

**CPH5820****DC / DC Converter Applications****Features**

- Composite type with a P-Channel Silicon MOSFET (MCH3308) and a Schottky Barrier Diode (SBS006M) contained in one package facilitating high-density mounting.

[MOSFET]

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

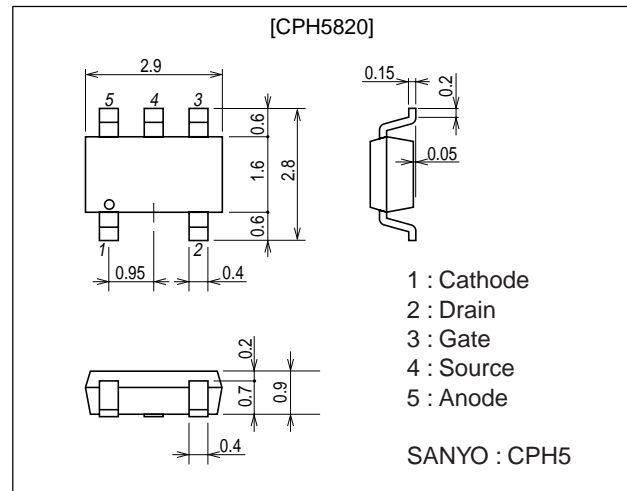
[SBD]

- Short reverse recovery time.
- Low forward voltage.

Package Dimensions

unit : mm

2171

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

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V_{DSS}		-30	V
Gate-to-Source Voltage	V_{GSS}		± 20	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 X0.8mm) 1unit	0.8	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}		30	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		30	V
Average Output Current	I_O		0.5	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	3	A
Junction Temperature	T_J		-55 to +125	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Marking : QW

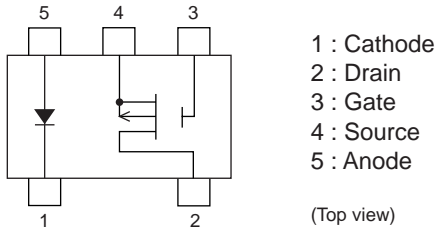
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CPH5820

Electrical Characteristics at Ta=25°C

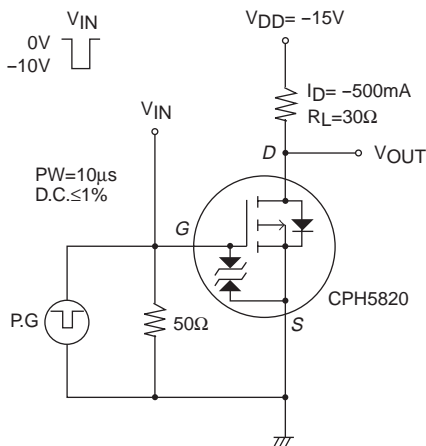
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}, V_{GS} = 0$	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30\text{V}, V_{GS} = 0$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{V}, I_D = -1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{V}, I_D = -500\text{mA}$	570	820		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -500\text{mA}, V_{GS} = -10\text{V}$		430	560	m Ω
	$R_{DS(on)2}$	$I_D = -300\text{mA}, V_{GS} = -4\text{V}$		780	1090	m Ω
Input Capacitance	C_{iss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		80		pF
Output Capacitance	C_{oss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		15		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		13		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		7		ns
Rise Time	t_r	See specified Test Circuit.		20		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		15		ns
Fall Time	t_f	See specified Test Circuit.		7		ns
Total Gate Charge	Q_g	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -1\text{A}$		2.6		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -1\text{A}$		0.5		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -1\text{A}$		0.6		nC
Diode Forward Voltage	V_{SD}	$I_S = -1\text{A}, V_{GS} = 0$		-0.9	-1.5	V
[SBD]						
Reverse Voltage	V_R	$I_R = 0.5\text{mA}$	30			V
Forward Voltage	V_{F1}	$I_F = 0.3\text{A}$		0.35	0.40	V
	V_{F2}	$I_F = 0.5\text{A}$		0.42	0.47	V
Reverse Current	I_R	$V_R = 10\text{V}$			200	μA
Interterminal Capacitance	C	$V_R = 10\text{V}, f = 1\text{MHz}$		20		pF
Reverse Recovery Time	t_{rr}	$I_F = I_R = 100\text{mA}$, See specified Test Circuit.			10	ns

Electrical Connection (Top view)



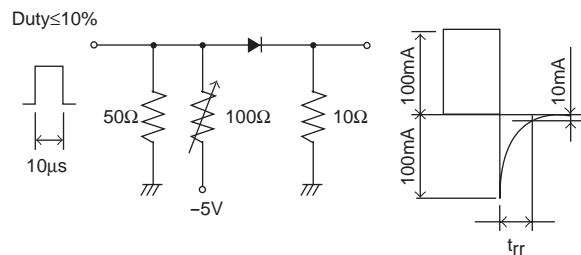
Switching Time Test Circuit

[MOSFET]

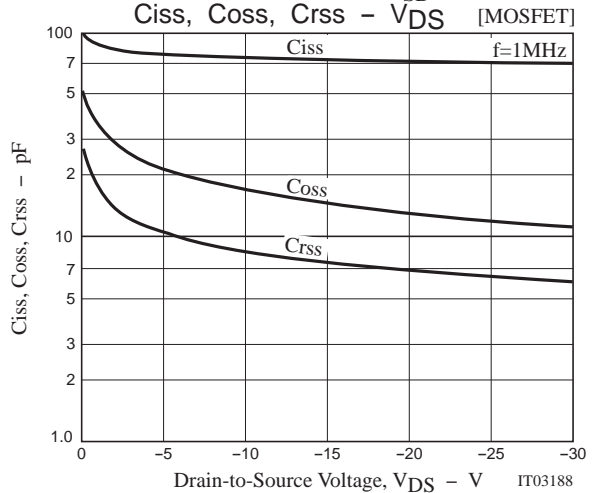
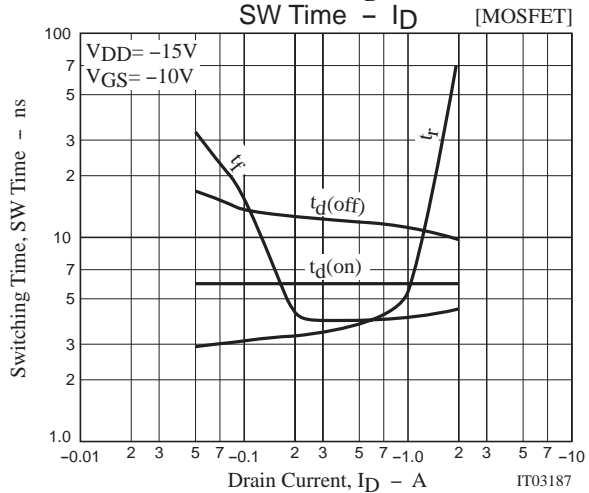
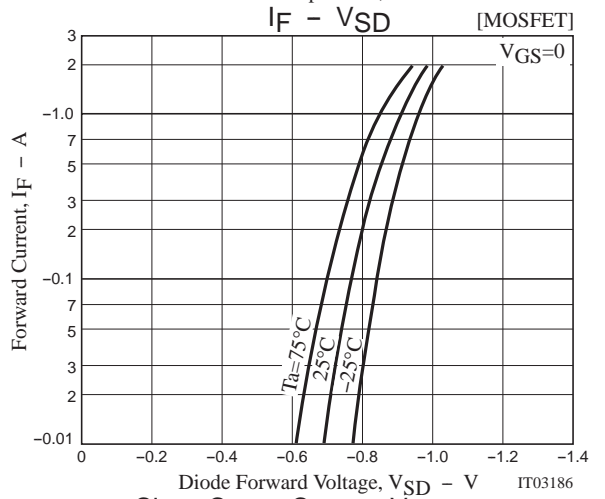
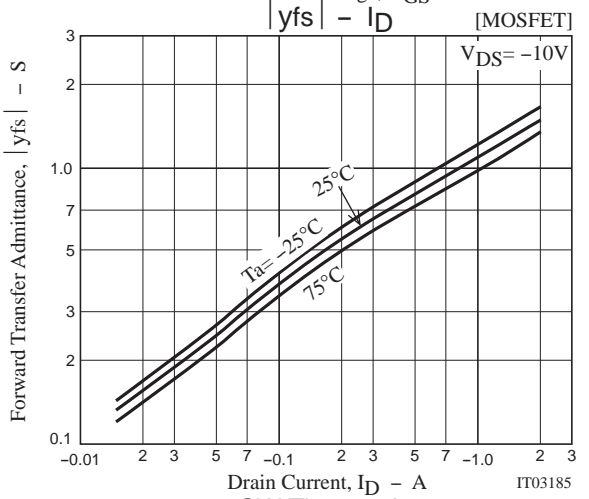
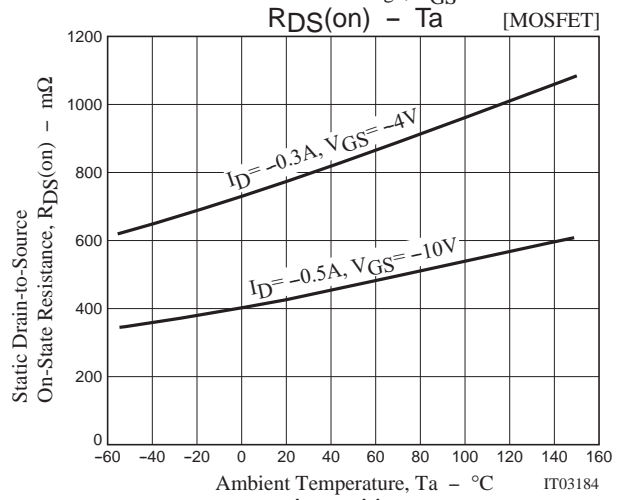
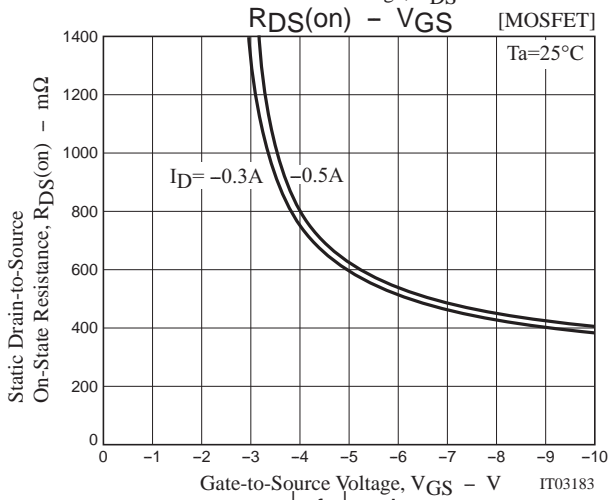
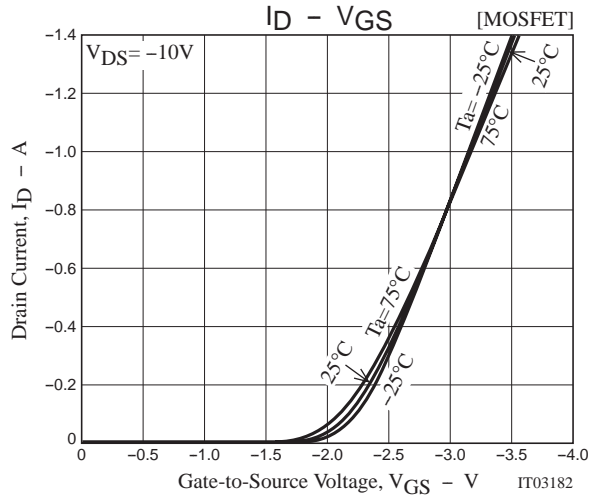
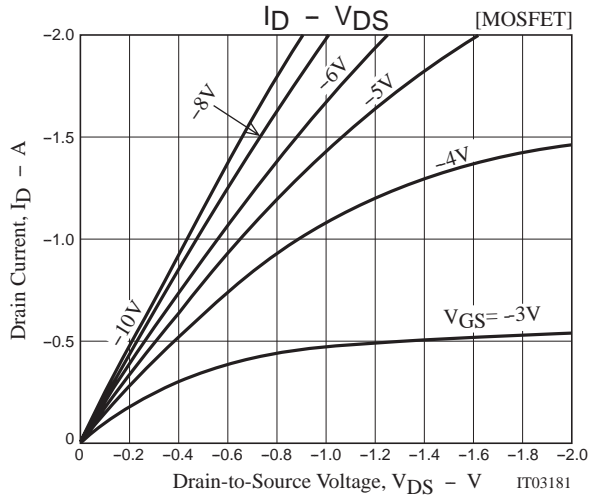


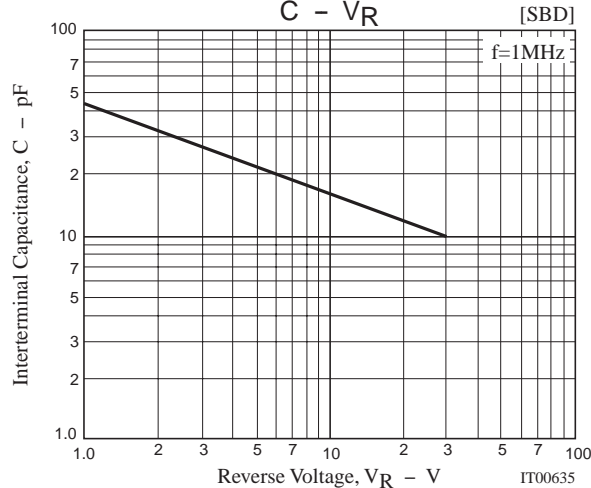
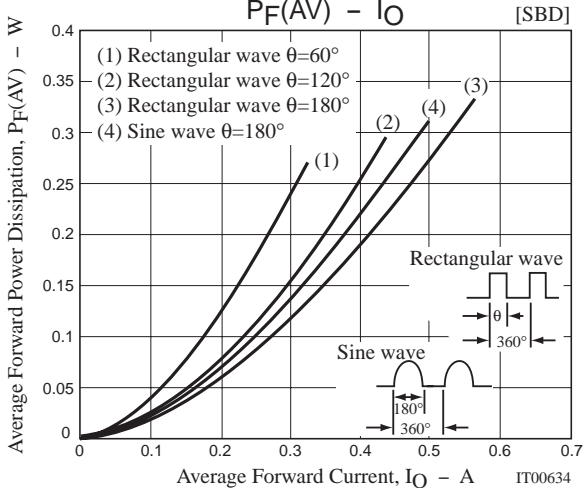
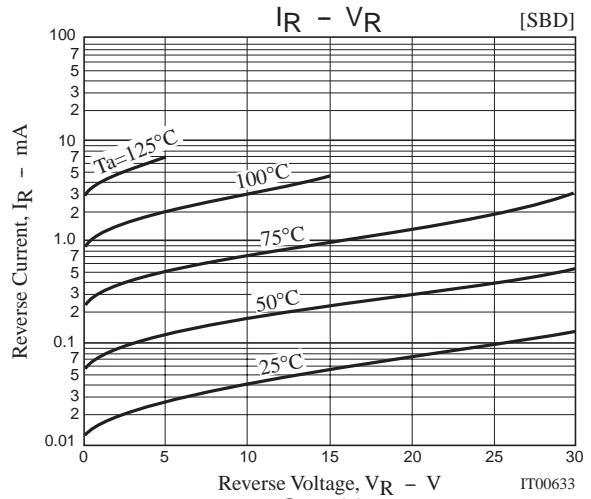
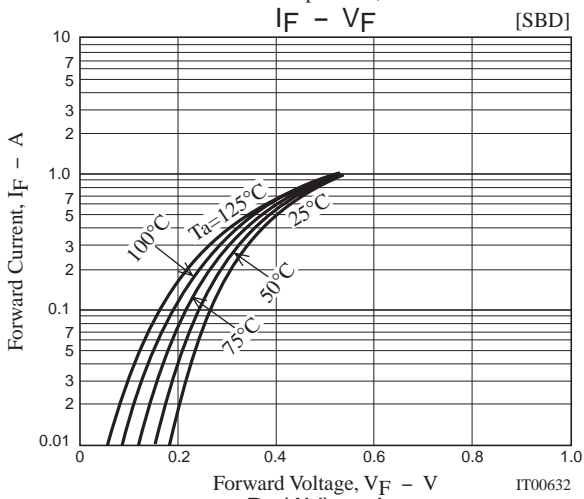
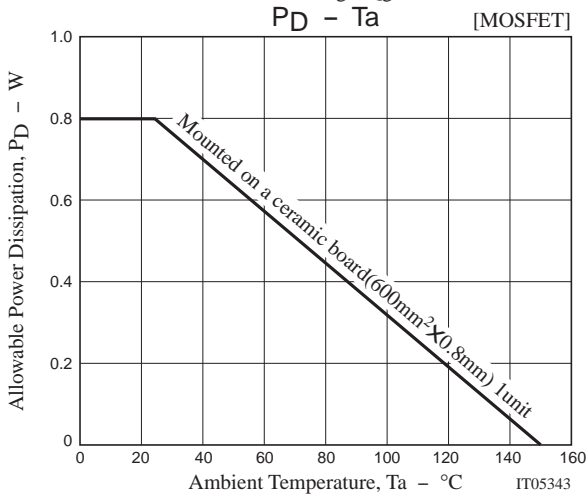
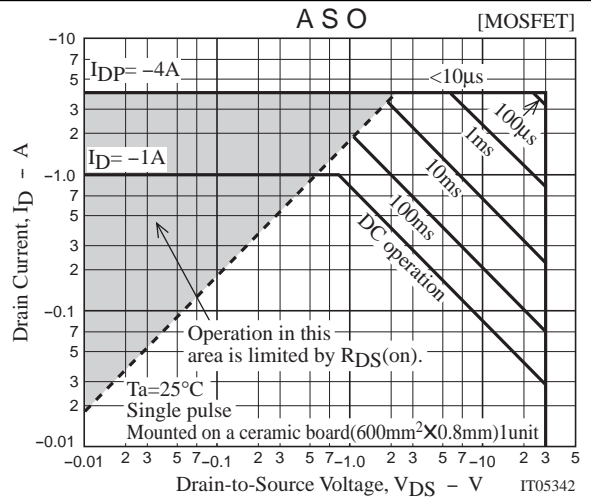
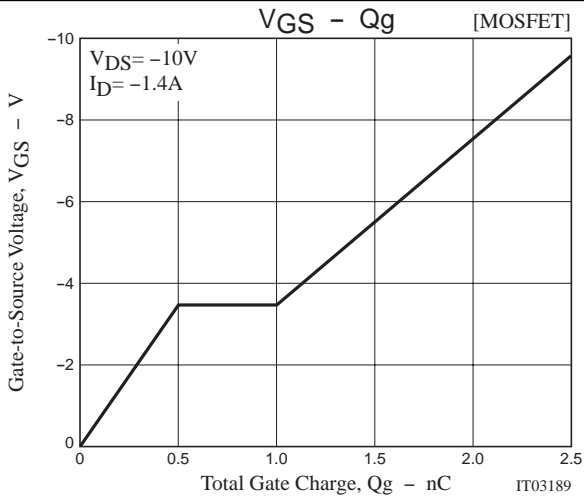
t_{rr} Test Circuit

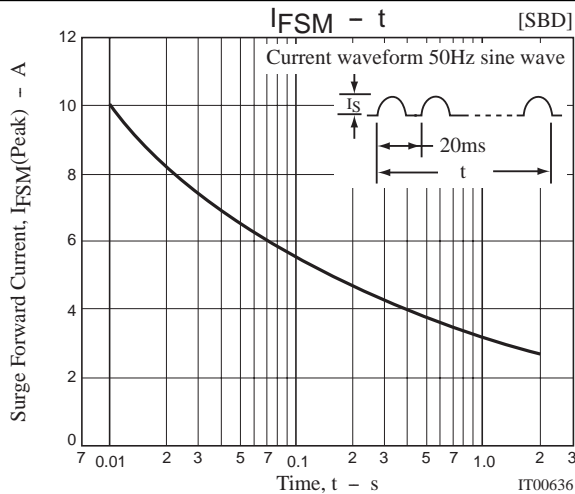
[SBD]



CPH5820







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