



SANYO Semiconductors

## DATA SHEET

# CPH5856 — General-Purpose Switching Device Applications

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## Features

- DC / DC converters.

## Features

- Composite type with a N-channel silicon MOSFET and a schottky barrier diode contained in one package facilitating high-density mounting.
- [MOSFET]
  - 1.8V drive.
- [SBD]
  - Short reverse recovery time.
  - Low forward voltage.
  - Junction temperature 150°C guarantee.

## 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>		2.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	10	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 +150	°C

Marking : YJ

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# CPH5856

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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	VRRM		15	V
Nonrepetitive Peak Reverse Surge Voltage	VRSM		15	V
Average Output Current	IO		1	A
Surge Forward Current	IFSM	50Hz sine wave, 1 cycle	3	A
Junction Temperature	TJ		-55 to +150	°C
Storage Temperature	Tstg		-55 to +150	°C

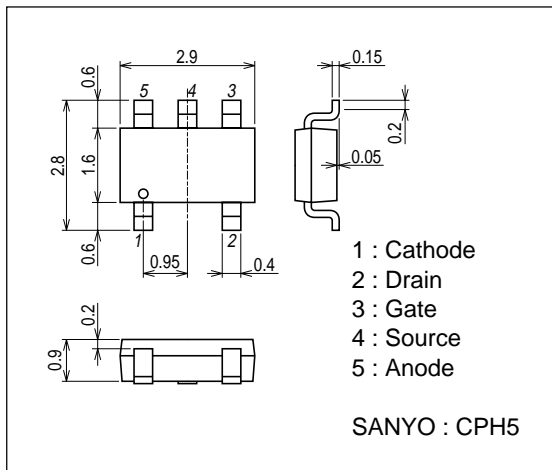
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=20V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±8V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	0.4		1.3	V
Forward Transfer Admittance	yfs	VDS=10V, ID=1.5A	1.8	3.0		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1.5A, VGS=4V		71	93	mΩ
	RDS(on)2	ID=1A, VGS=2.5V		89	125	mΩ
	RDS(on)3	ID=0.5A, VGS=1.8V		117	180	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		220		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		56		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		43		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		8.0		ns
Rise Time	tr	See specified Test Circuit.		44		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		28		ns
Fall Time	tf	See specified Test Circuit.		37		ns
Total Gate Charge	Qg	VDS=10V, VGS=4V, ID=2.5A			2.9	nC
Gate-to-Source Charge	Qgs	VDS=10V, VGS=4V, ID=2.5A		0.45		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=10V, VGS=4V, ID=2.5A		0.97		nC
Diode Forward Voltage	VSD	IS=2.5A, VGS=0V		0.83	1.2	V
[SBD]						
Reverse Voltage	VR	IR=0.2mA	15			V
Forward Voltage	VF1	IF=0.5A		0.44	0.49	V
	VF2	IF=1A		0.51	0.56	V
Reverse Current	IR	VR=7.5V			3	μA
Interterminal Capacitance	C	VR=10V, f=1MHz		20		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			10	ns

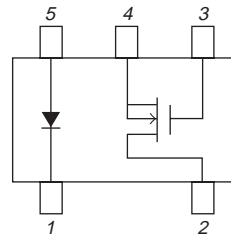
## Package Dimensions

unit : mm (typ)

7017A-005



## Electrical Connection

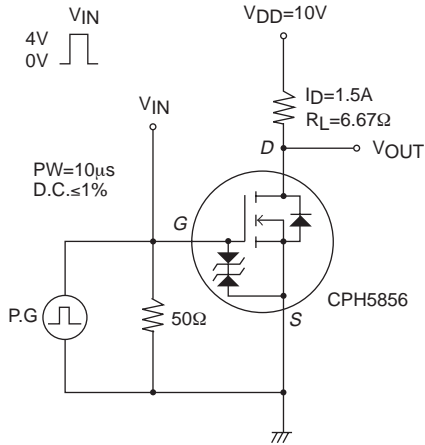


- 1 : Cathode
- 2 : Drain
- 3 : Gate
- 4 : Source
- 5 : Anode

Top view

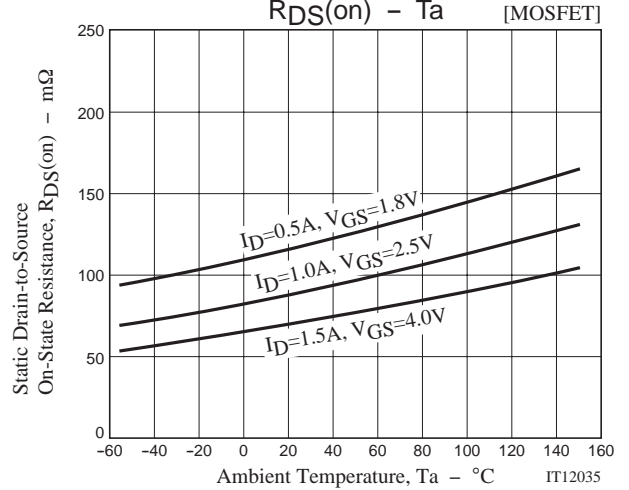
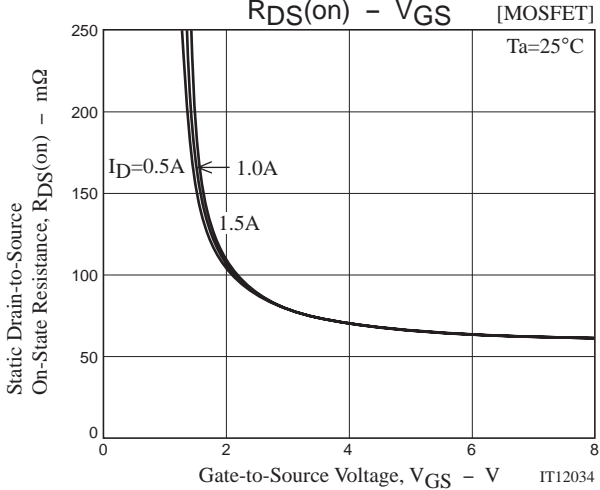
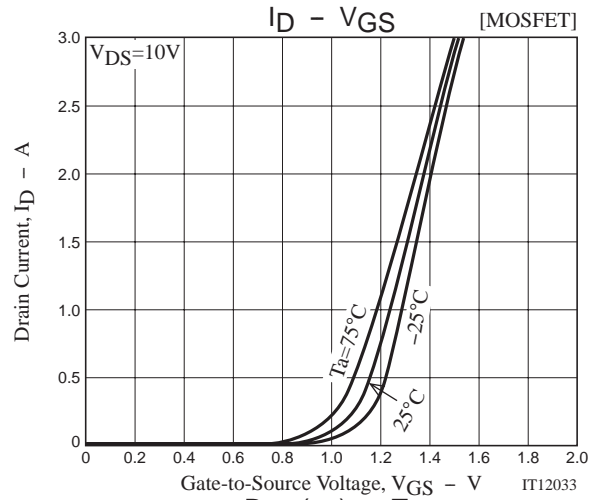
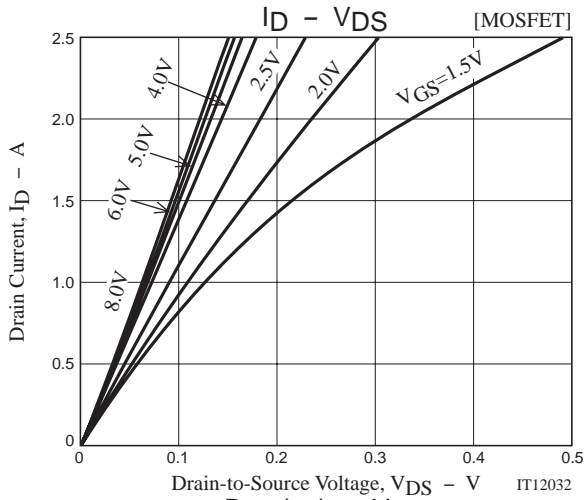
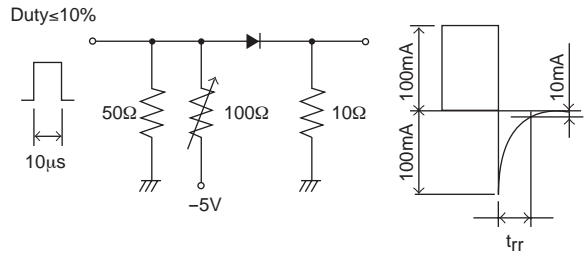
Switching Time Test Circuit

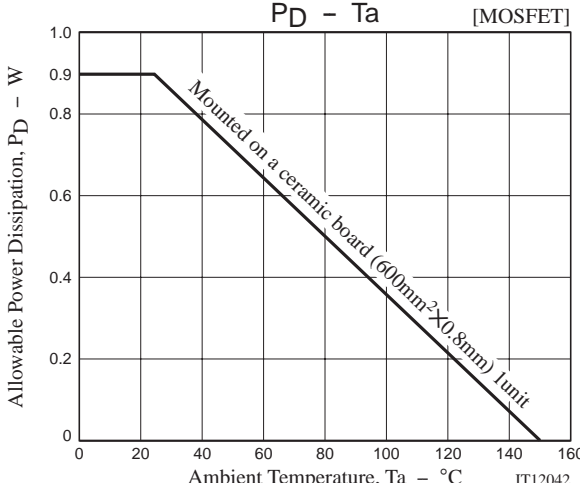
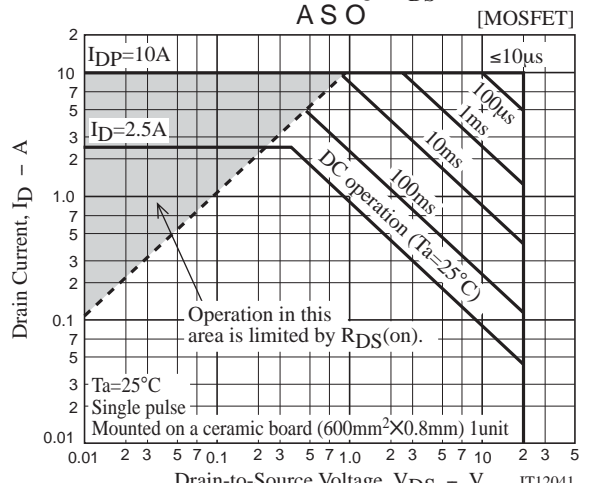
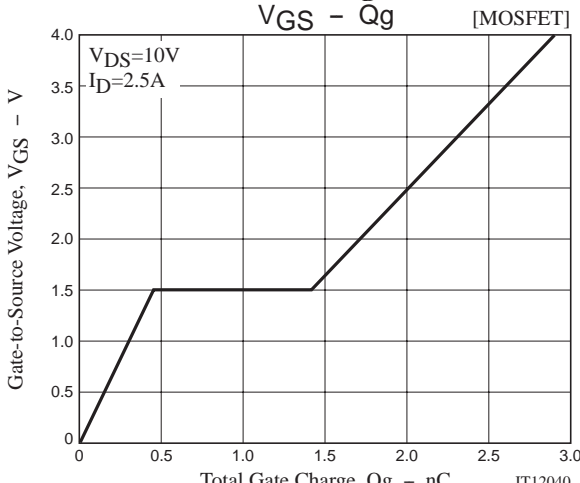
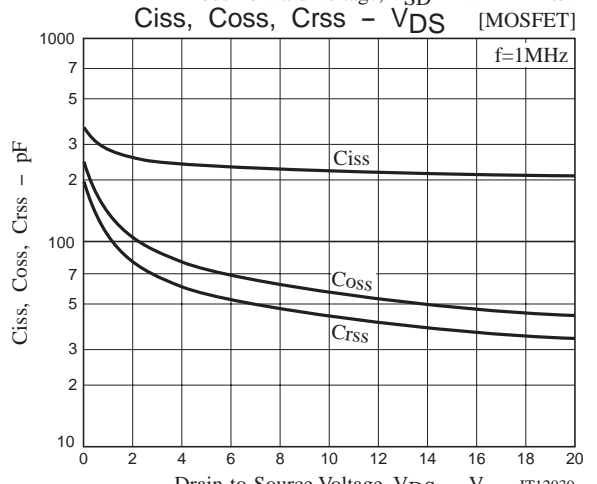
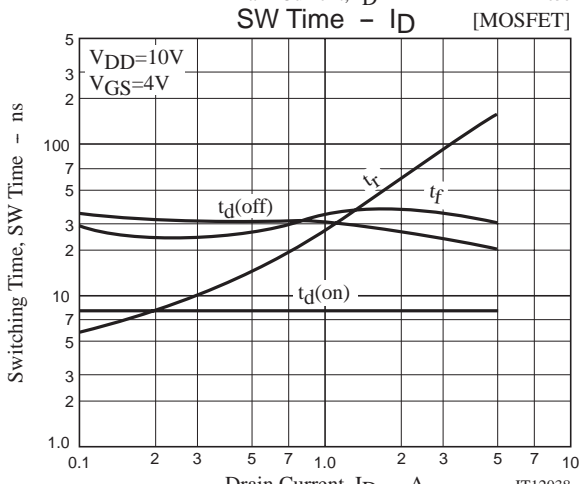
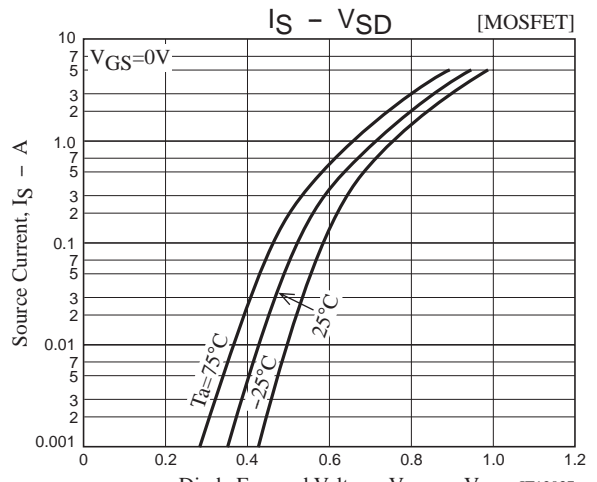
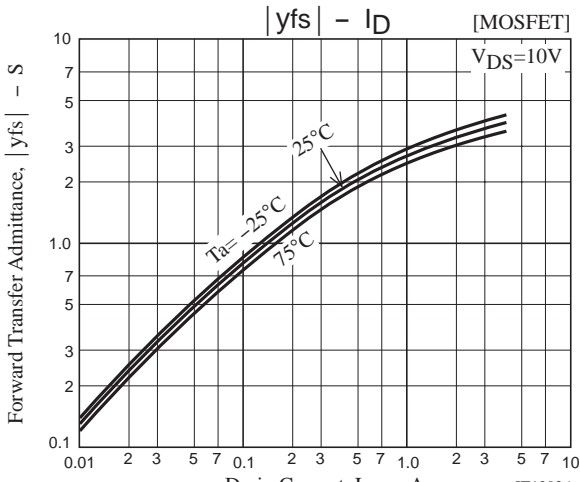
[MOSFET]

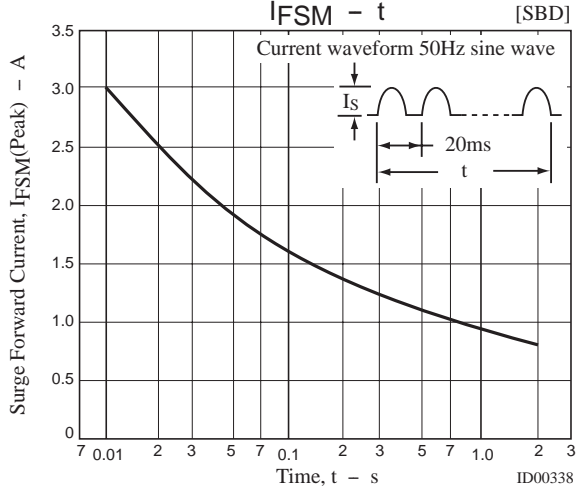
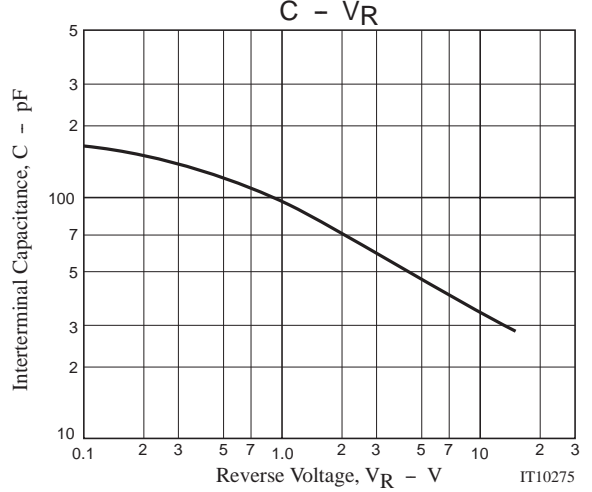
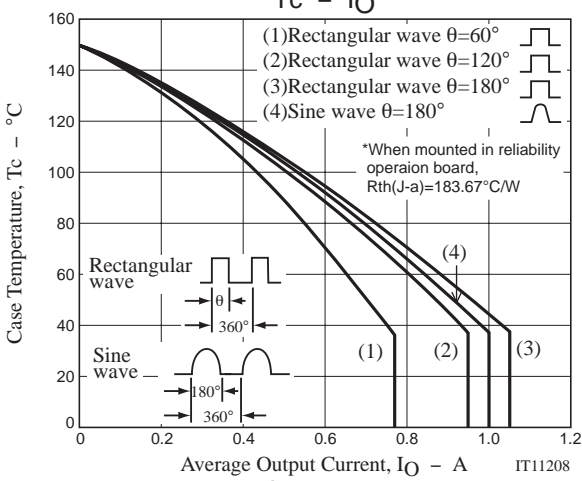
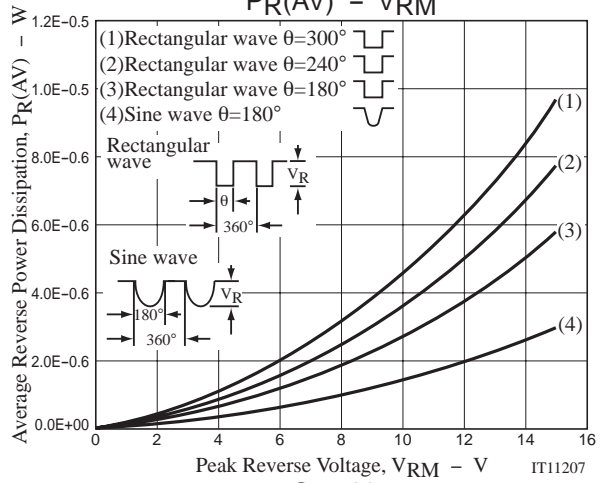
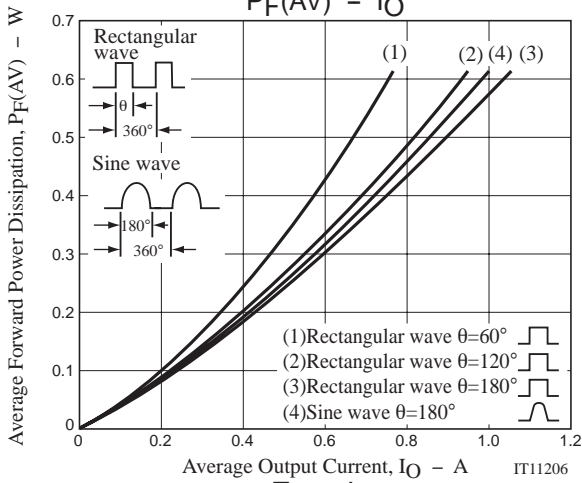
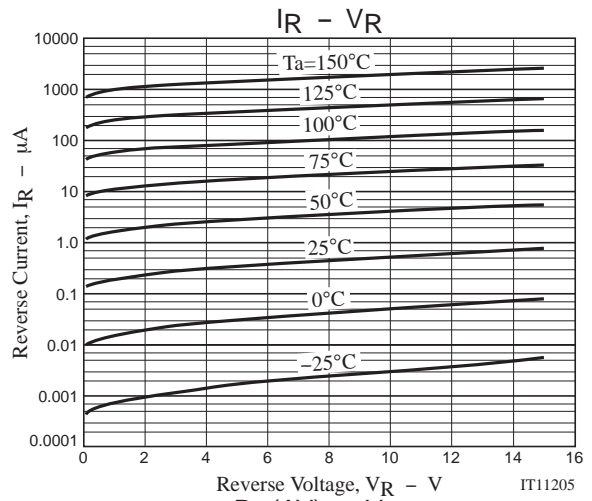
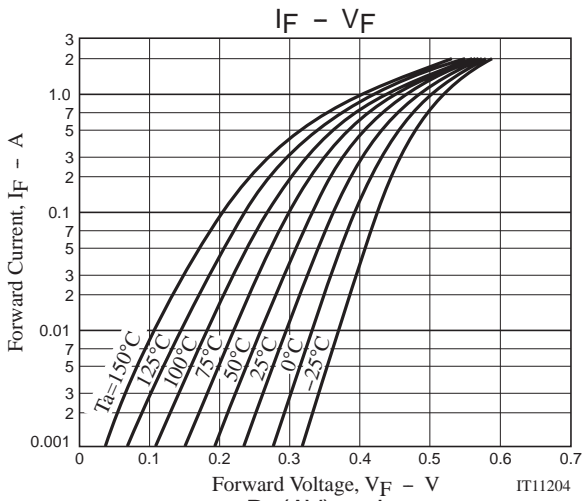


$t_{rr}$  Test Circuit

[SBD]







Note on usage : Since the CPH5856 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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