

**CPH5804****DC / DC Converter Applications****Features**

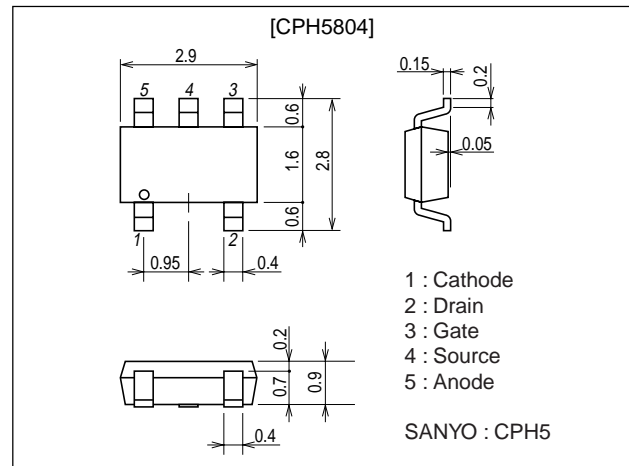
- Composite type with a P-Channel Silicon MOSFET (MCH3312) and a Schottky Barrier Diode (SBS006M) contained in one package facilitating high-density mounting.

**[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
<b>[MOSFET]</b>				
Drain-to-Source Voltage	$V_{DSS}$		-30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-2	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-8	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm) 1unit	0.9	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$
<b>[SBD]</b>				
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	10	A
Junction Temperature	$T_J$		-55 to +125	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$

Marking : QE

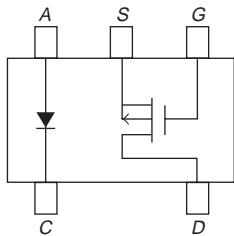
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## Electrical Characteristics at Ta=25°C

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	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
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} $	$V_{DS} = -10\text{V}, I_D = -1\text{A}$	1.4	2.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -1\text{A}, V_{GS} = -10\text{V}$		110	145	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -500\text{mA}, V_{GS} = -4\text{V}$		205	290	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		200		pF
Output Capacitance	$C_{oss}$	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		47		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = -10\text{V}, f = 1\text{MHz}$		32		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		7.2		ns
Rise Time	$t_r$	See specified Test Circuit		2.9		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		21		ns
Fall Time	$t_f$	See specified Test Circuit		8.7		ns
Total Gate Charge	$Q_g$	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -2\text{A}$		5.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -2\text{A}$		0.98		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS} = -10\text{V}, V_{GS} = -10\text{V}, I_D = -2\text{A}$		0.82		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -2\text{A}, V_{GS} = 0$		-0.85	-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	0.4	V
	$V_{F2}$	$I_F = 0.5\text{A}$		0.42	0.47	V
Reverse Current	$I_R$	$V_R = 10\text{V}$			200	$\mu\text{A}$
Interterminal Capacitance	$C$	$V_R = 10\text{V}, f = 1\text{MHz}, 1 \text{ cycle}$		20		pF
Reverse Recovery Time	$t_{rr}$	$I_F = I_R = 100\text{mA}$ , See specified Test Circuit.			10	ns

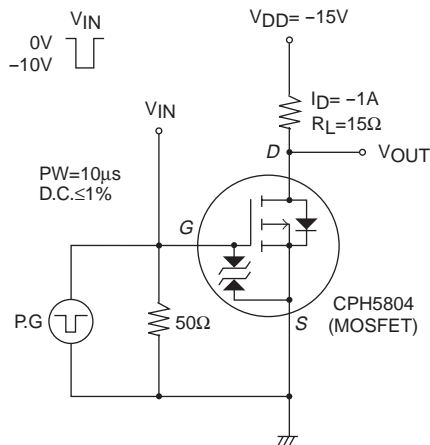
## Electrical Connection (Top view)



G : Gate  
S : Source  
A : Anode  
C : Cathode  
D : Drain

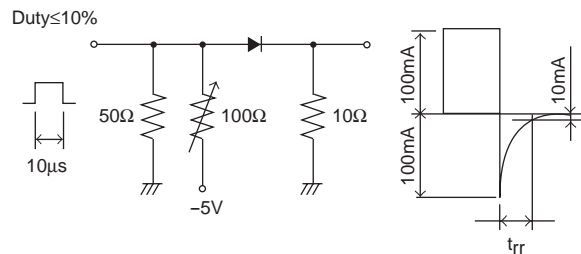
## Switching Time Test Circuit

[MOSFET]

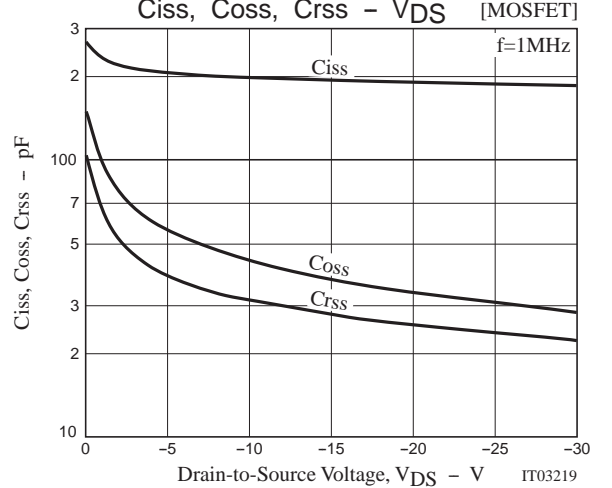
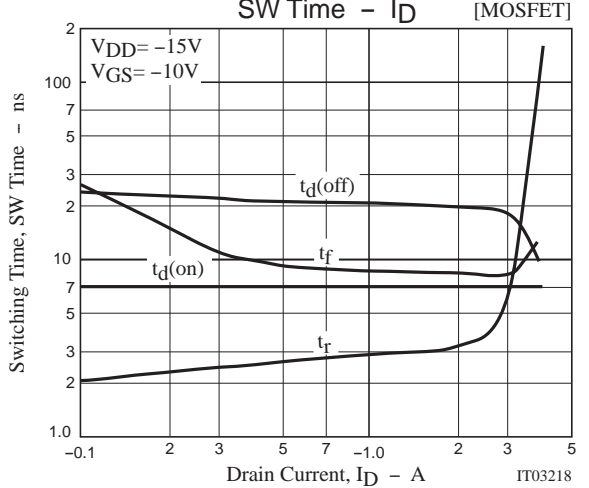
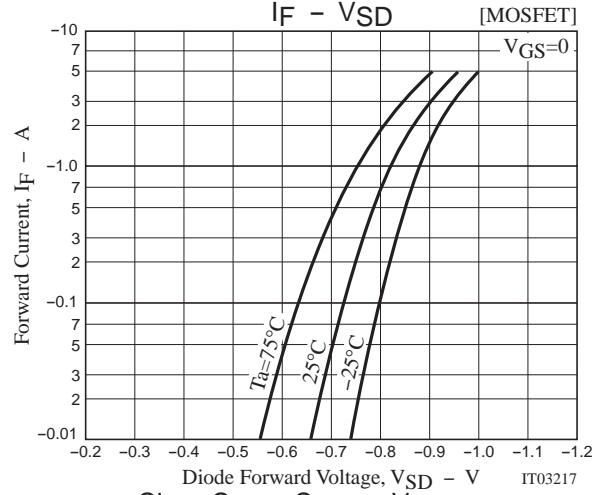
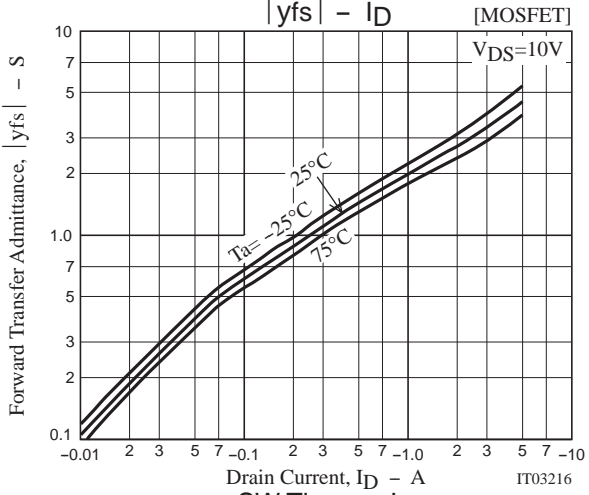
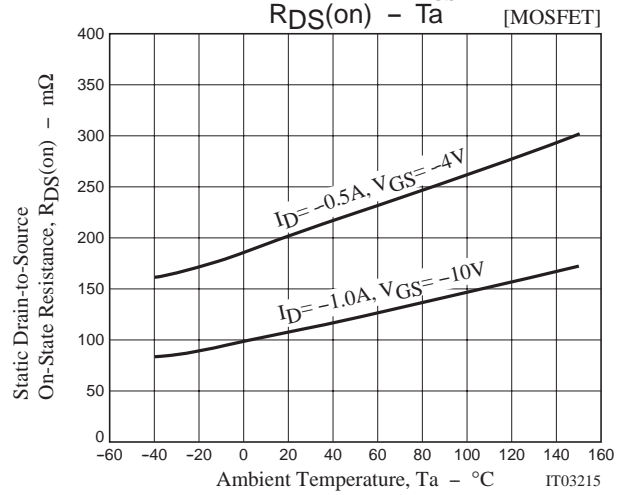
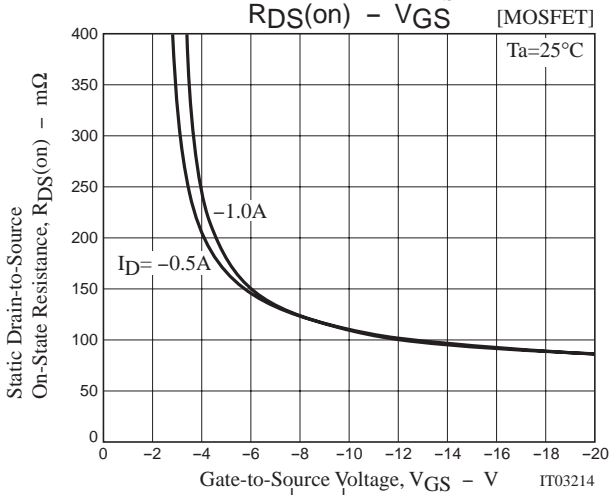
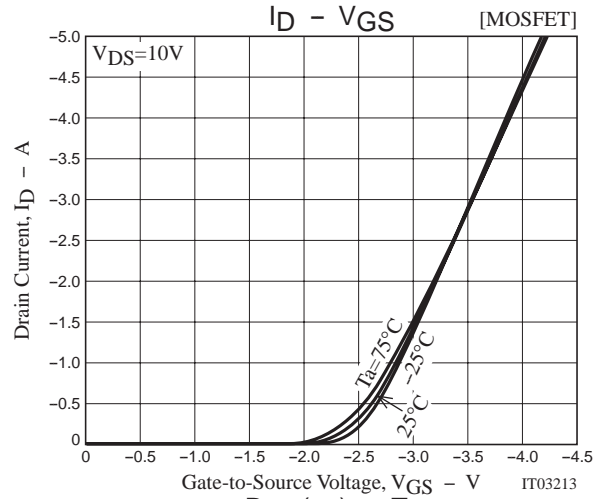
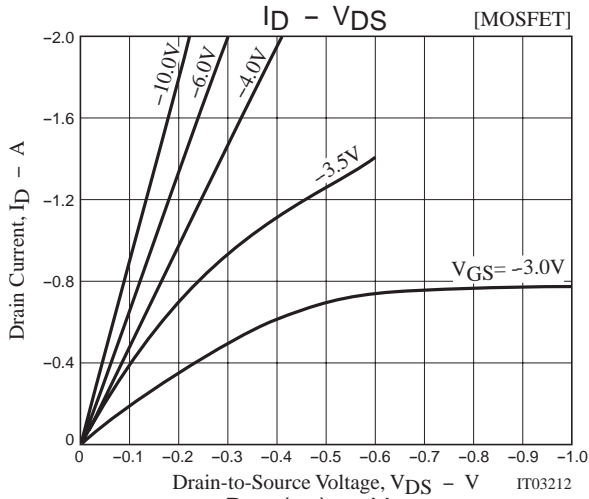


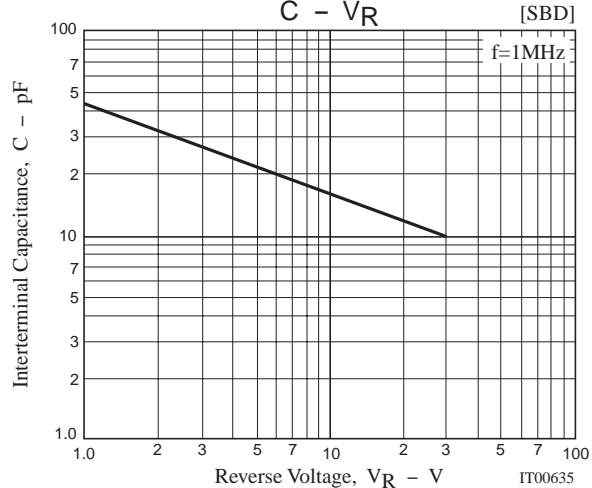
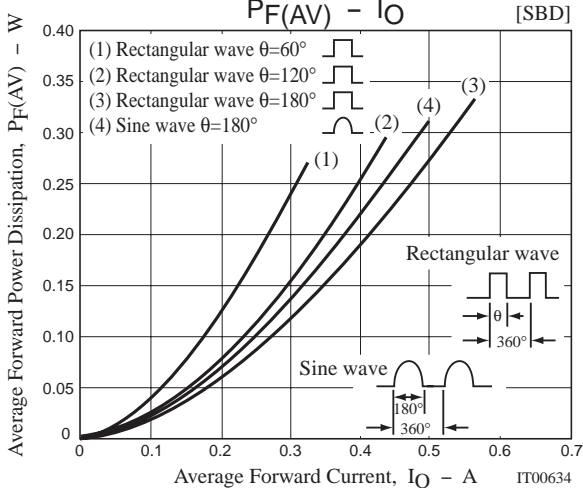
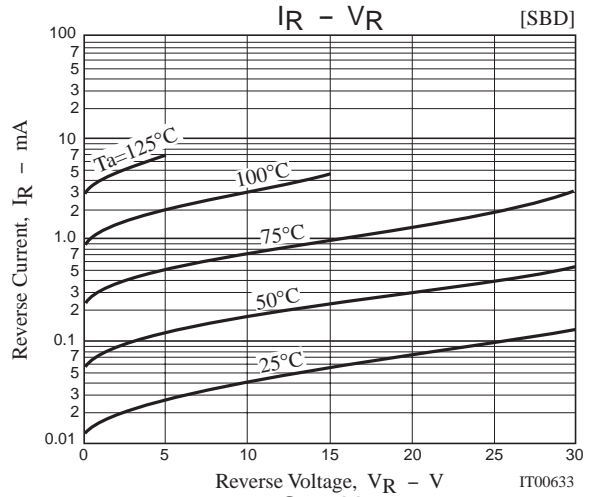
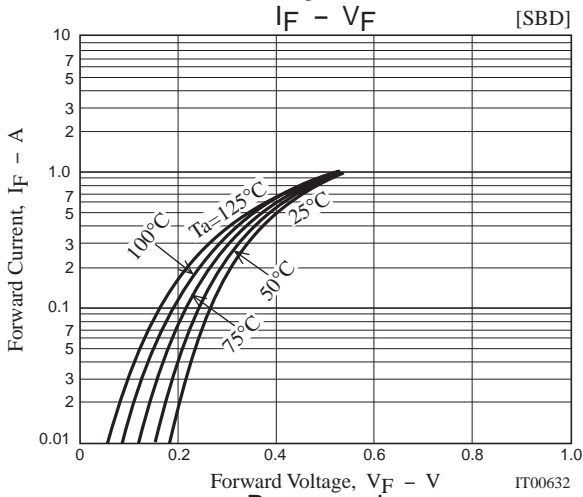
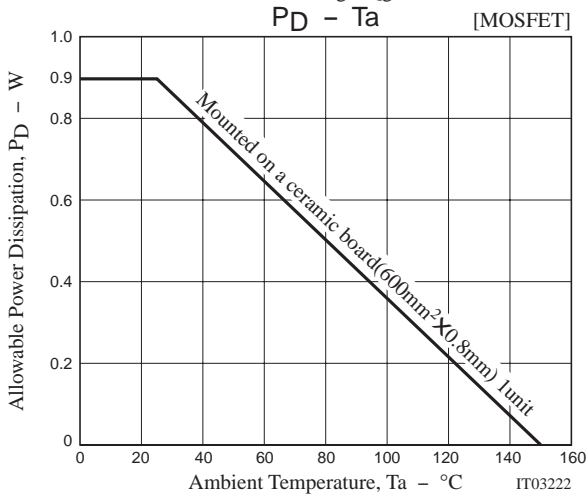
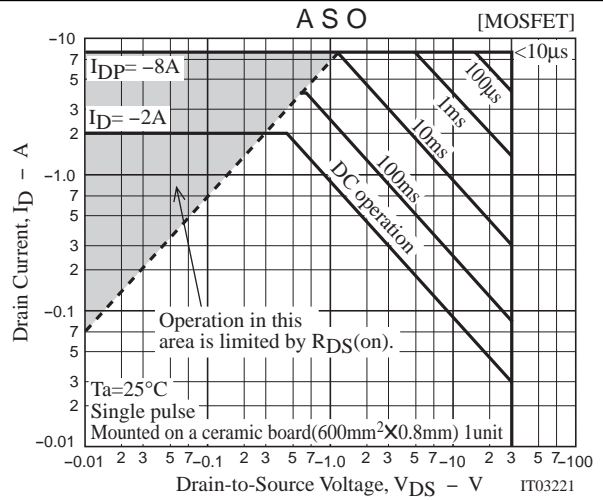
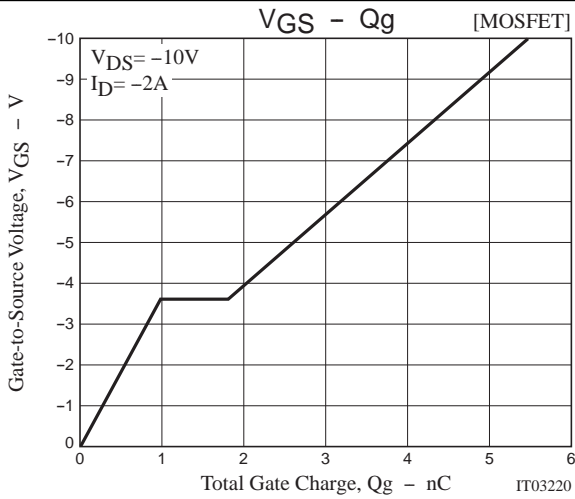
## trr Test Circuit

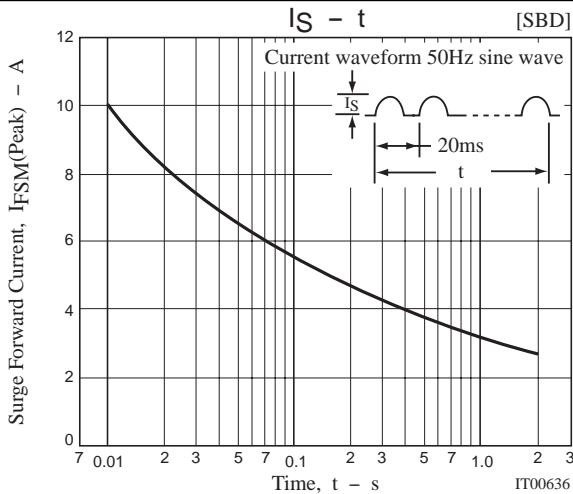
[SBD]



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