Ordering number : ENA0464

SANYO Semiconductors

DATA SHEET

CPH5862 — General-Purpose Switching Device Applications

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

Features

- DC / DC converter applications.
- Composite type with a N-channel sillicon 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_{DSS}		20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm²×0.8mm) 1unit	0.9	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +125	°C

Marking : YQ

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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		35	V
Average Output Current	I_O		700	mA
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

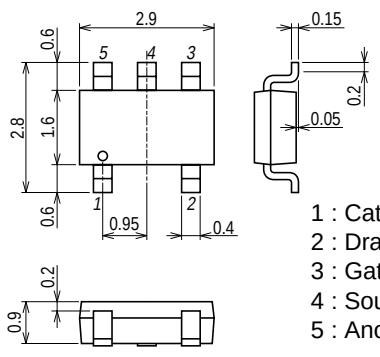
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=10V, I_D=1mA	0.4		1.3	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=1A	1.6	2.7		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=1A, V_{GS}=4V		100	130	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=2.5V		130	180	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		190		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		40		pF
Reverse Transfer Capacitance	Crss	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	Qg	V_{DS}=10V, V_{GS}=4V, I_D=2A		2.7		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4V, I_D=2A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4V, I_D=2A		0.6		nC
Diode Forward Voltage	V_{SD}	I_S=2A, V_{GS}=0V		0.87	1.2	V
[SBD]						
Reverse Voltage	V_R	I_R=300μA	30			V
Forward Voltage	V_F	I_F=700mA			0.55	V
Reverse Current	I_R	V_R=15V			80	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz, 1 cycle		25		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit.			10	ns

Package Dimensions

unit : mm (typ)

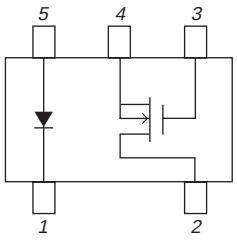
7017A-005



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

SANYO : CPH5

Electrical Connection



1 : Cathode
2 : Drain
3 : Gate
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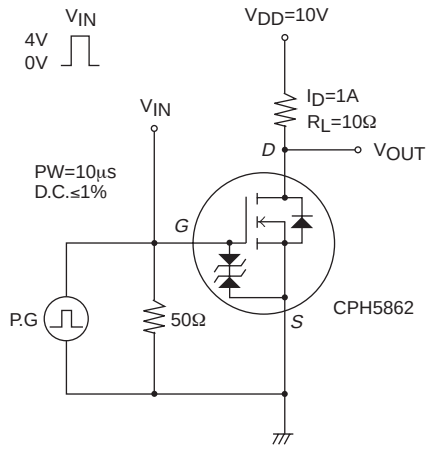
Top view

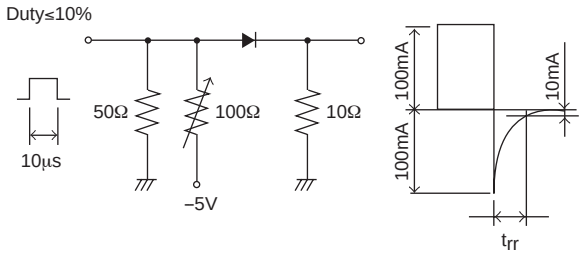
Switching Time Test Circuit

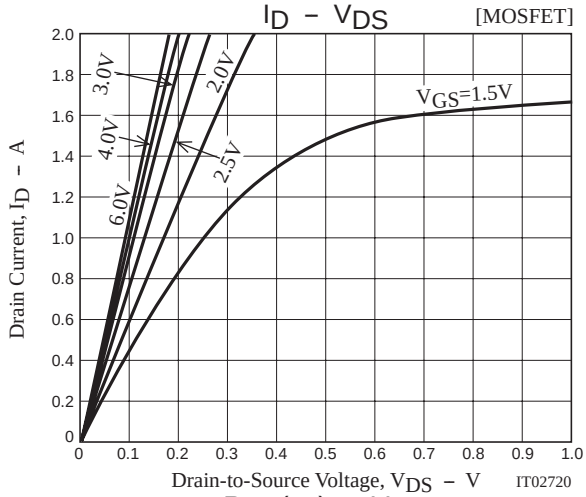
[MOSFET]

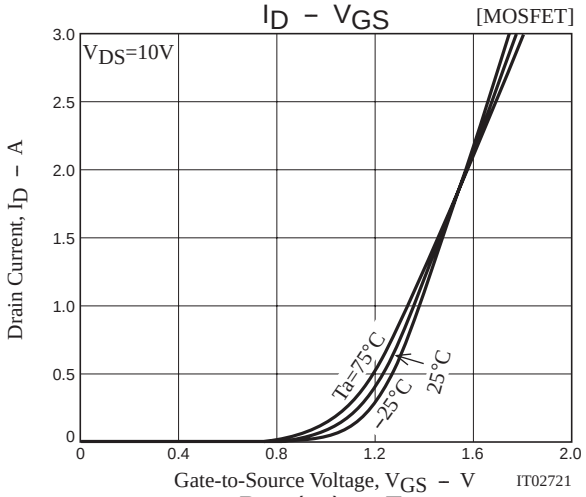


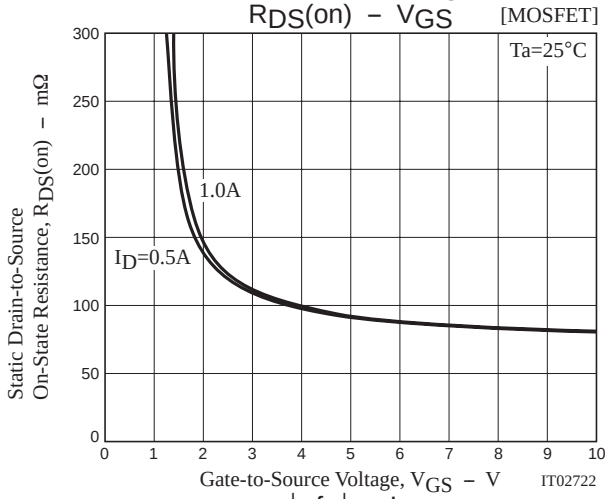
t_{rr} Test Circuit

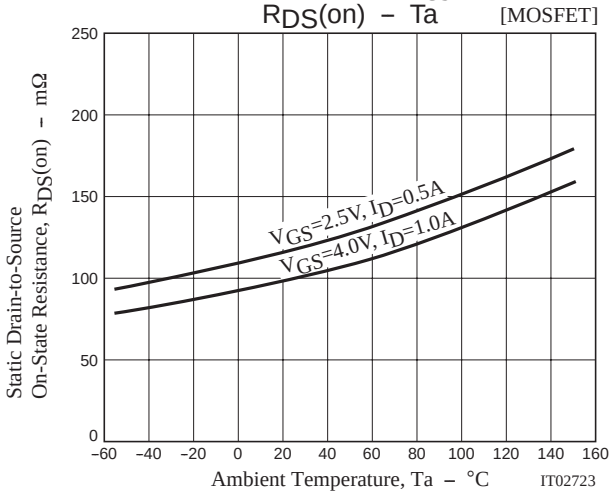
[SBD]

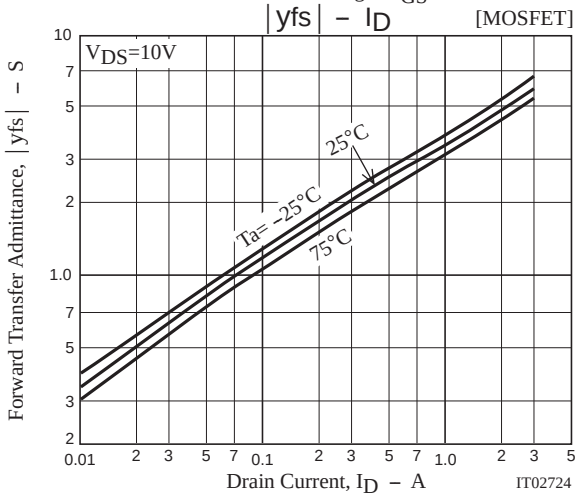


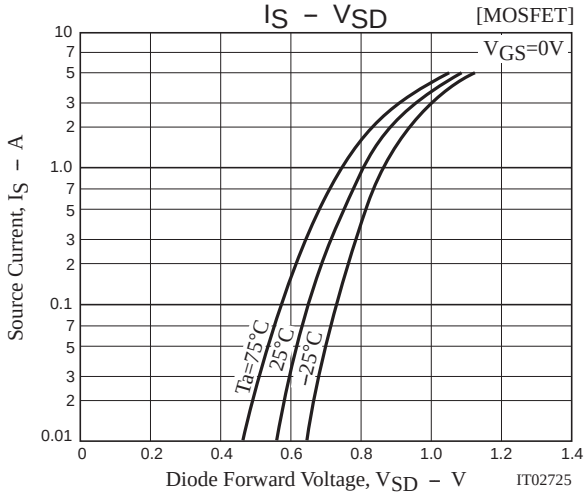




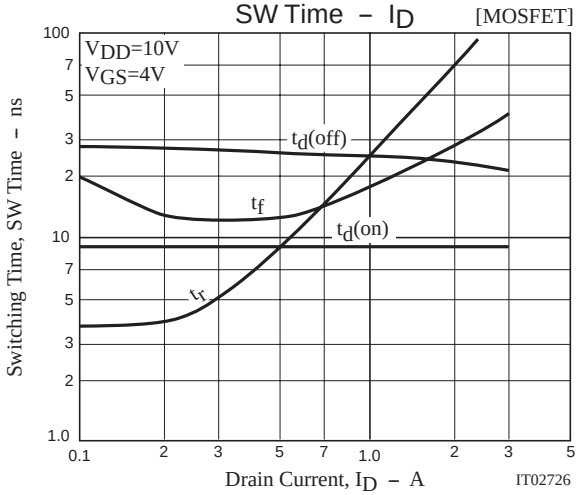




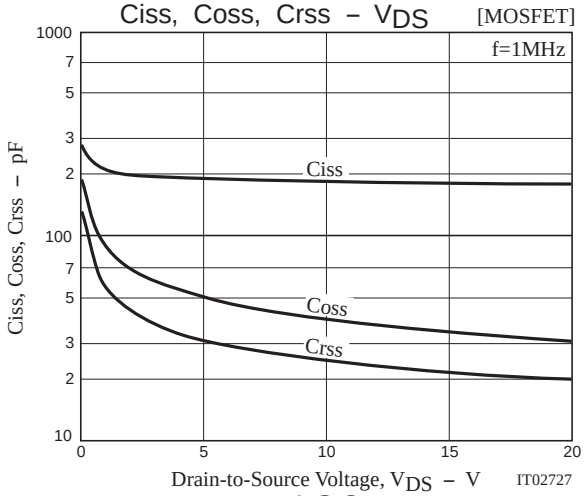




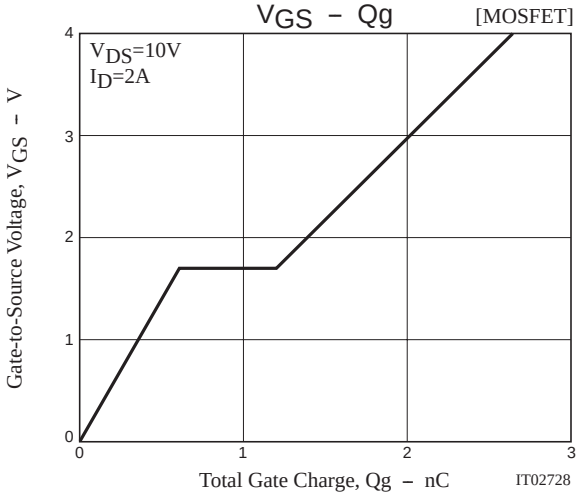
SW Time – I_D [MOSFET]



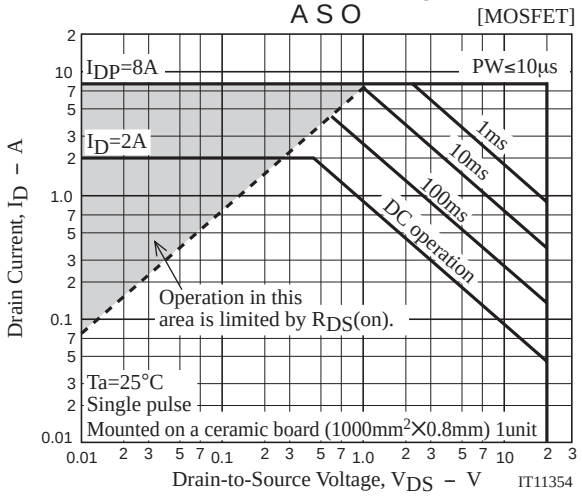
Ciss, Coss, Crss – V_{DS} [MOSFET]



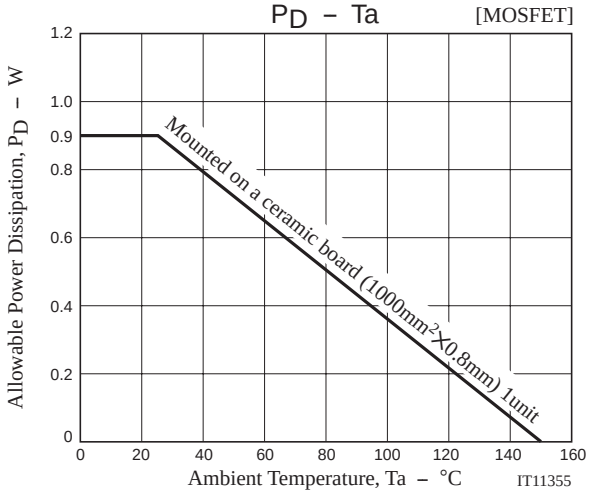
V_{GS} – Qg [MOSFET]



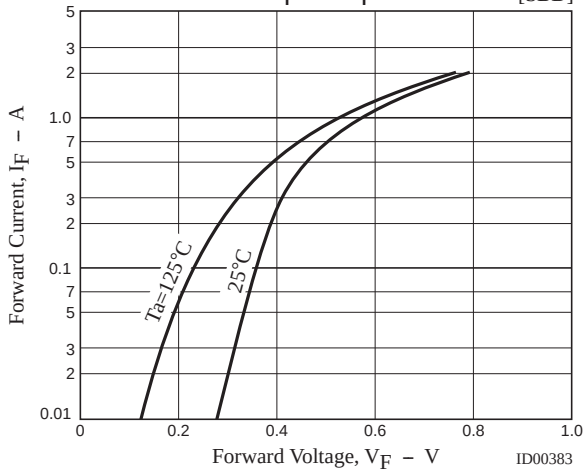
A S O [MOSFET]



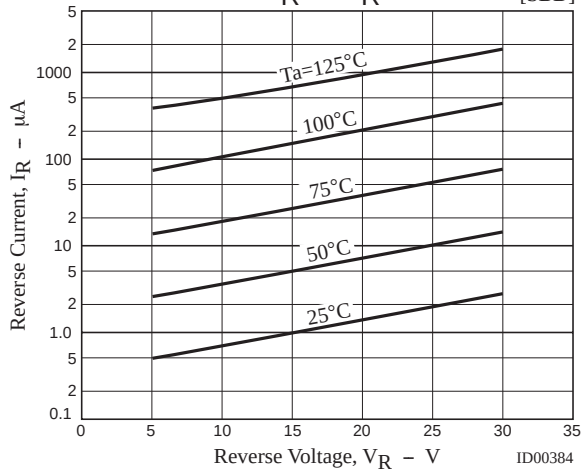
P_D – Ta [MOSFET]

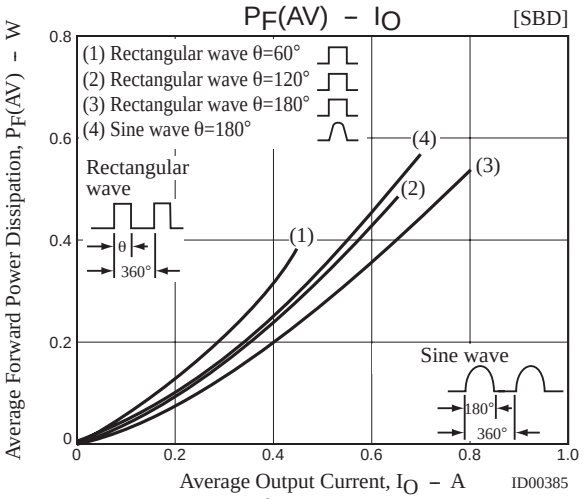


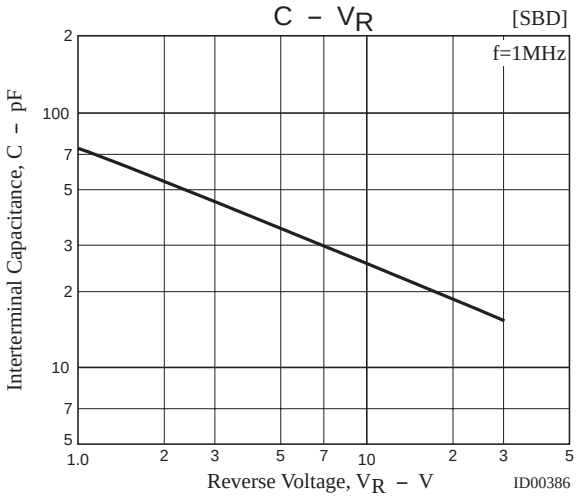
I_F – V_F [SBD]

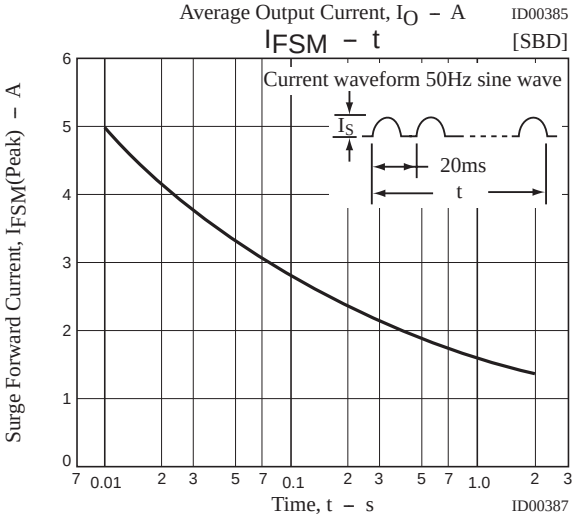


I_R – V_R [SBD]









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