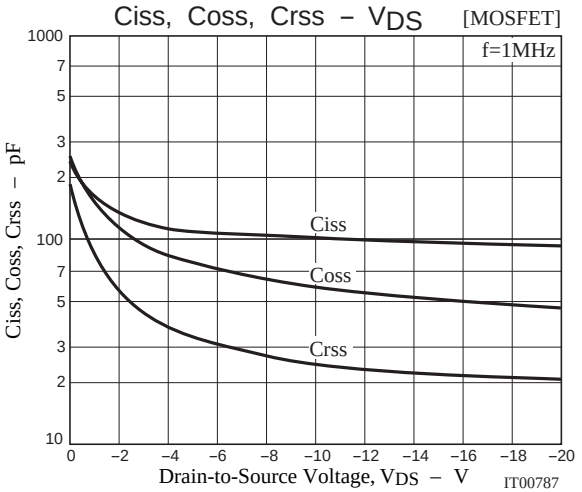

RDS(on) – VGS [MOSFET]
Ta=25°C
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
ID=–300mA
–500mA
Gate-to-Source Voltage, VGS – V
IT00782


RDS(on) – Ta [MOSFET]
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
ID=–300mA, VGS=–2.5V
ID=–500mA, VGS=–4.0V
Ambient Temperature, Ta – °C
IT00783

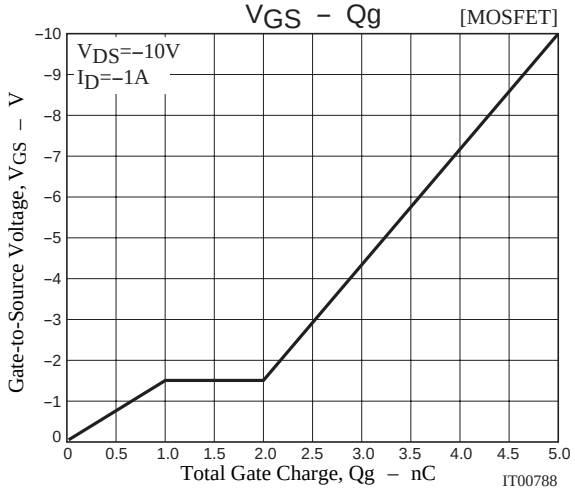

|yfs| – ID [MOSFET]
VDS=–10V
Forward Transfer Admittance, |yfs| – S
Ta=–25°C
25°C
75°C
Drain Current, ID – A
IT00784


IF – VSD [MOSFET]
VGS = 0
Forward Current, IF – A
Ta=75°C
25°C
–25°C
Diode Forward Voltage, VSD – V
IT00785

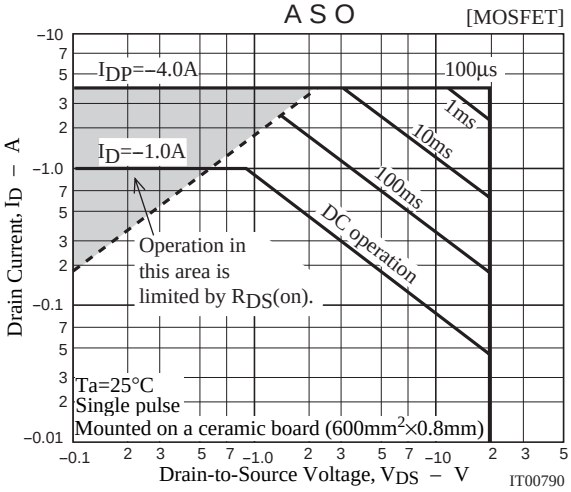

SW Time – ID [MOSFET]
VDD=–10V
VGS=–4V
Switching Time, SW Time – ns
tr
tf
td(on)
td(off)
Drain Current, ID – A
IT00786


Ciss, Coss, Crss – VDS [MOSFET]
f=1MHz
Ciss, Coss, Crss – pF
Ciss
Coss
Crss
Drain-to-Source Voltage, VDS – V
IT00787

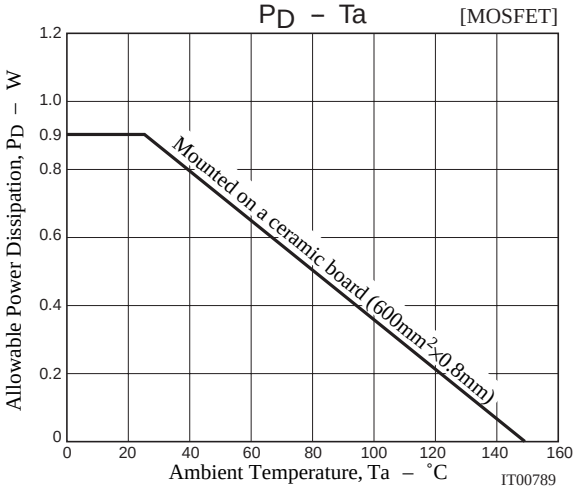
V_{GS} – Qg [MOSFET]



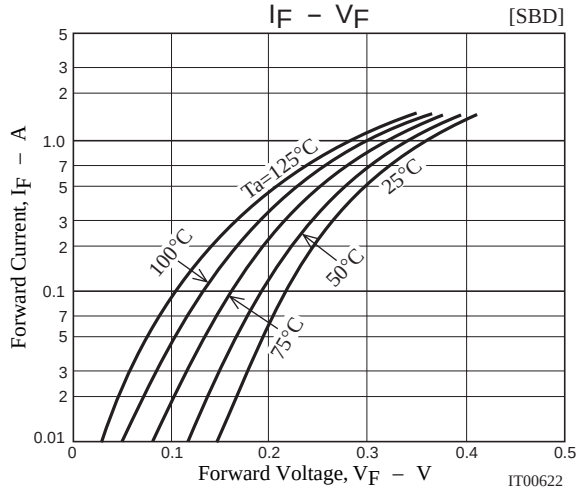
A S O [MOSFET]



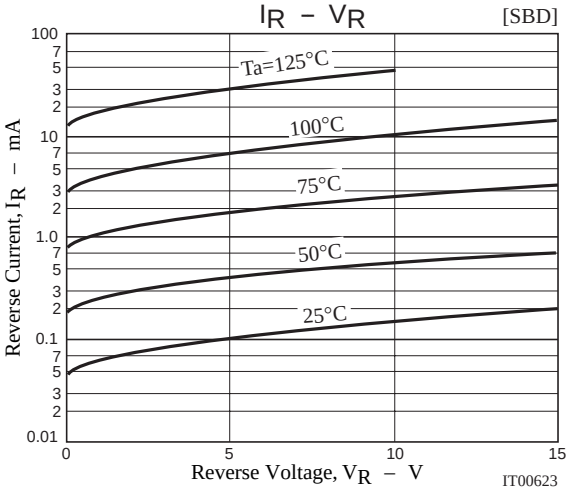
P_D – Ta [MOSFET]



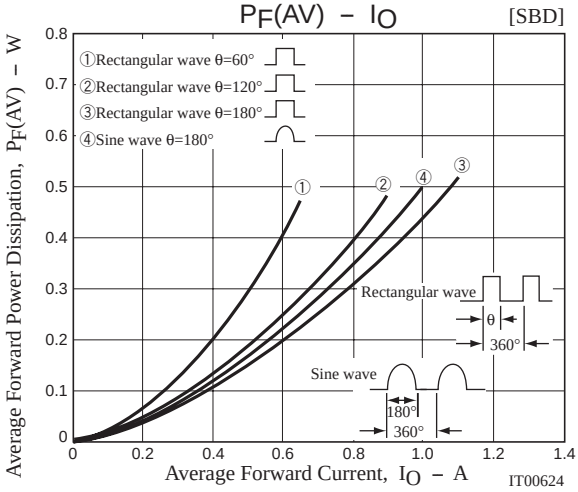
I_F – V_F [SBD]



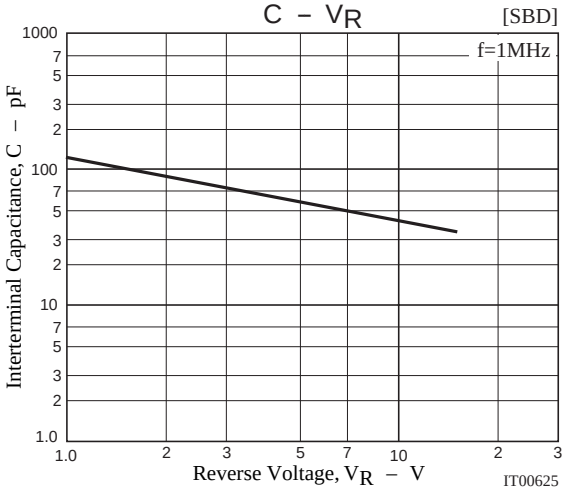
I_R – V_R [SBD]



$P_{F(AV)}$ – I_O [SBD]



C – V_R [SBD]



I_S – t [SBD]