



ON Semiconductor®

# ON Semiconductor DATA SHEET

## CPH5802

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

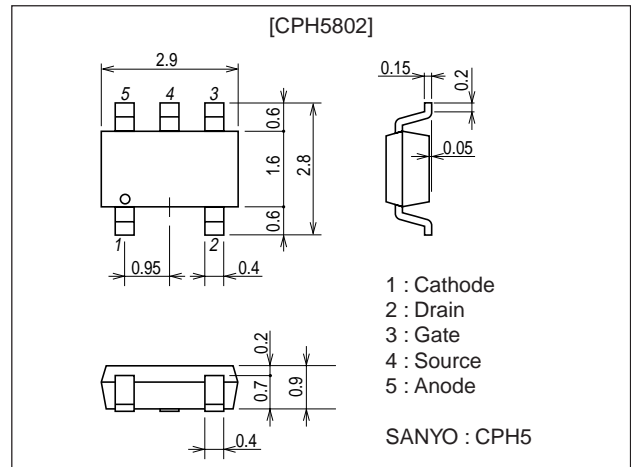
### DC / DC Converter Applications

#### Features

- Composite type with a P-Channel Silicon MOSFET (MCH3306) and a Schottky Barrier Diode (SBS004) contained in one package facilitating high-density mounting.
- [MOSFET]
- Low ON-resistance.
  - Ultrahigh-speed switching.
  - Ultralow voltage drive (1.8V drive).
- [SBD]
- Short reverse recovery time.
  - Low forward voltage.

#### Package Dimensions

unit : mm  
2171



#### 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>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-8	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (600mm <sup>2</sup> ×0.8mm) 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>RSM</sub>		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		15	V
Average Output Current	I <sub>O</sub>		1	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	10	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

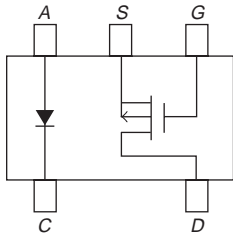
Marking : QC

# CPH5802

## Electrical Characteristics at Ta=25°C

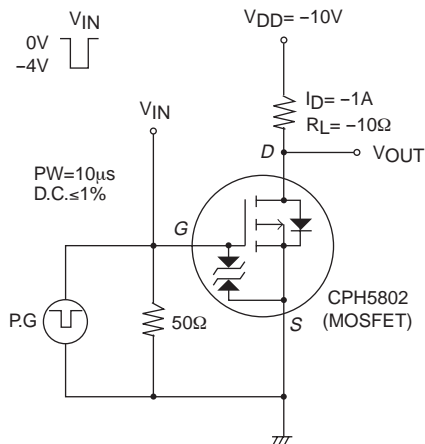
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0$			-10	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-0.3		-1.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1A$	2.1	3.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-4V$		110	145	m $\Omega$
	$R_{DS(on)2}$	$I_D=-0.5A, V_{GS}=-2.5V$		140	200	m $\Omega$
	$R_{DS(on)3}$	$I_D=-0.1A, V_{GS}=-1.8V$		180	260	m $\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		410		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		60		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		40		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		9		ns
Rise Time	$t_r$	See specified Test Circuit		27		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		42		ns
Fall Time	$t_f$	See specified Test Circuit		38		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		10		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		0.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		1.2		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-2A, V_{GS}=0$		-0.88	-1.2	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	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz, 1\text{ cycle}$		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 (600mm <sup>2</sup> ×0.8mm)		110		°C / W

## Electrical Connection (Top view)



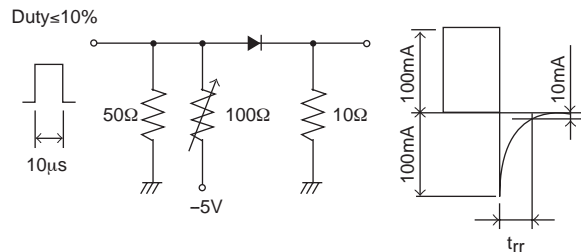
## Switching Time Test Circuit

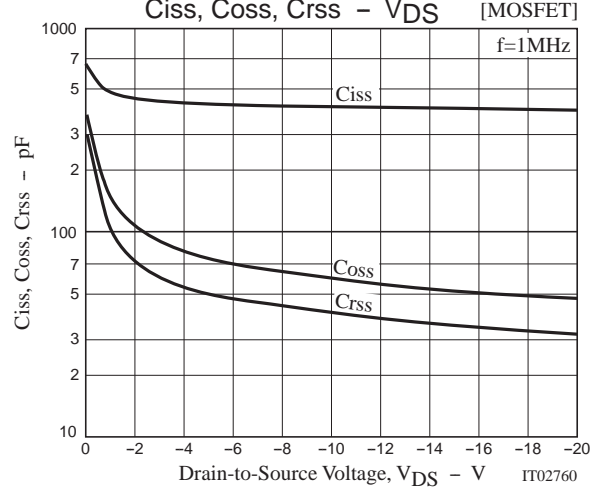
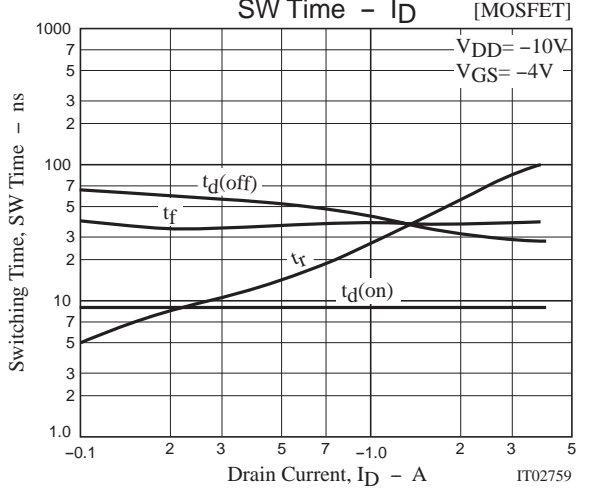
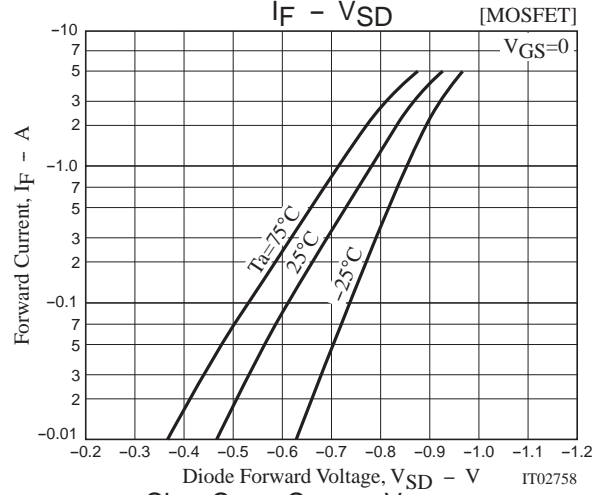
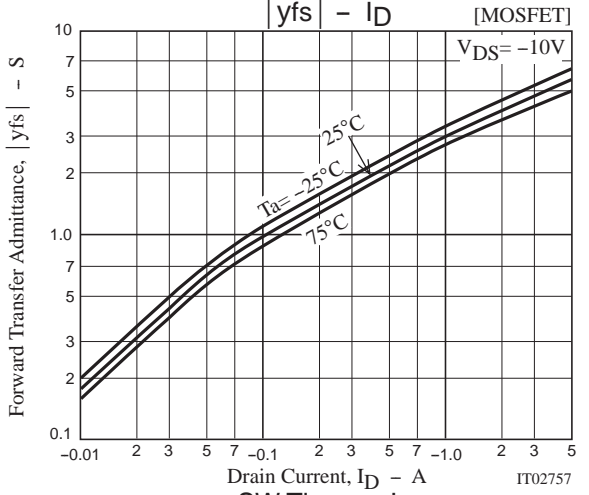
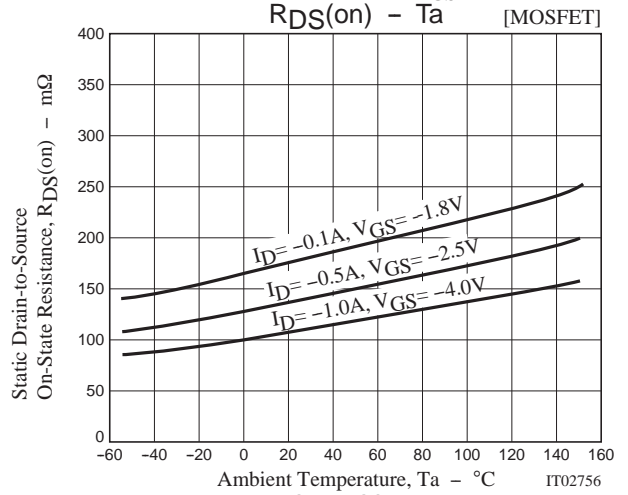
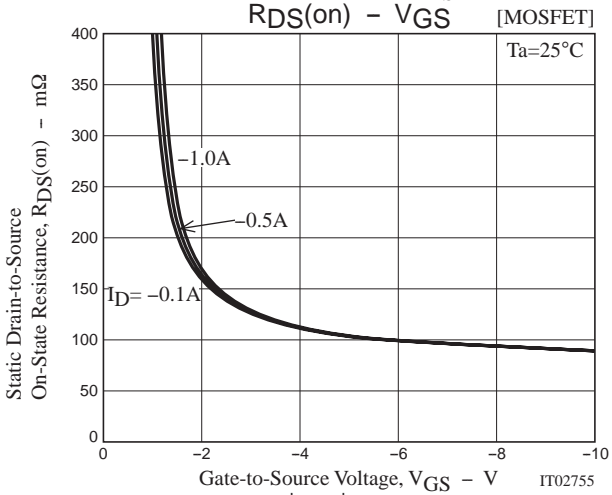
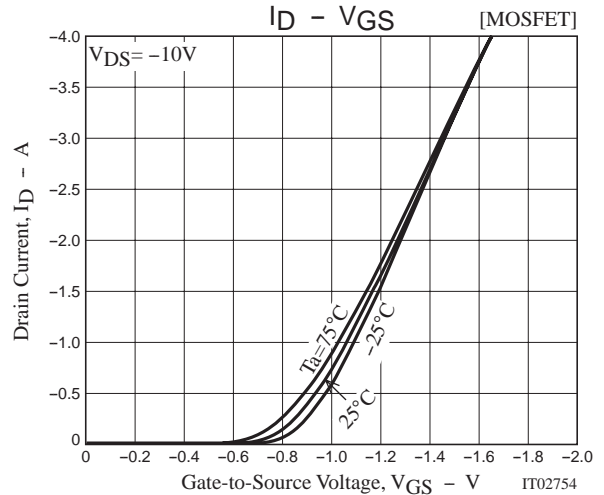
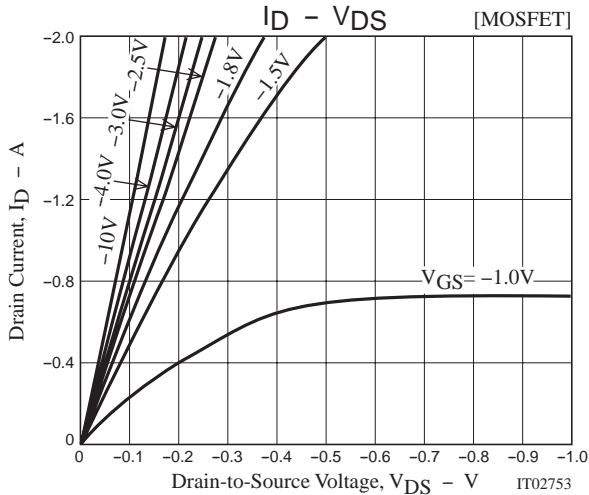
[MOSFET]

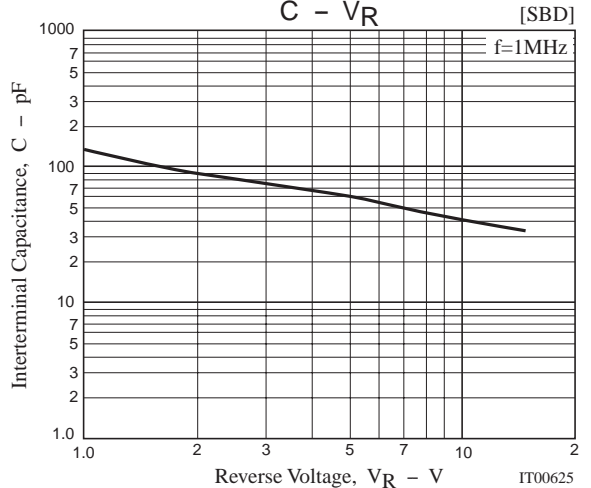
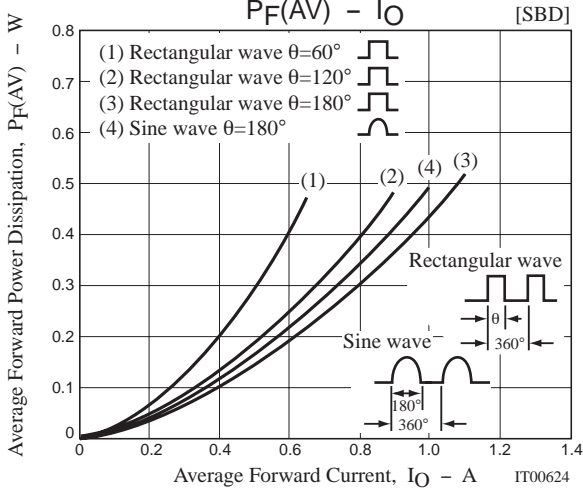
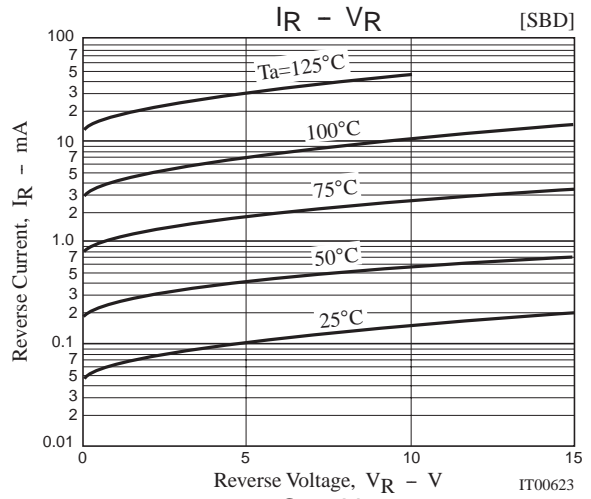
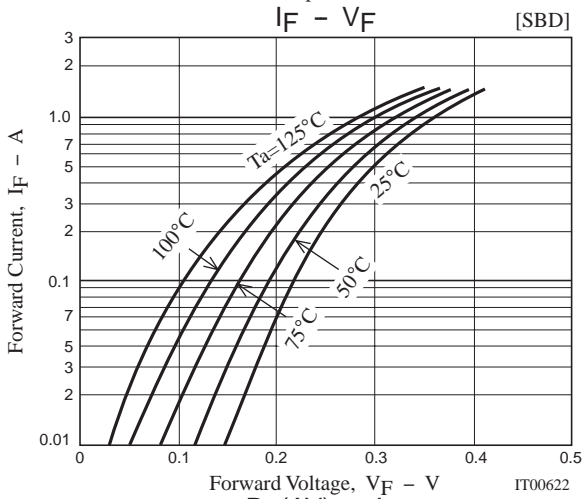
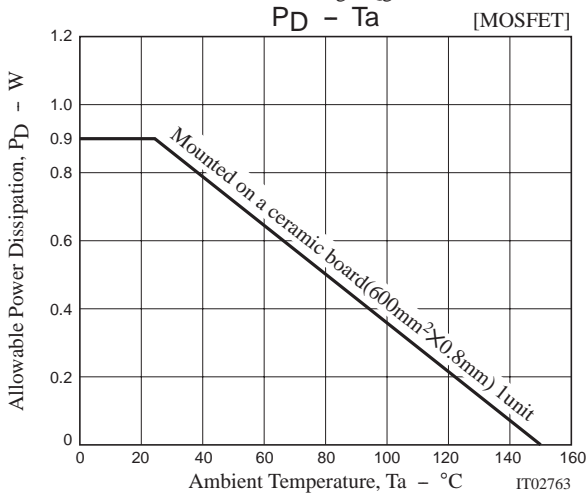
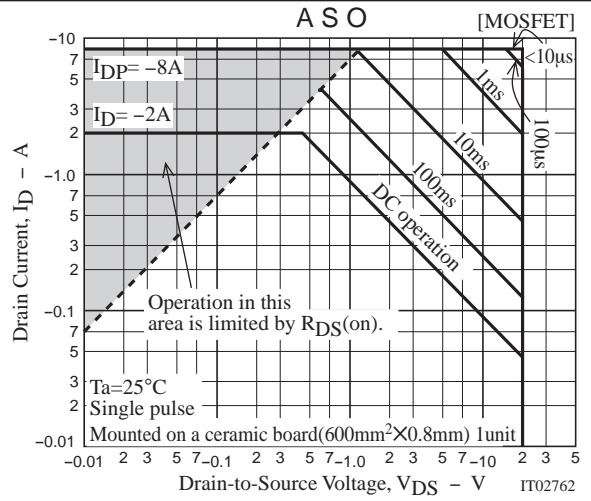
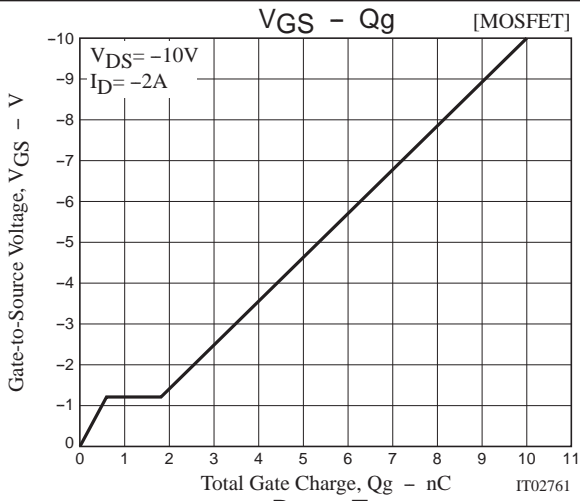


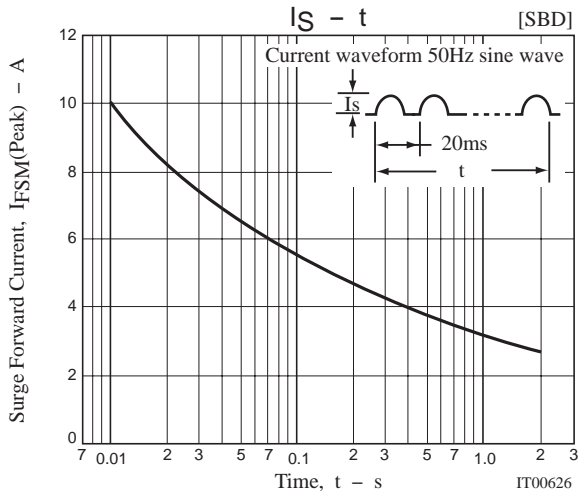
## trr Test Circuit

[SBD]









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