



SANYO Semiconductors

## DATA SHEET

CPH5808

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## DC / DC Converter Applications

## Features

- Composite type with a N-Channel Silicon MOSFET (MCH3409) and a Schottky Barrier Diode (SBS004) contained in one package facilitating high-density mounting.
- [MOS]
  - Low ON-resistance
  - Ultrahigh-speed switching
  - Low Voltage drive
- [SBD]
  - Short reverse recovery time
  - Low forward voltage

## Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		20	V
Gate-to-Source Voltage	V <sub>GS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		2.0	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	8.0	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm) 1unit	0.9	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>R</sub> RM		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>R</sub> S		15	V
Average Output Current	I <sub>O</sub>		1	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1cycle	10	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

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# CPH5808

## Electrical Characteristics at Ta=25°C

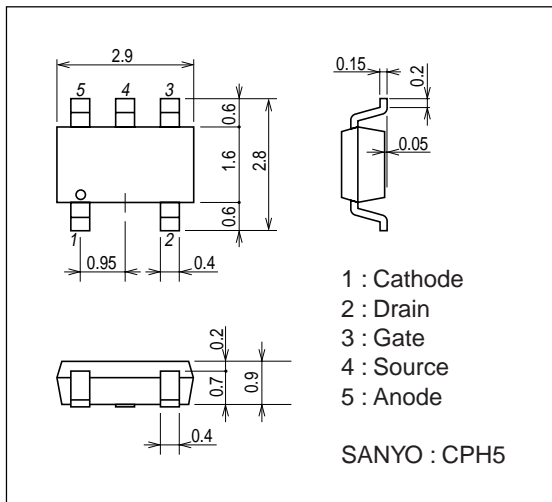
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
<b>[MOSFET]</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0$			1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=1A$	2.4	3.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=1A, V_{GS}=4V$		100	130	$m\Omega$
	$R_{DS(on)2}$	$I_D=0.5A, V_{GS}=2.5V$		130	180	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		190		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		40		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		25		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		9		ns
Rise Time	$t_r$	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		25		ns
Fall Time	$t_f$	See specified Test Circuit.		18		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4V, I_D=2A$		2.7		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=4V, I_D=2A$		0.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=4V, I_D=2A$		0.6		nC
Diode Forward Voltage	$V_{SD}$	$I_S=2A, V_{GS}=0$		0.87	1.2	V
<b>[SBD]</b>						
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	$R_{th(j-a)}$	Mounted on a ceramic board (900mm <sup>2</sup> X0.8mm)		110		$^{\circ}C/W$

Marking : QJ

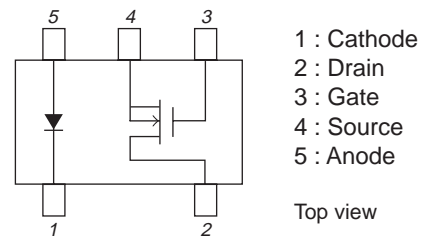
## Package Dimensions

unit : mmm

2171

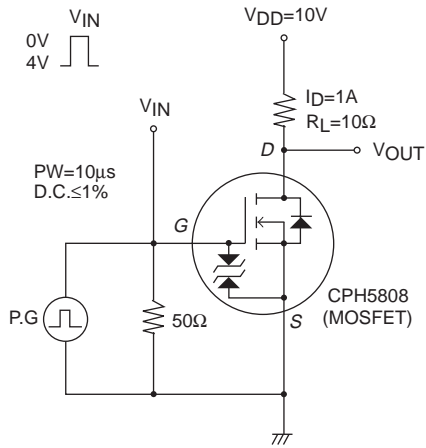


## Electrical Connection



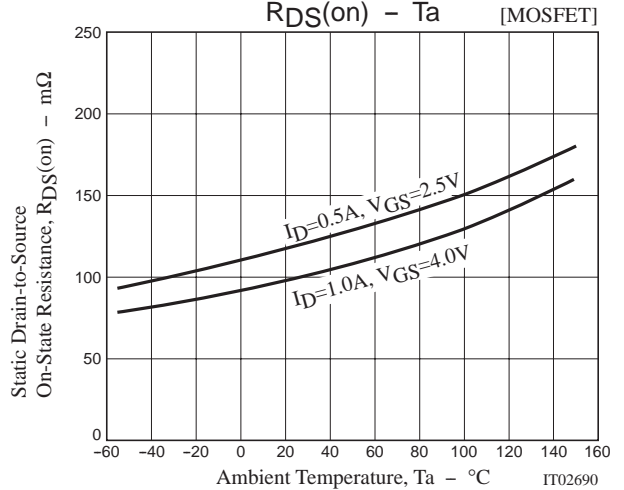
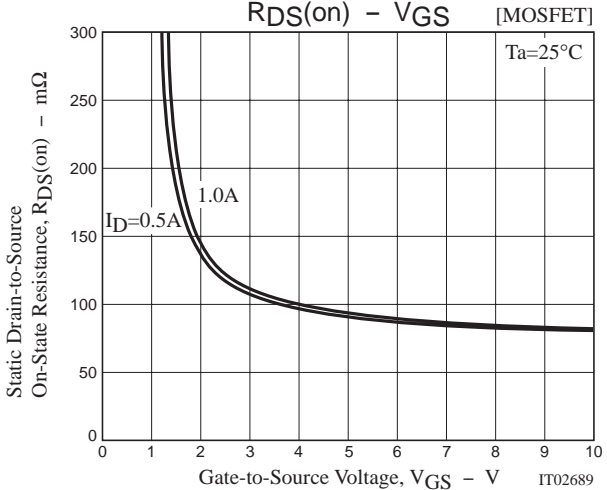
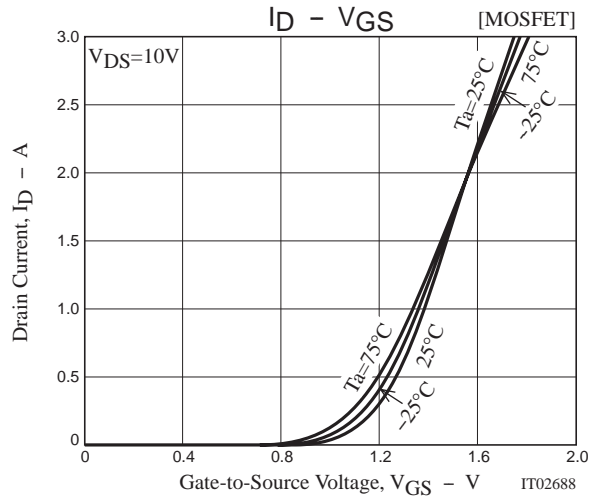
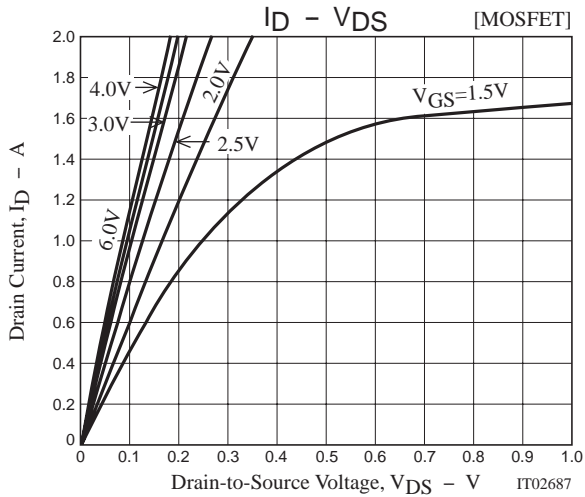
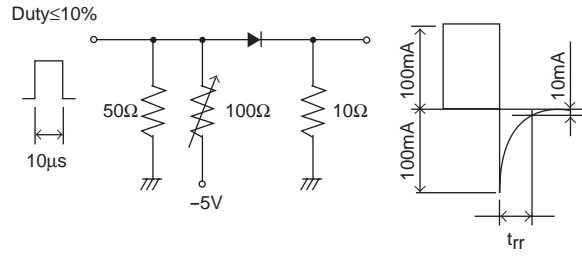
**Switching Time Test Circuit**

[MOSFET]

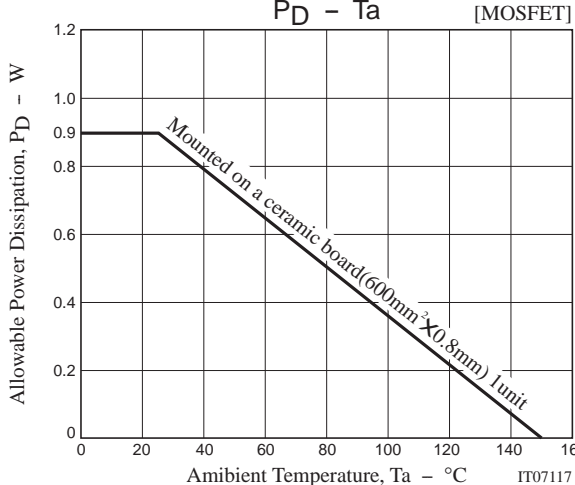
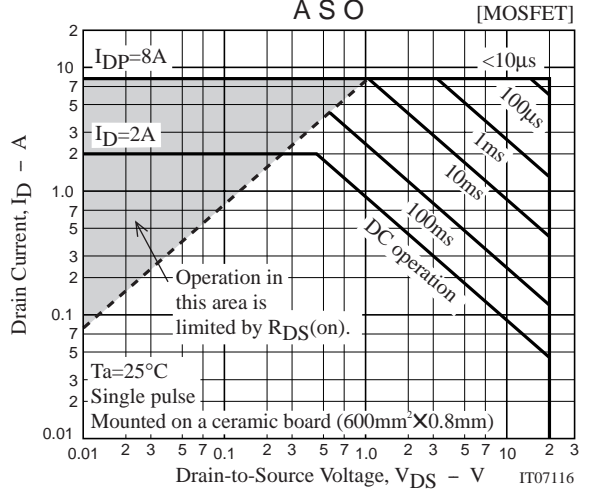
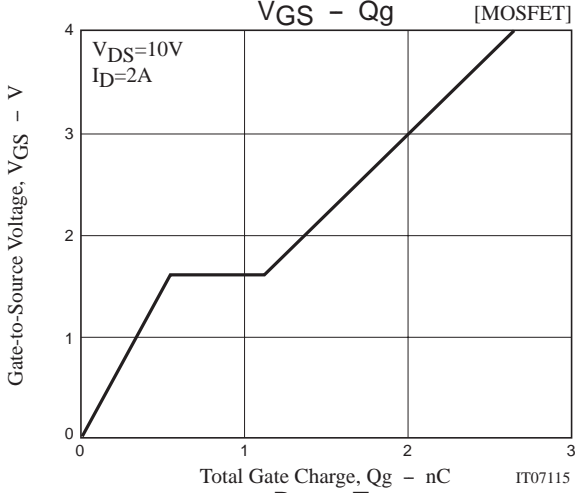
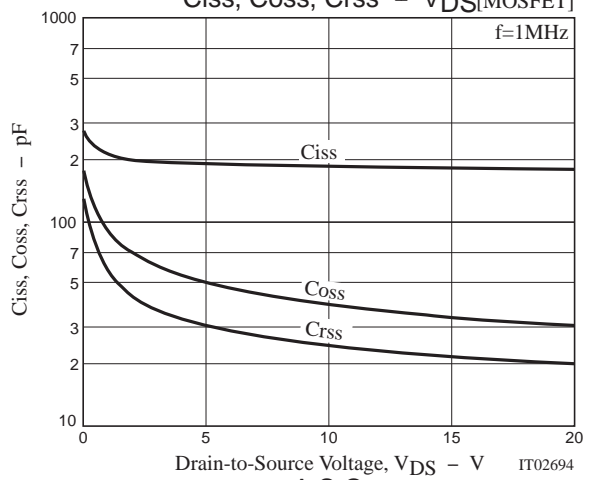
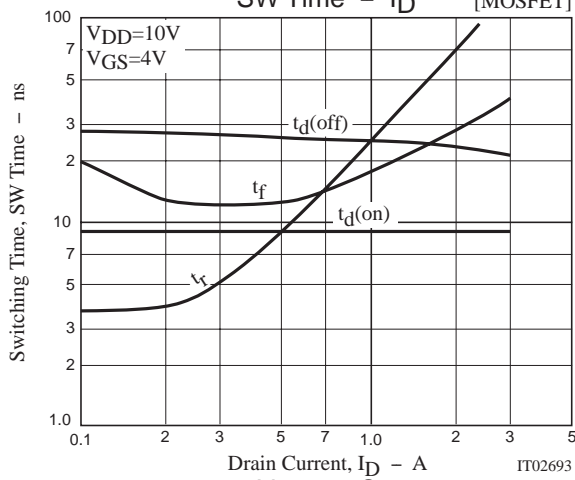
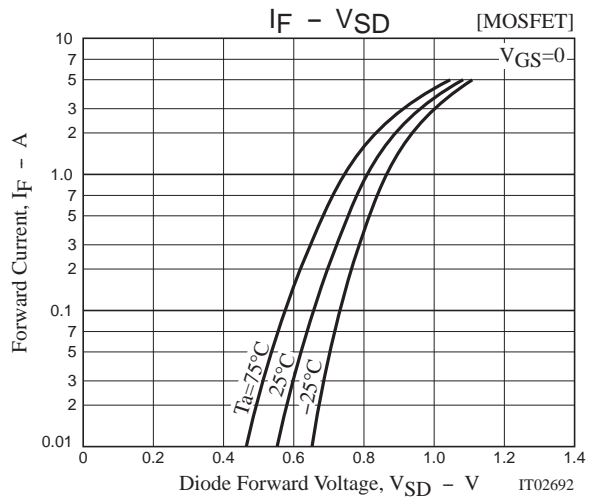
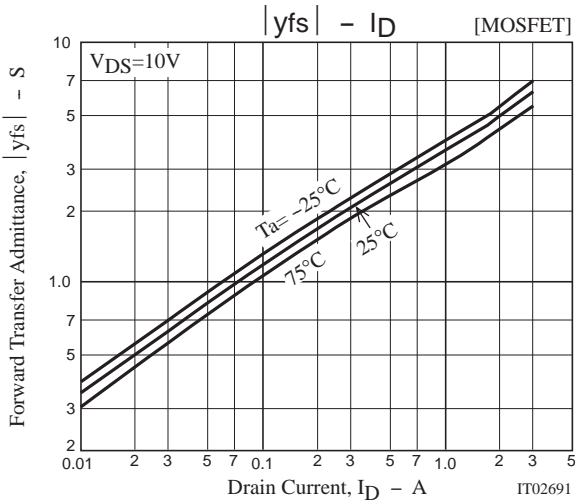


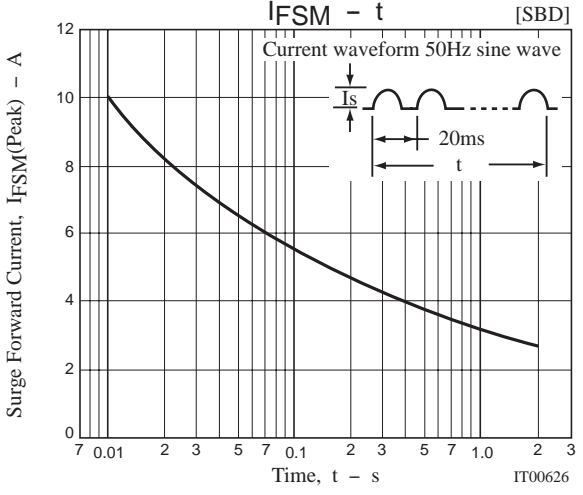
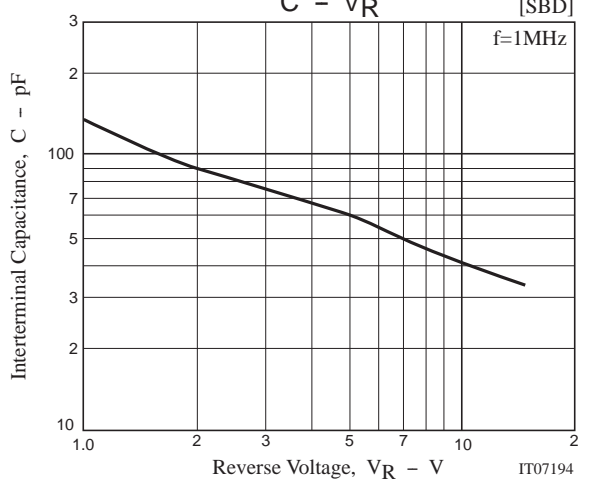
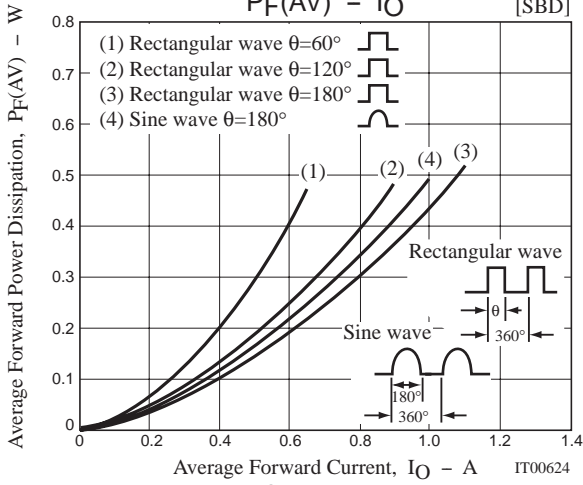
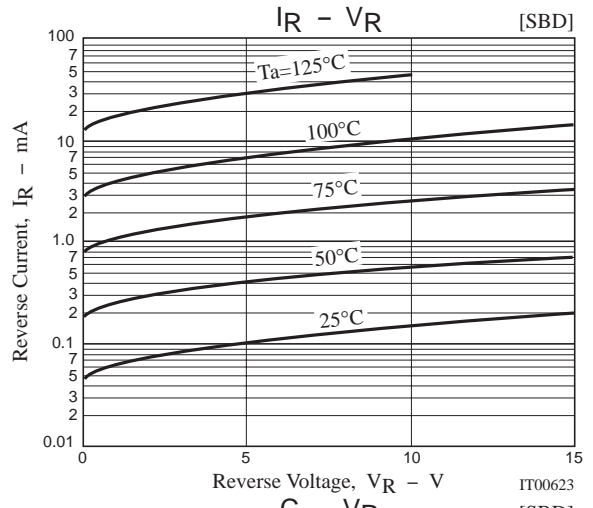
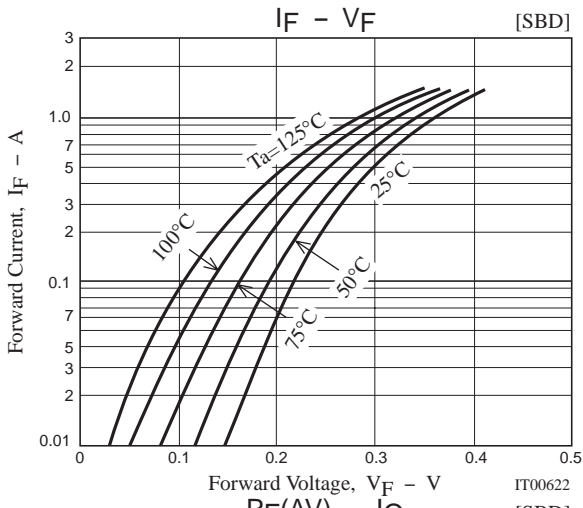
**trr Test Circuit**

[SBD]



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