



SANYO Semiconductors

DATA SHEET

CPH5871

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

General-Purpose Switching Device

Applications

Features

- Composite type with a N-channel silicon MOSFET and a schottky barrier diode contained in one package facilitating high-density mounting.
- [MOSFET]
 - Ultrahigh-speed switching
 - 1.8V drive
- [SBD]
 - Short reverse recovery time.
 - Low forward voltage.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	VDSS		30	V
Gate-to-Source Voltage	VGSS		±12	V
Drain Current (DC)	ID		3.5	A
Drain Current (Pulse)	IDP	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	PD	When mounted on ceramic substrate (600mm ² ×0.8mm) 1unit	0.9	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +125	°C

Marking : YZ

Continued on next page.

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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		1	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	10	A
Junction Temperature	T_j		-55 to +125	°C
Storage Temperature	T_{stg}		-55 to +125	°C

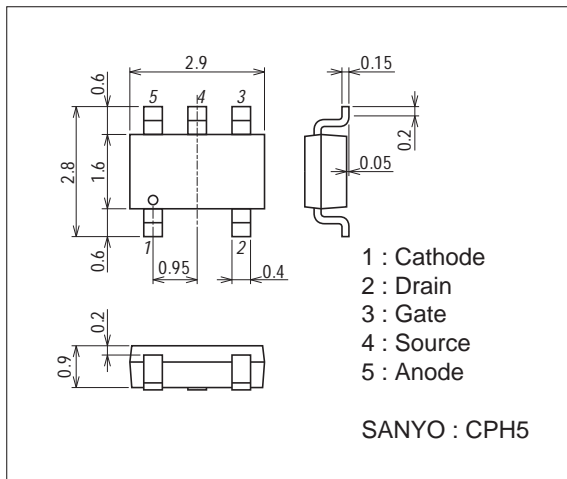
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}, V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}, I_D=1\text{mA}$	0.4		1.3	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}, I_D=2\text{A}$	2.0	3.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2\text{A}, V_{GS}=4.5\text{V}$		40	52	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}, V_{GS}=2.5\text{V}$		53	74	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=0.5\text{A}, V_{GS}=1.8\text{V}$		82	132	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}, f=1\text{MHz}$		430		pF
Output Capacitance	C_{oss}	$V_{DS}=10\text{V}, f=1\text{MHz}$		59		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10\text{V}, f=1\text{MHz}$		38		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		41		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		36		ns
Fall Time	t_f	See specified Test Circuit.		37		ns
Total Gate Charge	Q_g	$V_{DS}=15\text{V}, V_{GS}=4.5\text{V}, I_D=3.5\text{A}$		4.7		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=15\text{V}, V_{GS}=4.5\text{V}, I_D=3.5\text{A}$		0.8		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=15\text{V}, V_{GS}=4.5\text{V}, I_D=3.5\text{A}$		1.1		nC
Diode Forward Voltage	V_{SD}	$I_S=3.5\text{A}, V_{GS}=0\text{V}$		0.8	1.2	V
[SBD]						
Reverse Voltage	V_R	$I_R=0.5\text{mA}$	30			V
Forward Voltage	V_{F1}	$I_F=0.7\text{A}$		0.45	0.5	V
	V_{F2}	$I_F=1\text{A}$		0.48	0.53	V
Reverse Current	I_R	$V_R=16\text{V}$			15	μA
Interterminal Capacitance	C	$V_R=10\text{V}, f=1\text{MHz}, 1\text{ cycle}$		27		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100\text{mA}$, See specified Test Circuit.			10	ns

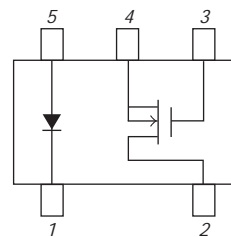
Package Dimensions

unit : mm (typ)

7017A-005



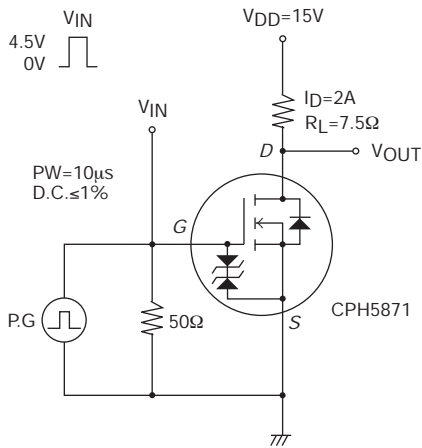
Electrical Connection



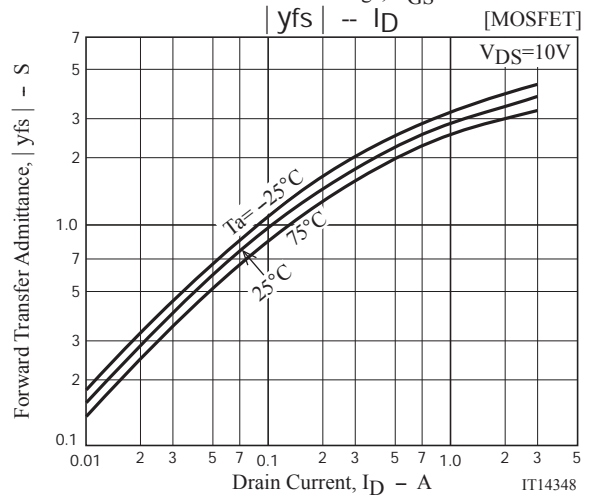
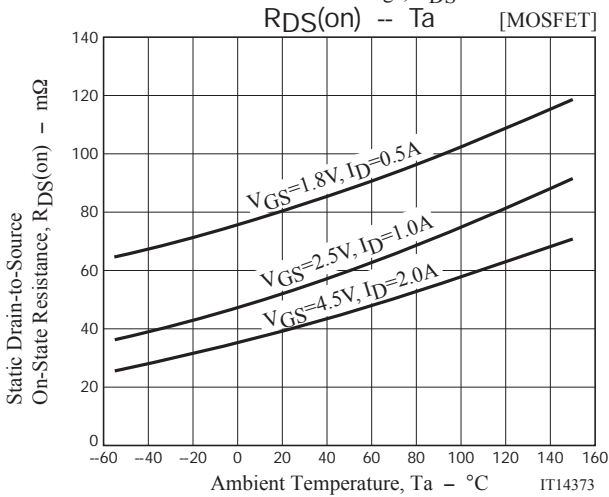
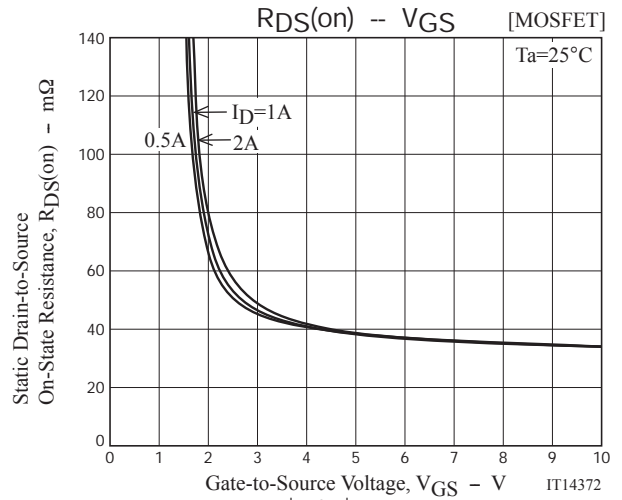
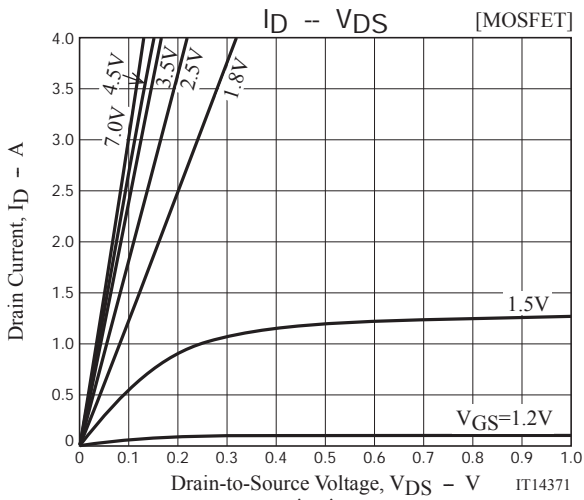
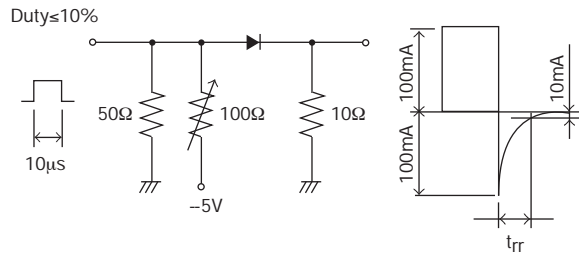
- 1 : Cathode
- 2 : Drain
- 3 : Gate
- 4 : Source
- 5 : Anode

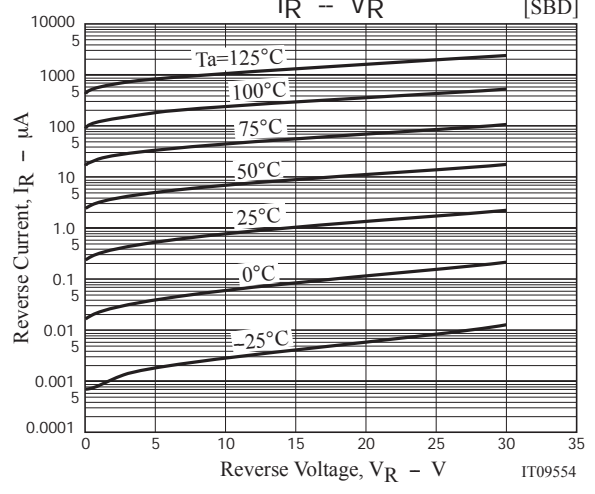
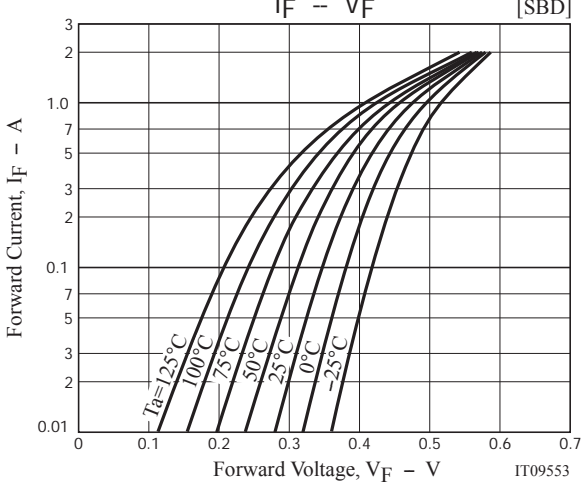
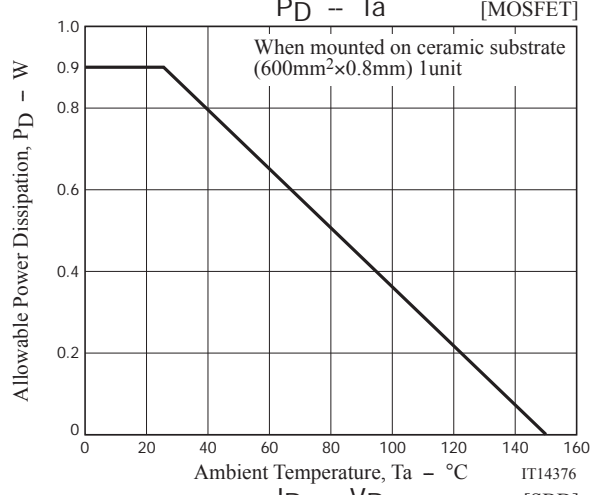
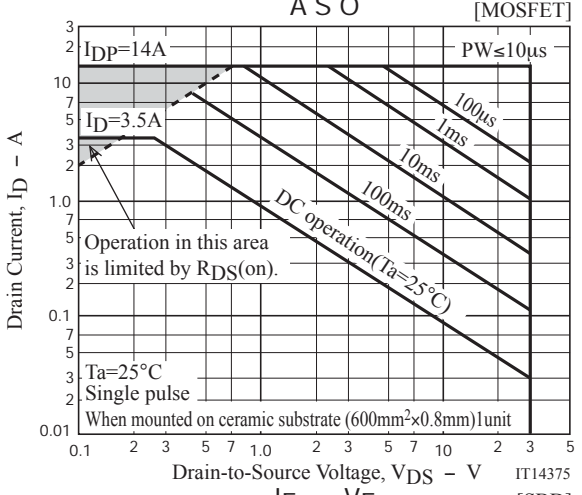
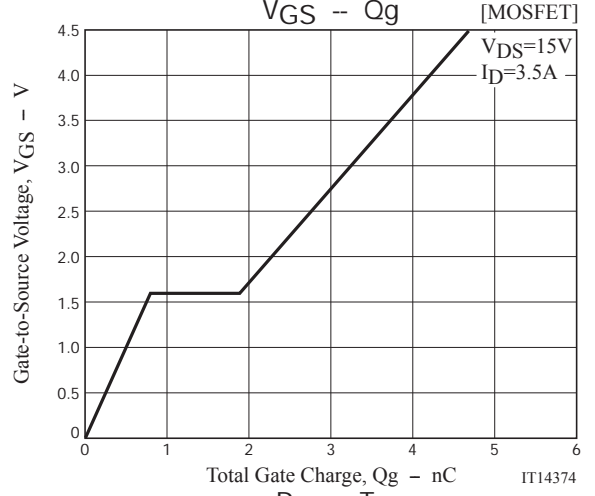
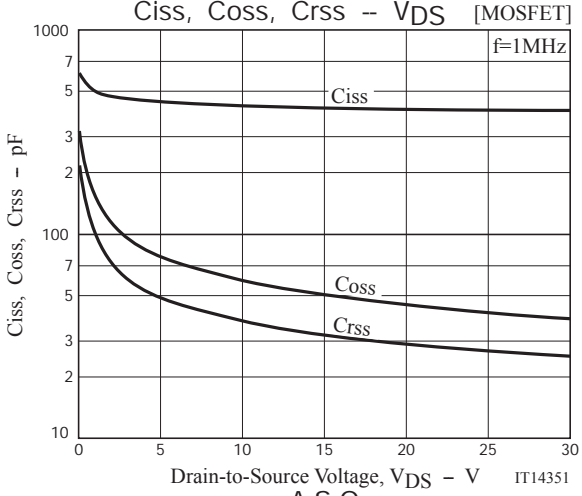
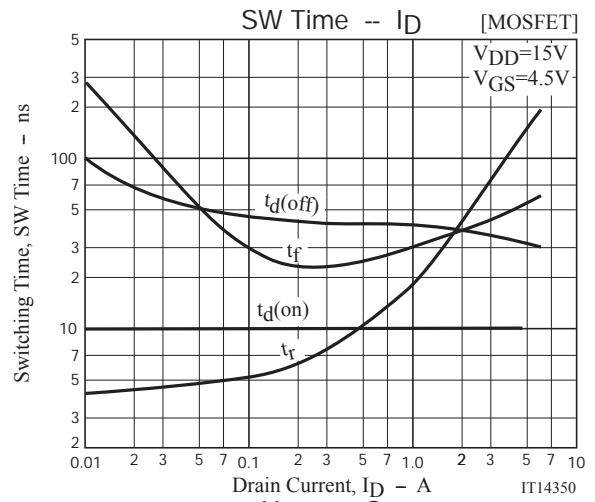
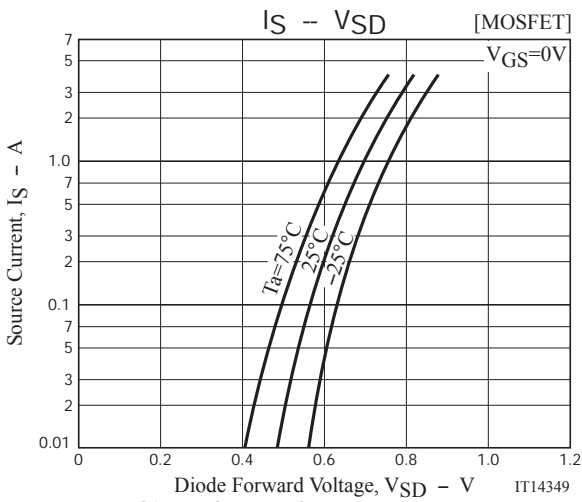
Top view

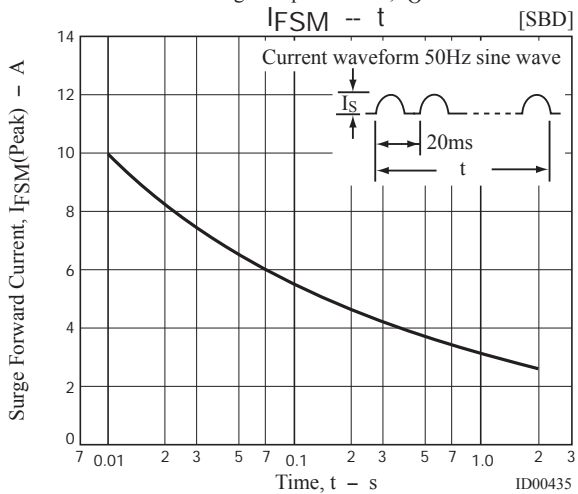
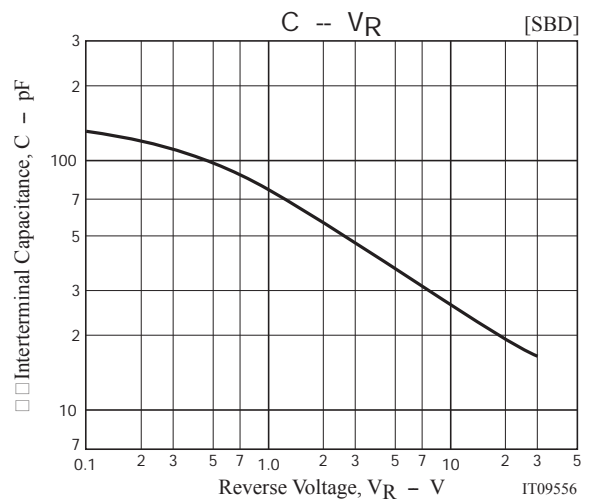
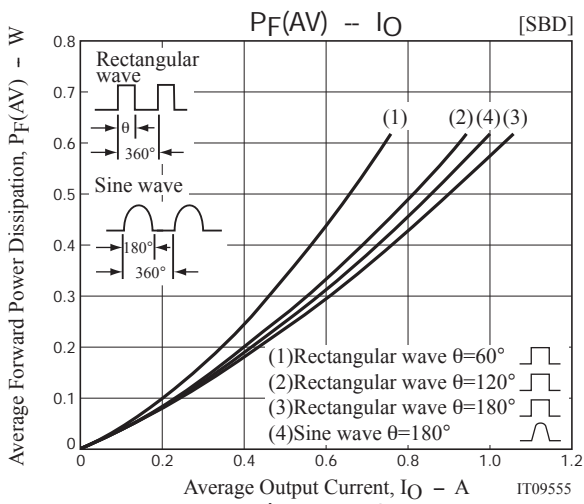
Switching Time Test Circuit
(MOSFET)



t_{rr} Test Circuit
(SBD)







Note on usage : Since the CPH5871 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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