



CPH5810

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## General-Purpose Switching Device Applications

### Features

- Composite type with an P-Channel Silicon MOSFET (MCH3312) and a Schottky Barrier Diode (SBS001) 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.

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		-30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	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>RRM</sub>		11	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		15	V
Average Output Current	I <sub>O</sub>		500	mA
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	5	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : QL

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# CPH5810

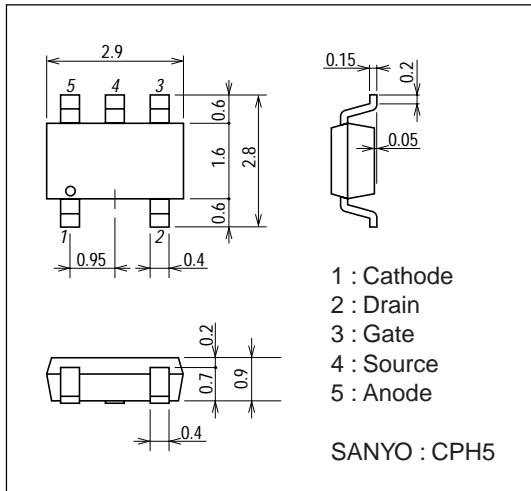
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0$			-1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GSS}=\pm 16V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1A$	1.4	2.0		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1A, V_{GS}=-10V$		110	145	$m\Omega$
	$R_{DS(on)2}$	$I_D=-500mA, V_{GS}=-4V$		205	290	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		200		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		47		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		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	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		5.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		0.98		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-2A$		0.82		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-2A, V_{GS}=0$		-0.85	-1.5	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=400\mu A$	11			V
Forward Voltage	$V_F$	$I_F=500mA$		0.4	0.45	V
Reverse Current	$I_R$	$V_R=6V$			200	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz$ cycle		50		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA$ , See specified Test Circuit.			10	ns

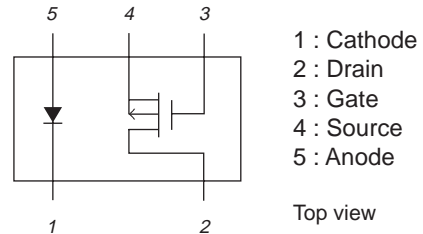
### Package Dimensions

unit : mm

2171



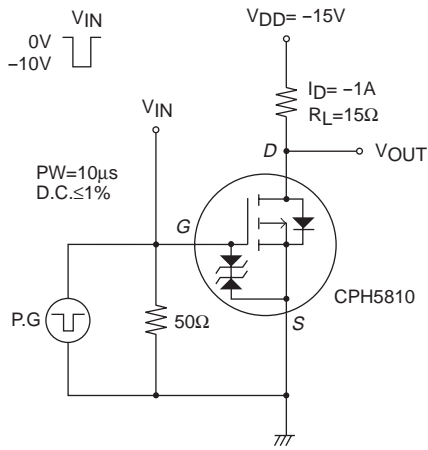
### Electrical Connection



# CPH5810

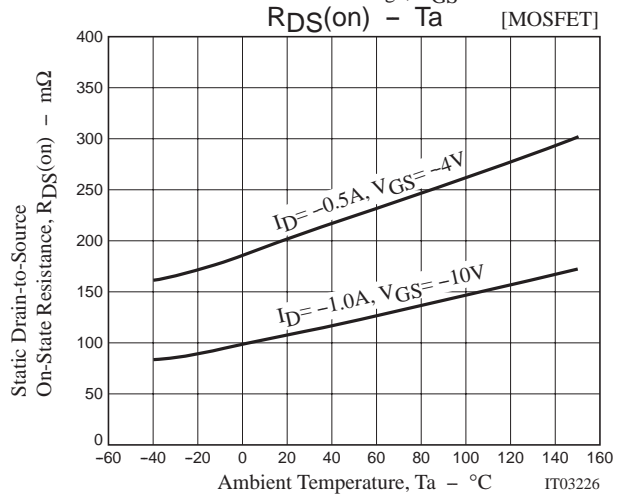
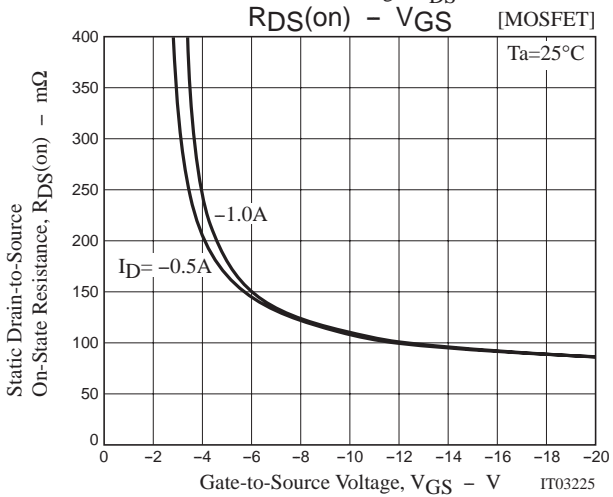
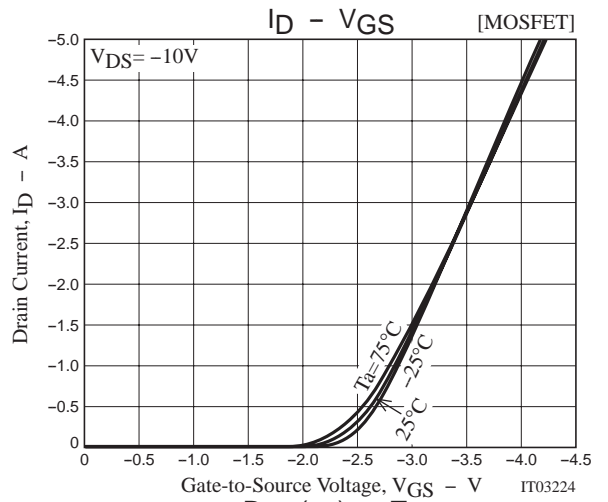
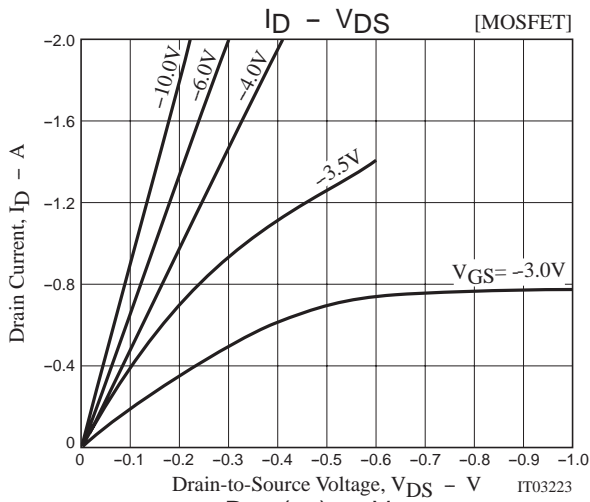
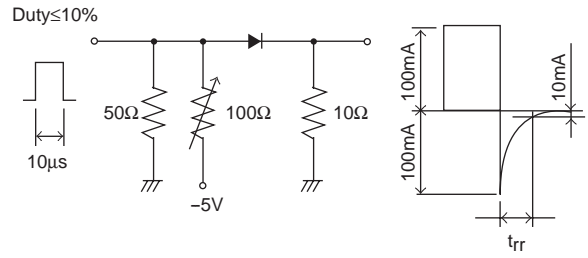
## Switching Time Test Circuit

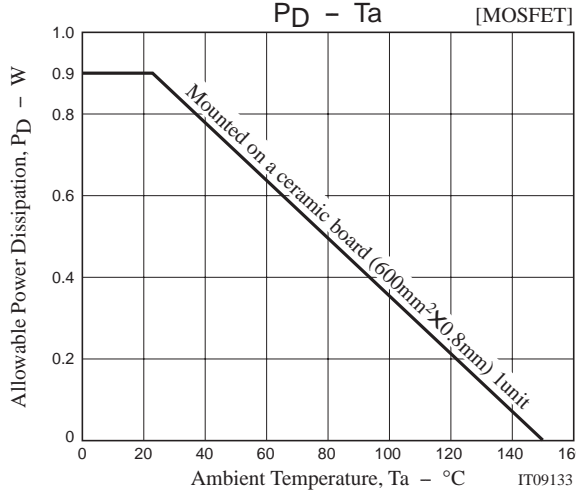
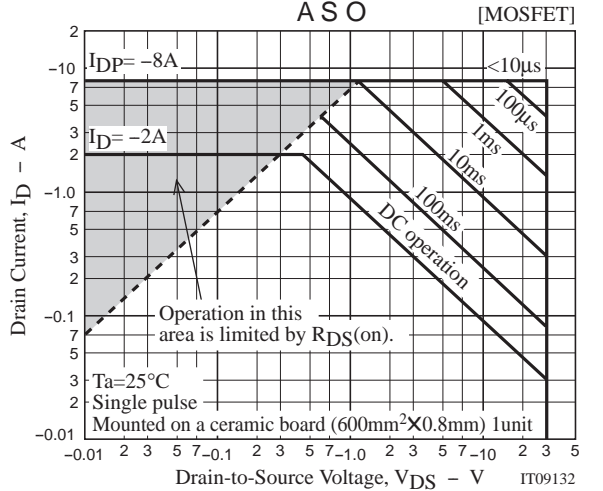
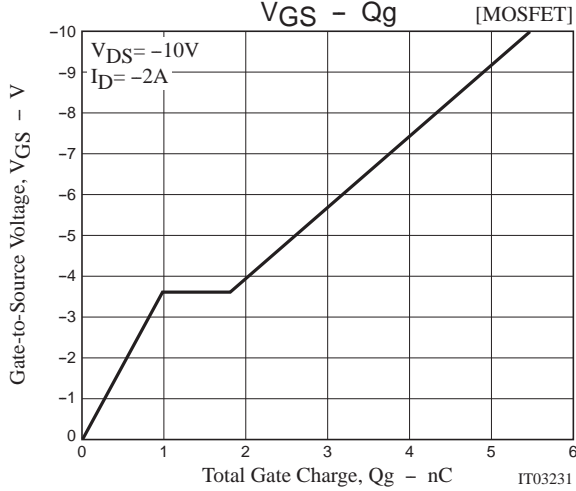
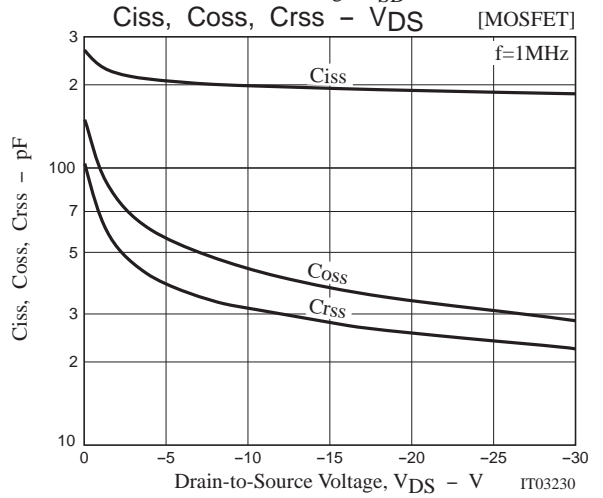
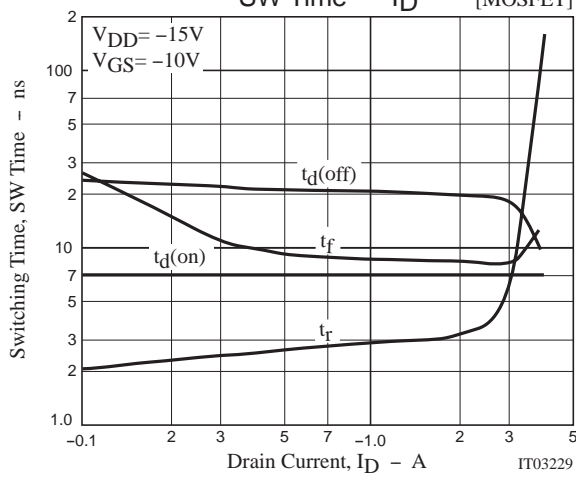
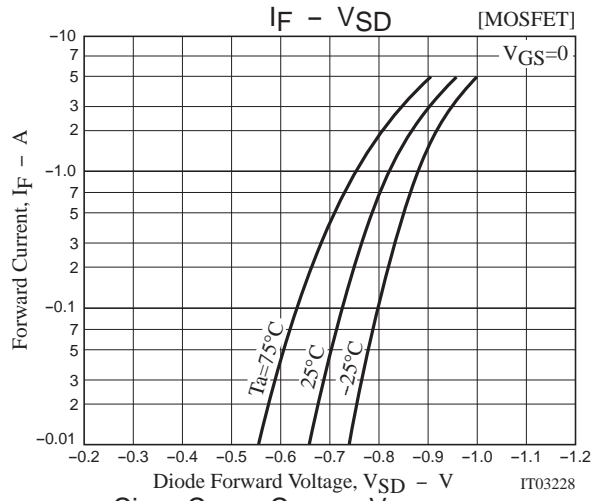
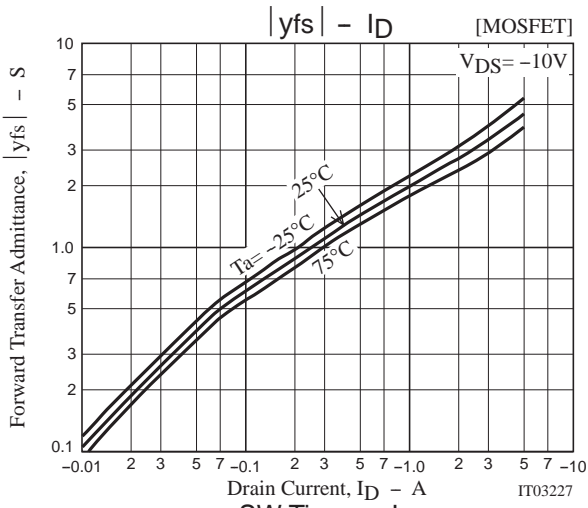
[MOSFET]

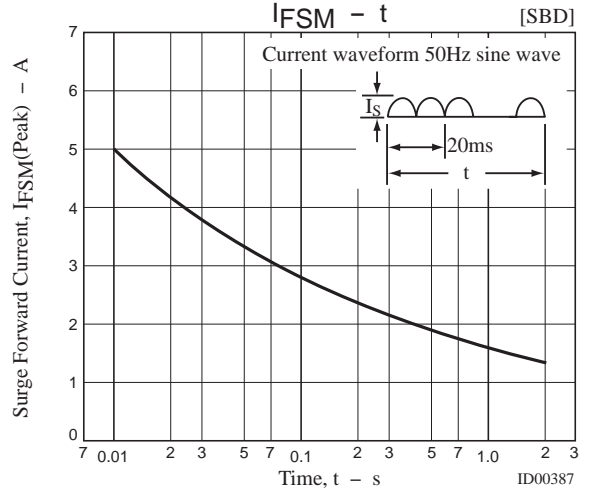
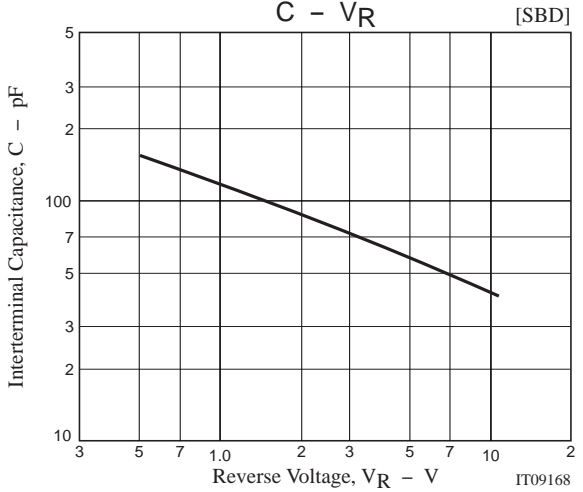
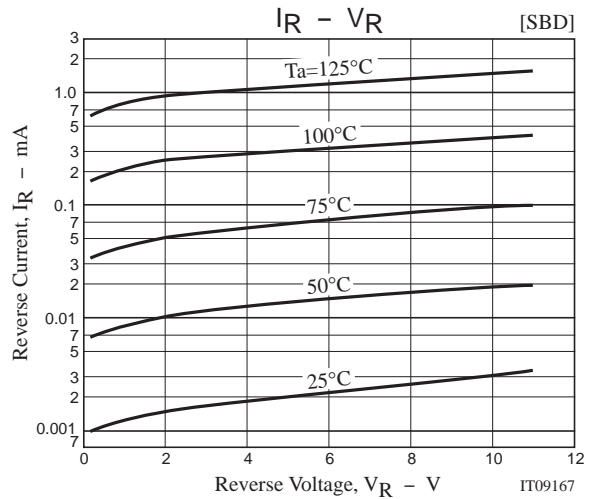
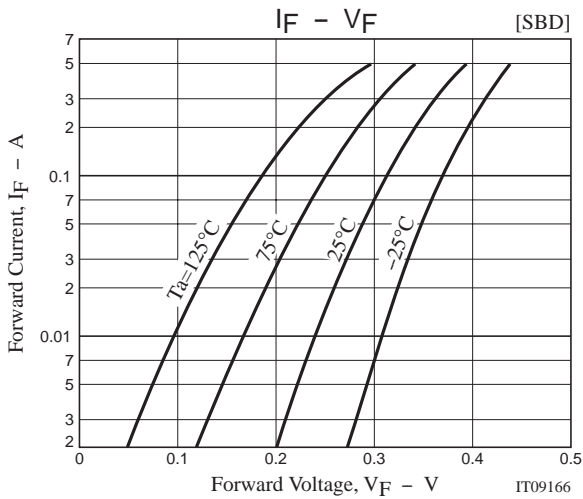


## $t_{rr}$ Test Circuit

[SBD]







Note on usage : Since the CPH5810 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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