



SANYO Semiconductors

## DATA SHEET

CPH5862

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

# General-Purpose Switching Device Applications

## Features

- DC / DC converter applications.
- Composite type with a N-channel silicon MOSFET and a schottky barrier diode contained in one package facilitating high-density mounting.
- [MOSFET]
  - 2.5V drive.
- [SBD]
  - Short reverse recovery time.
  - Low forward voltage.
  - Low reverse current.

## 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 (1000mm <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

Marking : YQ

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SANYO Semiconductor Co., Ltd.

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# CPH5862

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>		30	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		35	V
Average Output Current	I <sub>O</sub>		700	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

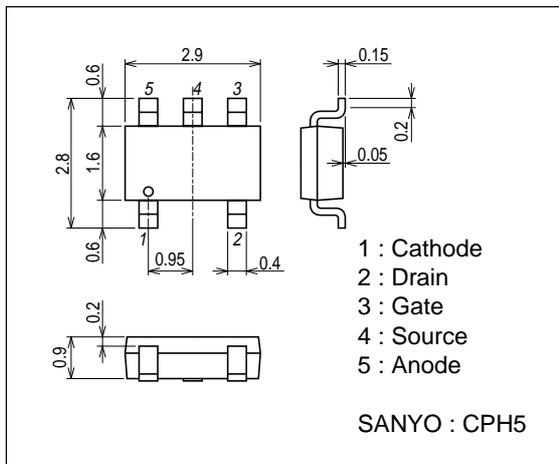
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	20			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1A	1.6	2.7		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =1A, V <sub>GS</sub> =4V		100	130	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =0.5A, V <sub>GS</sub> =2.5V		130	180	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, f=1MHz		190		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =10V, f=1MHz		40		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =10V, f=1MHz		25		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		9		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		25		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		25		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		18		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2A		2.7		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2A		0.6		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =2A		0.6		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =2A, V <sub>GS</sub> =0V		0.87	1.2	V
[SBD]						
Reverse Voltage	V <sub>R</sub>	I <sub>R</sub> =300μA	30			V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =700mA			0.55	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =15V			80	μA
Interterminal Capacitance	C	V <sub>R</sub> =10V, f=1MHz, 1 cycle		25		pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>R</sub> =100mA, See specified Test Circuit.			10	ns

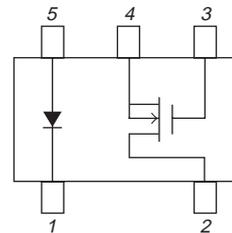
## Package Dimensions

unit : mm (typ)

7017A-005



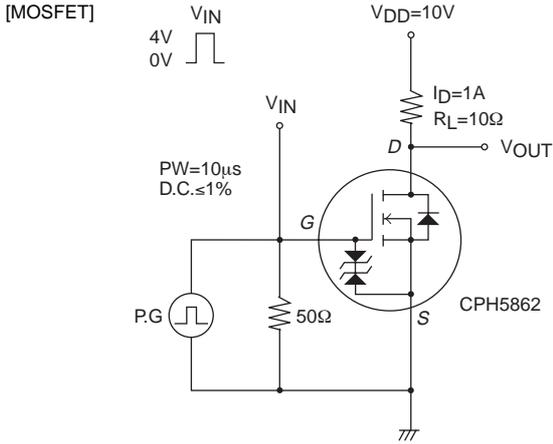
## Electrical Connection



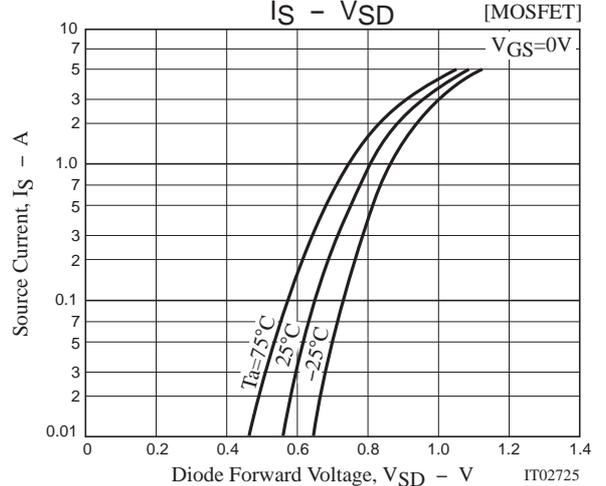
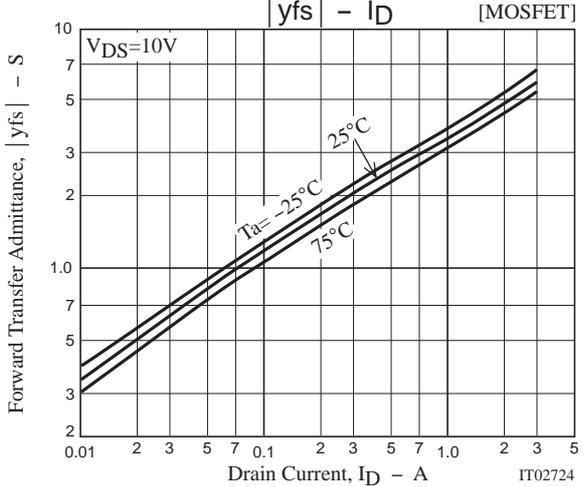
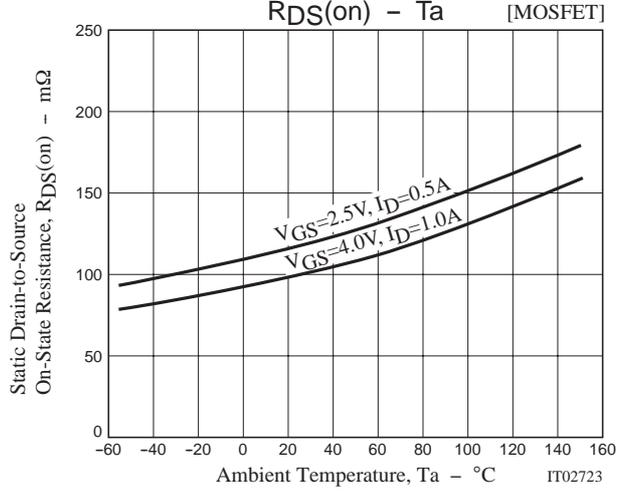
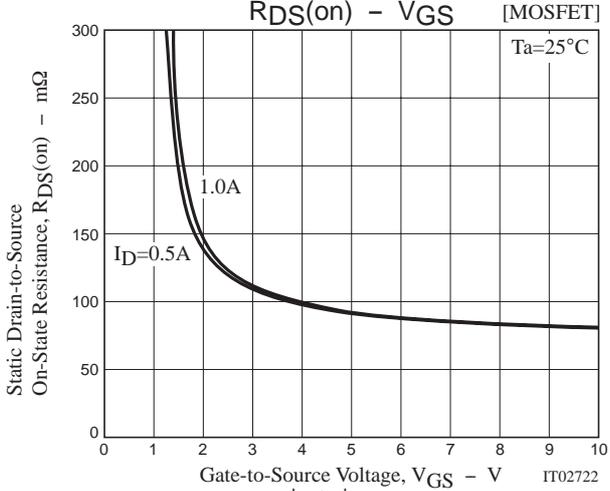
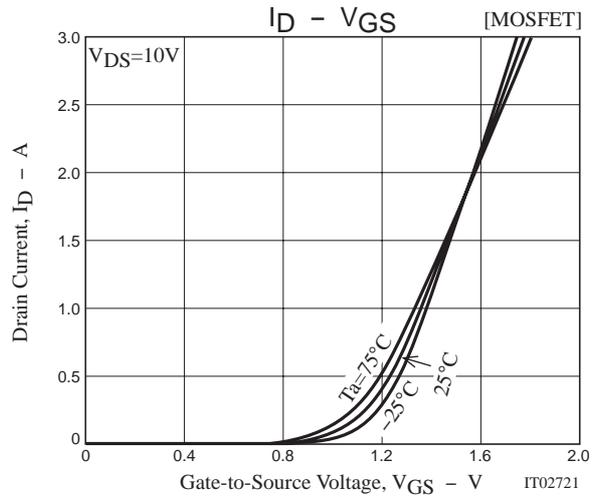
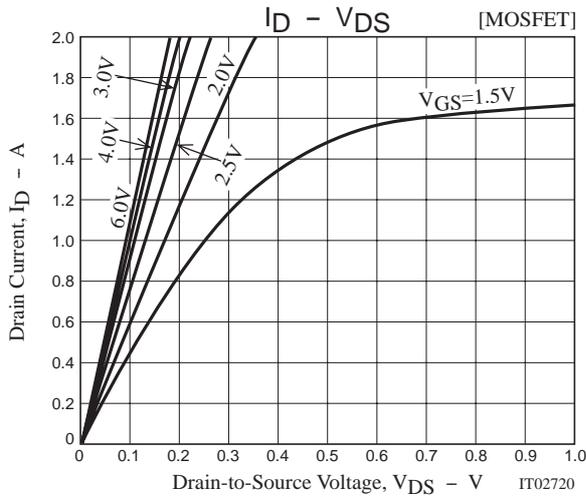
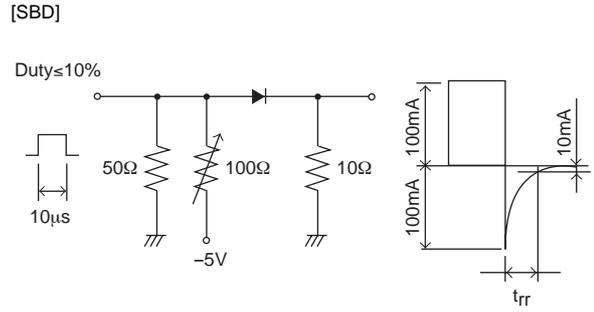
- 1 : Cathode
- 2 : Drain
- 3 : Gate
- 4 : Source
- 5 : Anode

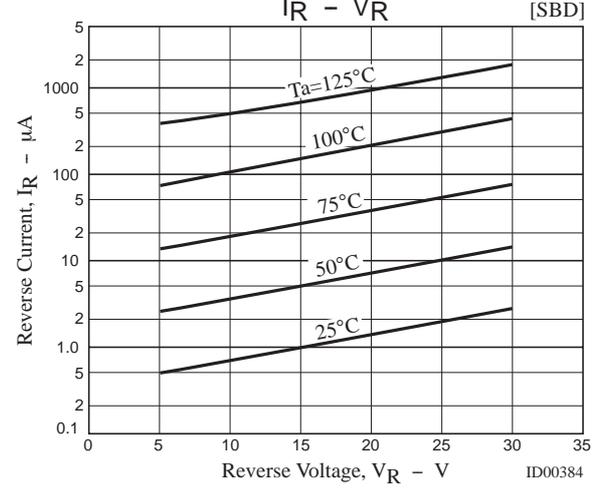
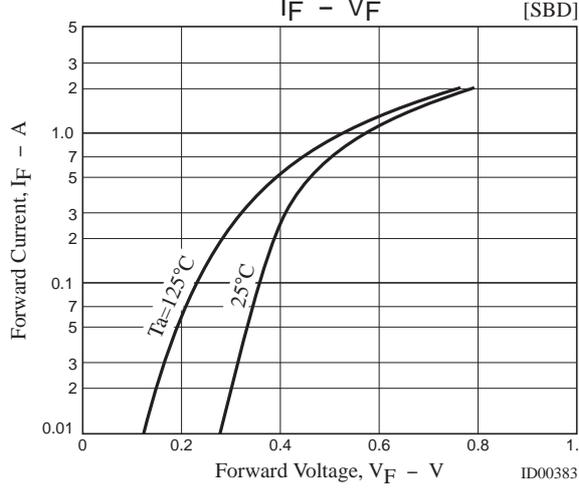
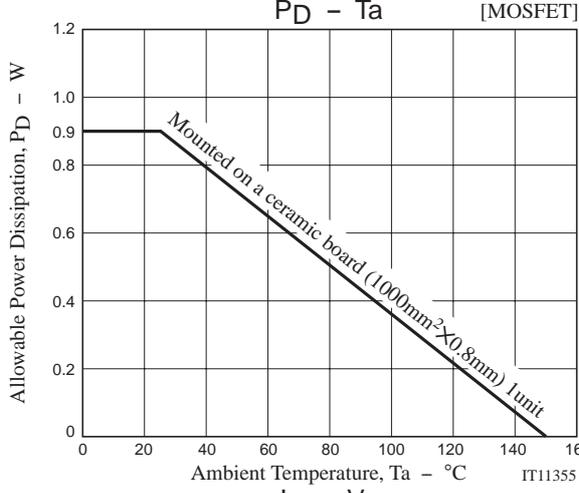
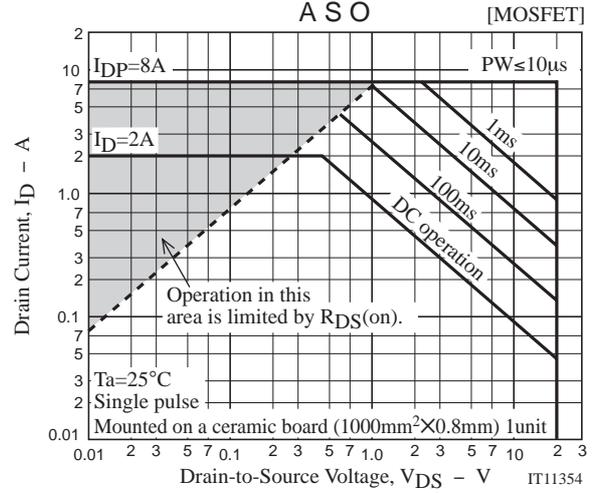
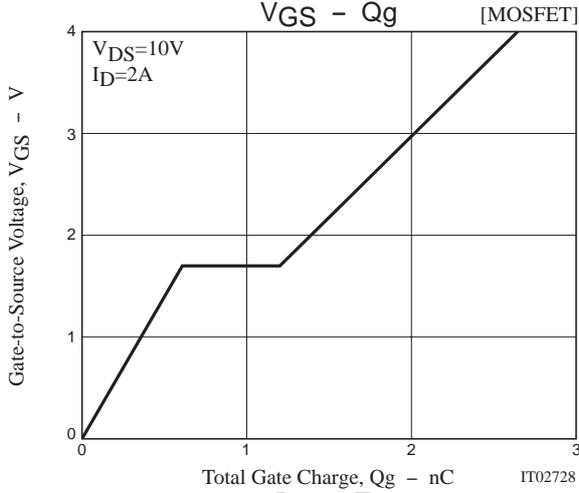
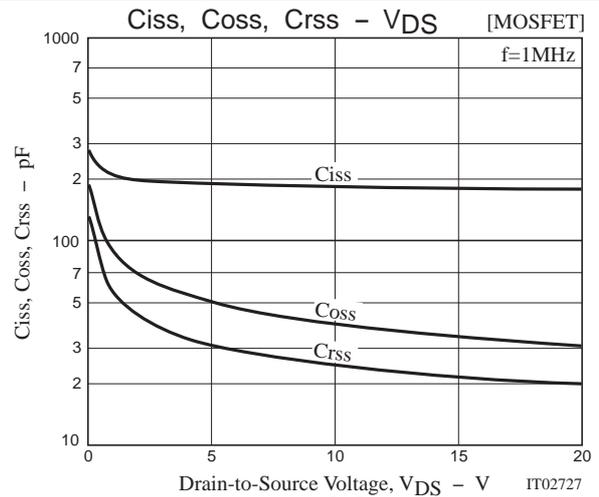
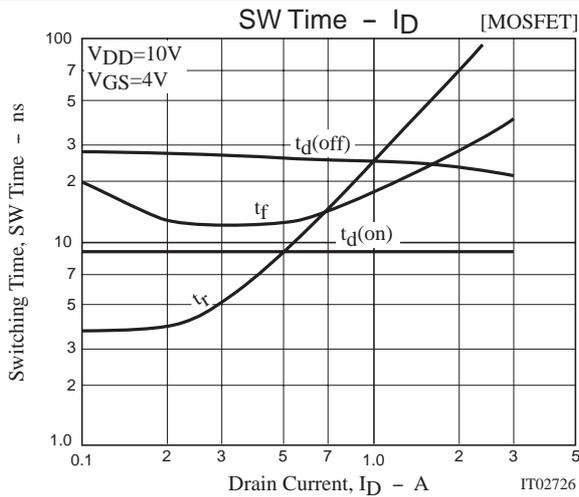
Top view

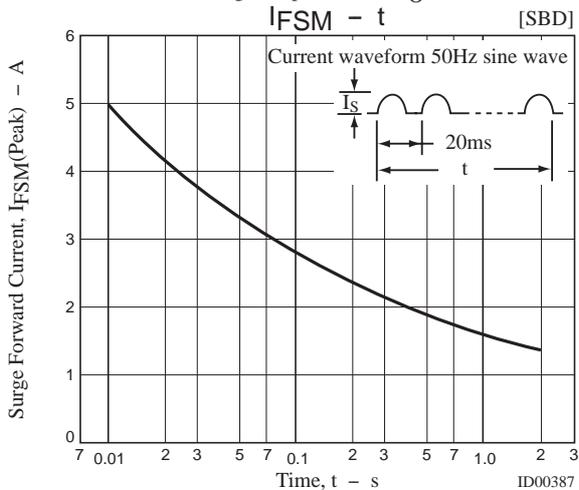
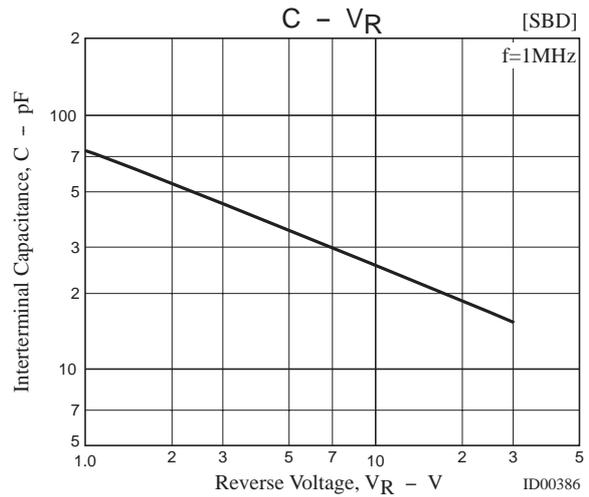
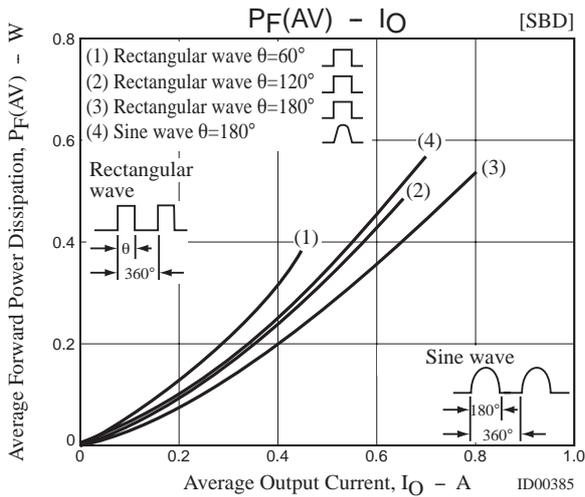
Switching Time Test Circuit



$t_{rr}$  Test Circuit







Note on usage : Since the CPH5862 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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