



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	V _{DSS}		30	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		3.5	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	P _D	When mounted on ceramic substrate (600mm ² ×0.8mm) 1unit	0.9	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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

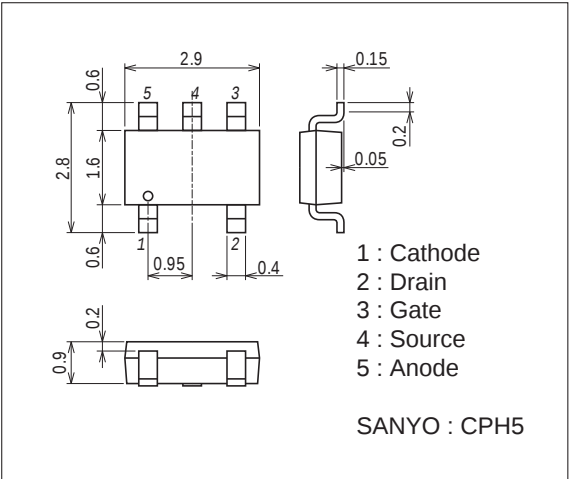
Electrical Characteristics at $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, 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=2A	2.0	3.4		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=2A, VGS=4.5V		40	52	mΩ
	RDS(on)2	ID=1A, VGS=2.5V		53	74	mΩ
	RDS(on)3	ID=0.5A, VGS=1.8V		82	132	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		430		pF
Output Capacitance	Coss	VDS=10V, f=1MHz		59		pF
Reverse Transfer Capacitance	Crss	VDS=10V, f=1MHz		38		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		10		ns
Rise Time	tr	See specified Test Circuit.		41		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		36		ns
Fall Time	tf	See specified Test Circuit.		37		ns
Total Gate Charge	Qg	VDS=15V, VGS=4.5V, ID=3.5A		4.7		nC
Gate-to-Source Charge	Qgs	VDS=15V, VGS=4.5V, ID=3.5A		0.8		nC
Gate-to-Drain “Miller” Charge	Qgd	VDS=15V, VGS=4.5V, ID=3.5A		1.1		nC
Diode Forward Voltage	VSD	IS=3.5A, VGS=0V		0.8	1.2	V
[SBD]						
Reverse Voltage	VR	IR=0.5mA	30			V
Forward Voltage	VF1	IF=0.7A		0.45	0.5	V
	VF2	IF=1A		0.48	0.53	V
Reverse Current	IR	VR=16V			15	μA
Interterminal Capacitance	C	VR=10V, f=1MHz, 1 cycle		27		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			10	ns

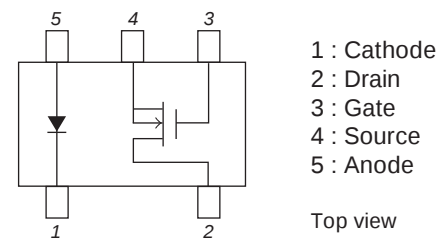
Package Dimensions

unit : mm (typ)

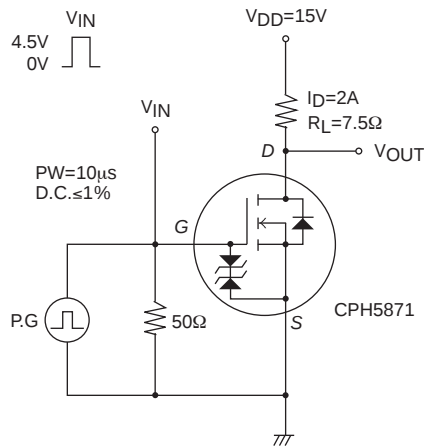
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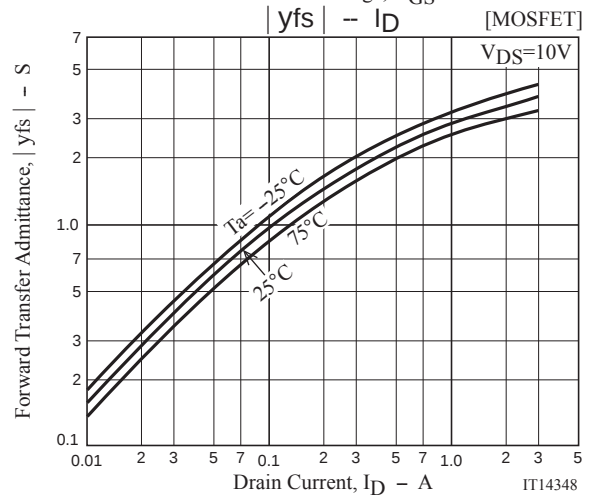
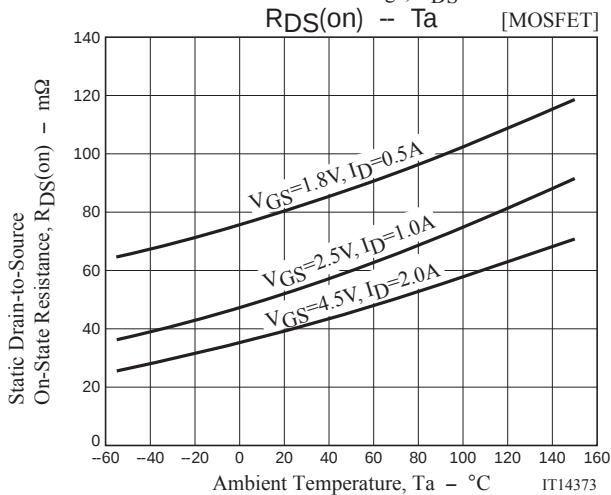
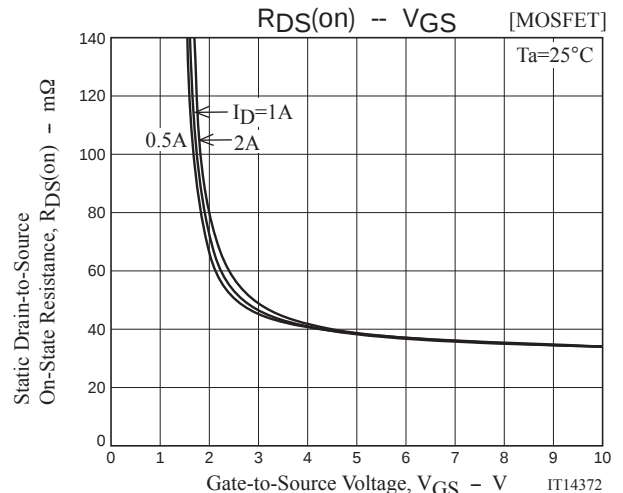
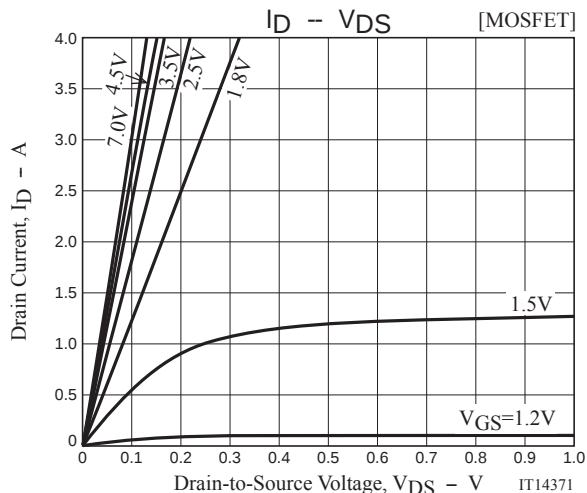
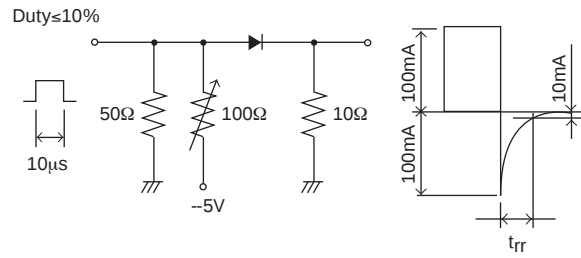
Electrical Connection

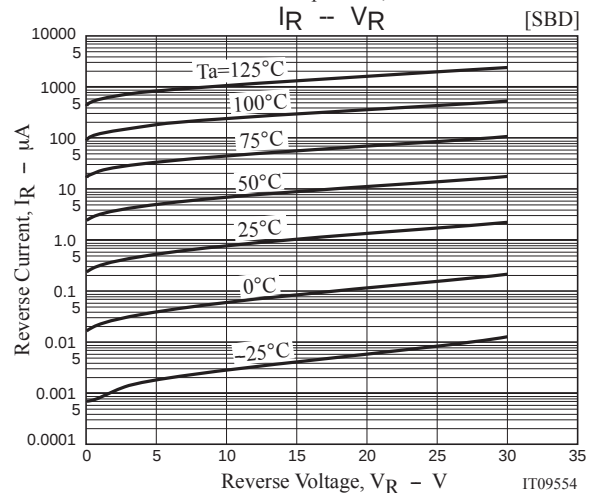
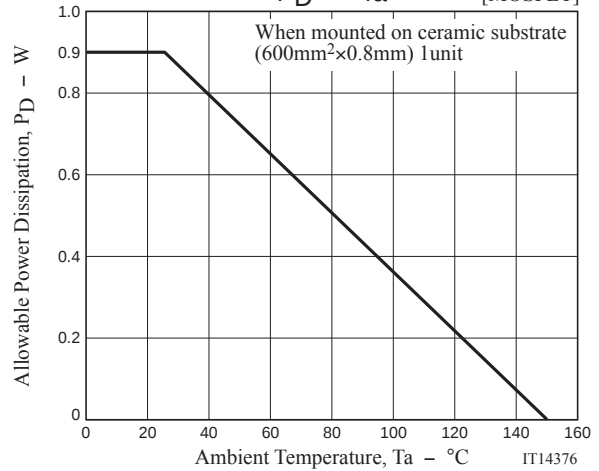
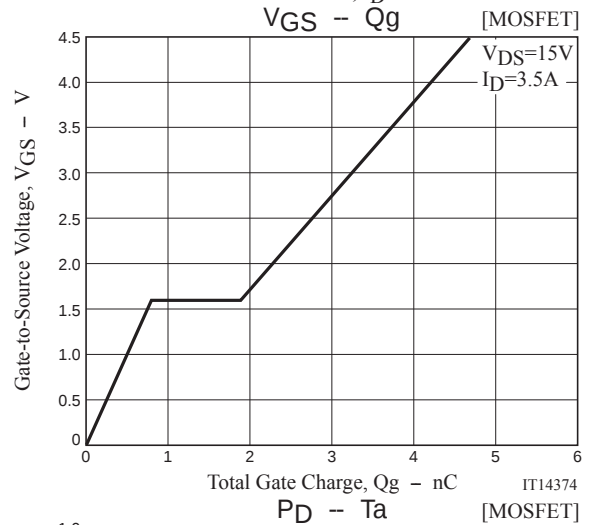
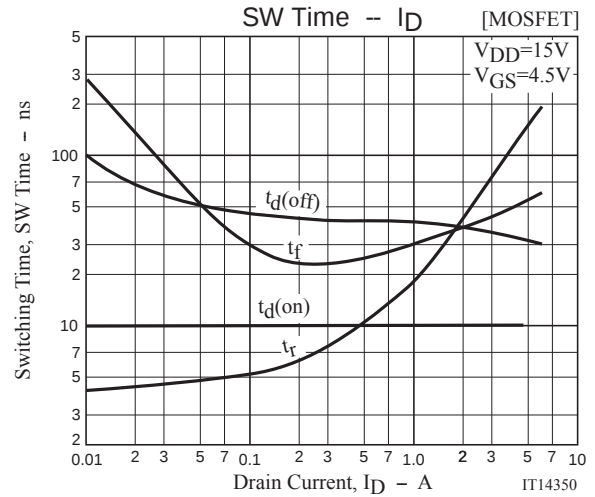
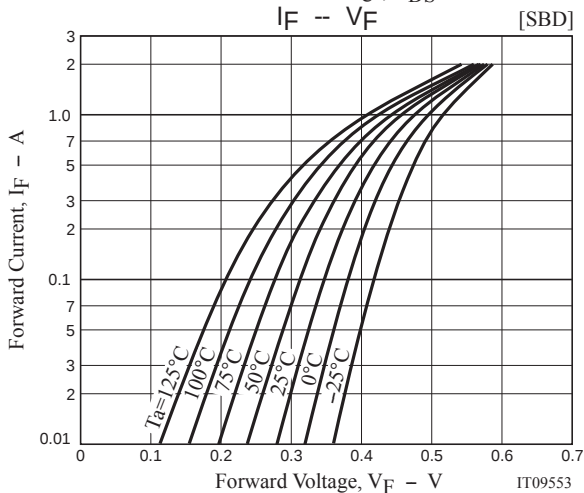
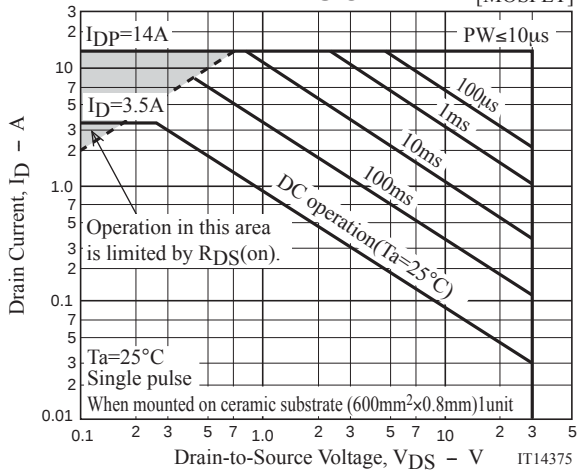
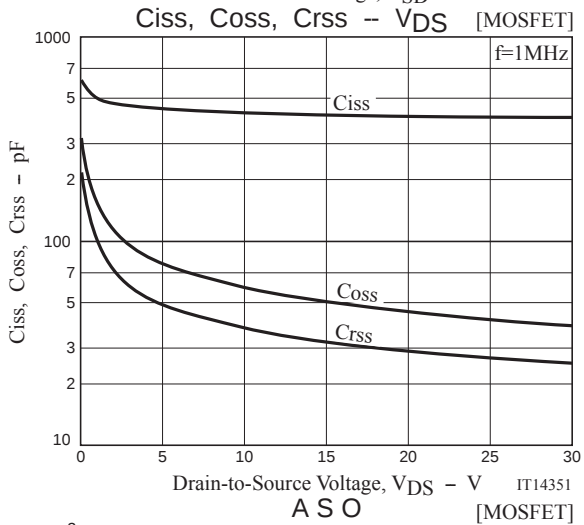
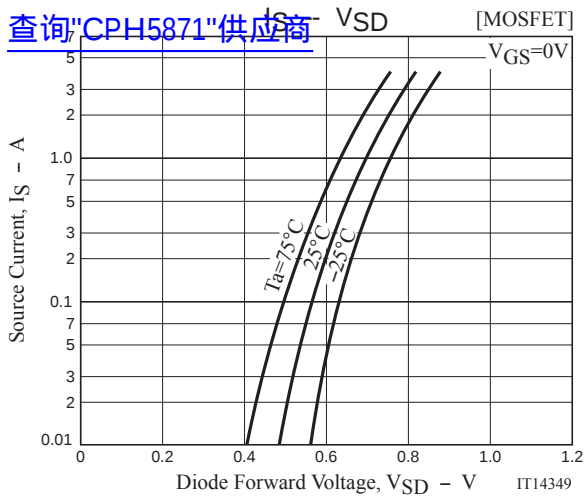


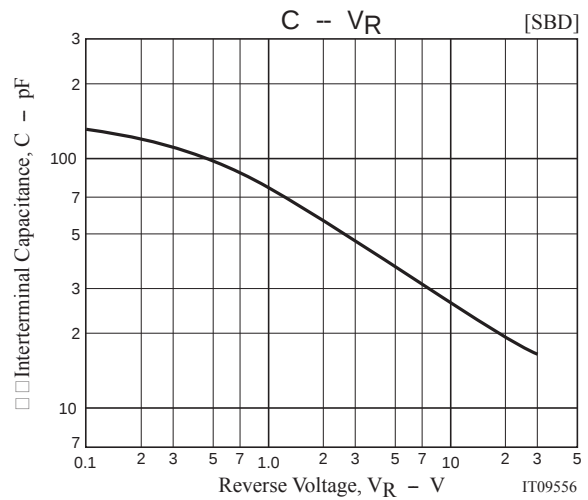
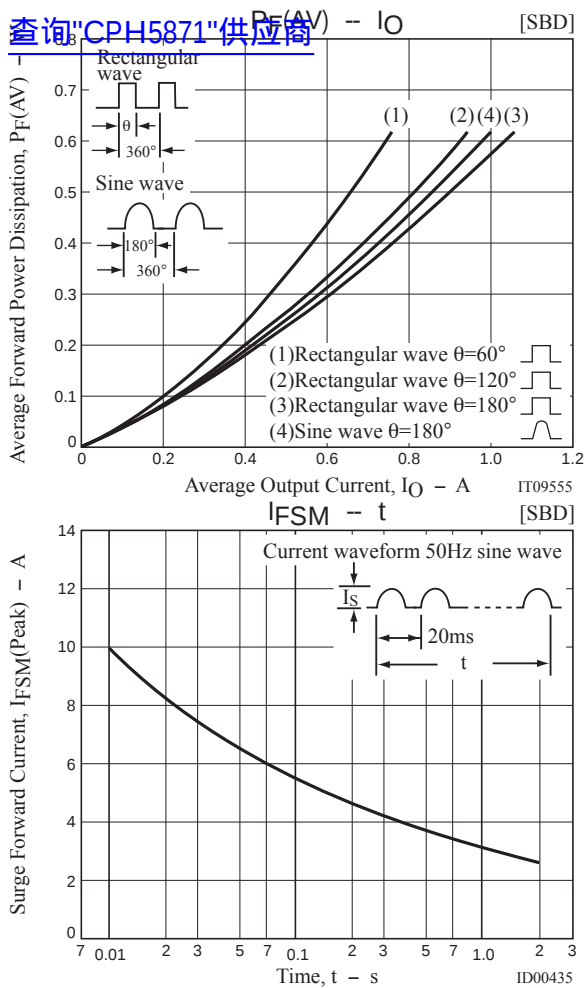
Switching Time Test Circuit (MOSFET)



t_{rr} Test Circuit (SBD)



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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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