



SANYO Semiconductors

DATA SHEET

CPH5870

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]
 - Low ON-resistance
 - Ultrahigh-speed switching
 - 2.5V drive.
- [SBD]
 - Short reverse recovery time (t_{rr} max=10ns).
 - Low forward voltage (V_F max=0.55V).

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V_{DS}		60	V
Gate-to-Source Voltage	V_{GS}		±10	V
Drain Current (DC)	I_D		1.8	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	7.2	A
Allowable Power Dissipation	P_D	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 : YY

Continued on next page.

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CPH5870

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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		50	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		55	V
Average Output Current	I_O		800	mA
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	T_J		-55 to +125	°C
Storage Temperature	T_{stg}		-55 to +125	°C

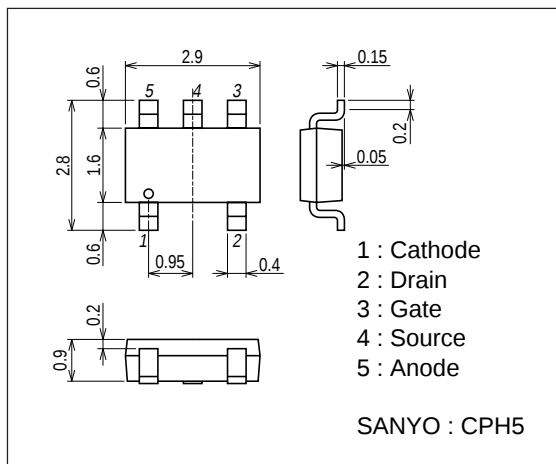
Electrical Characteristics at $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	60			V
Zero-Gate Voltage Drain Current	IDSS	VDS=60V, 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=1A	1.8	3.6		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=1A, VGS=4V		170	220	mΩ
	RDS(on)2	ID=0.5A, VGS=2.5V		190	270	mΩ
Input Capacitance	Ciss	VDS=20V, f=1MHz		325		pF
Output Capacitance	Coss	VDS=20V, f=1MHz		29		pF
Reverse Transfer Capacitance	Crss	VDS=20V, f=1MHz		21		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		11		ns
Rise Time	tr	See specified Test Circuit.		17		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		40		ns
Fall Time	tf	See specified Test Circuit.		27		ns
Total Gate Charge	Qg	VDS=30V, VGS=4V, ID=1.8A		4.2		nC
Gate-to-Source Charge	Qgs	VDS=30V, VGS=4V, ID=1.8A		1.1		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=30V, VGS=4V, ID=1.8A		1.1		nC
Diode Forward Voltage	VSD	IS=1.8A, VGS=0V		0.84	1.2	V
[SBD]						
Reverse Voltage	VR	IR=200μA	50			V
Forward Voltage	VF	IF=500mA		0.5	0.55	V
Reverse Current	IR	VR=25V			50	μA
Interterminal Capacitance	C	VR=10V, f=1MHz, 1 cycle		17		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			10	ns

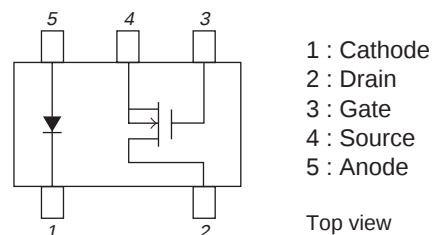
Package Dimensions

unit : mm (typ)

7017A-005

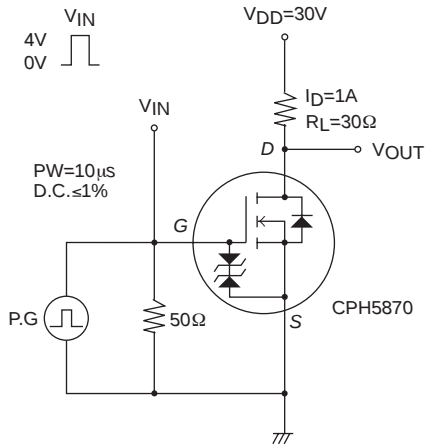


Electrical Connection



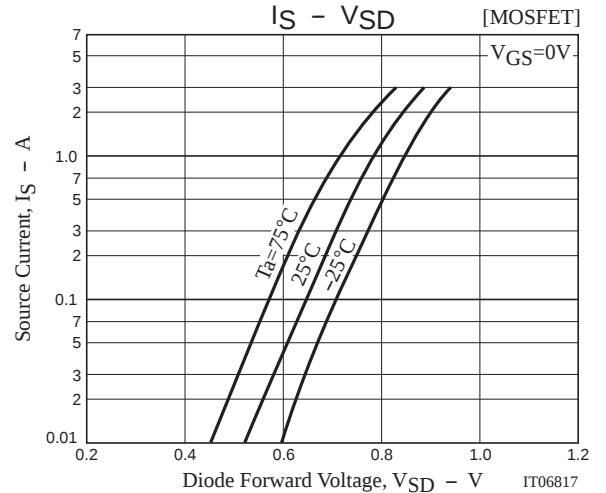
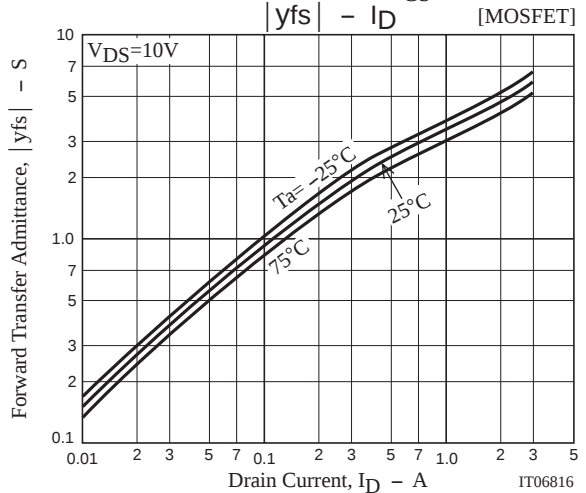
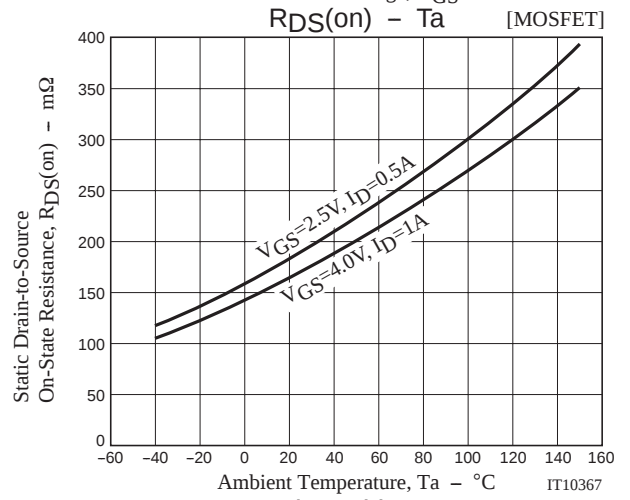
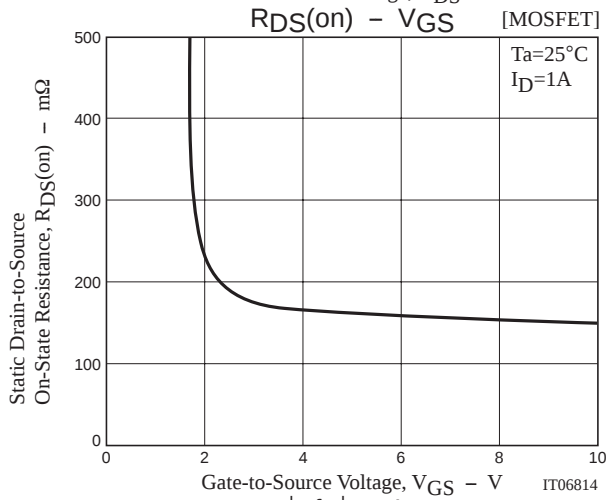
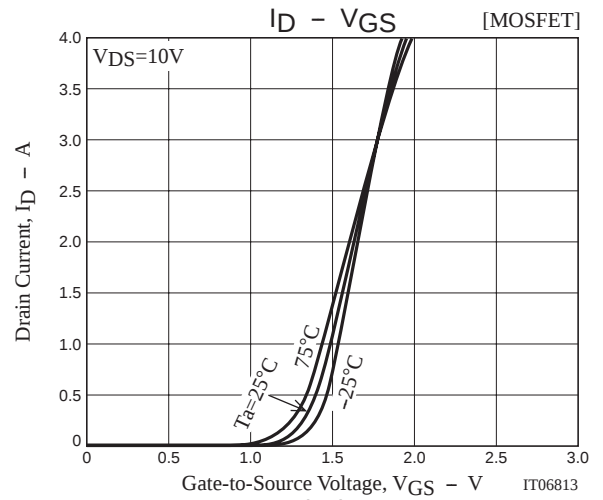
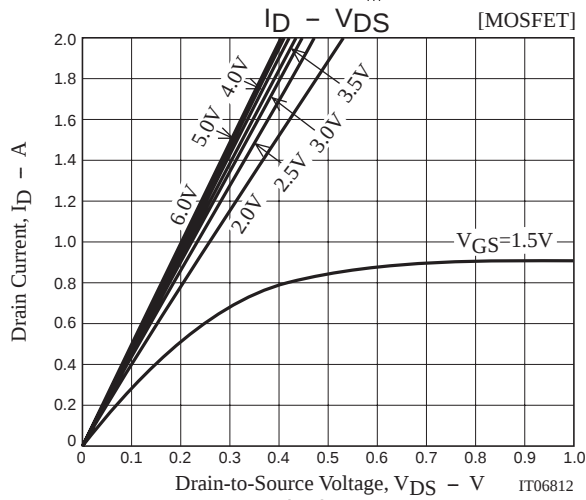
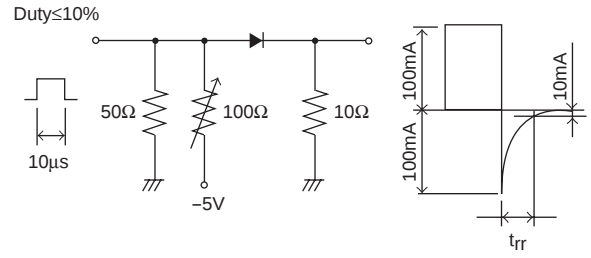
Switching Time Test Circuit

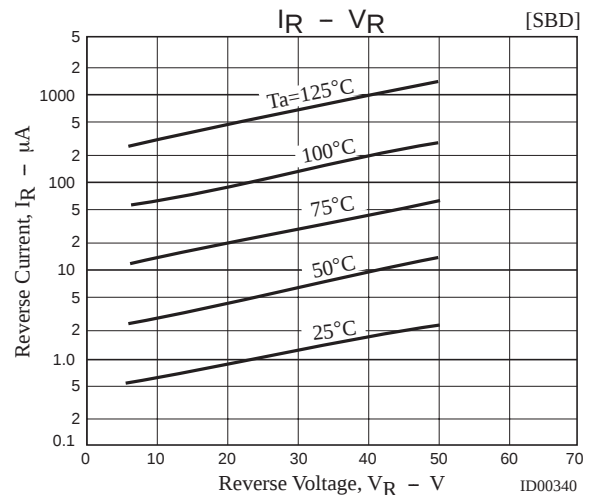
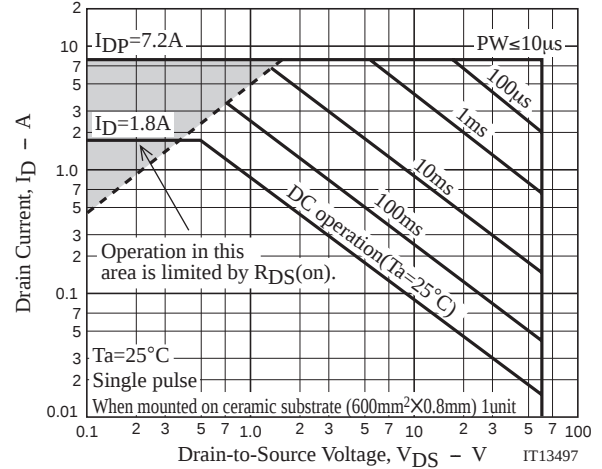
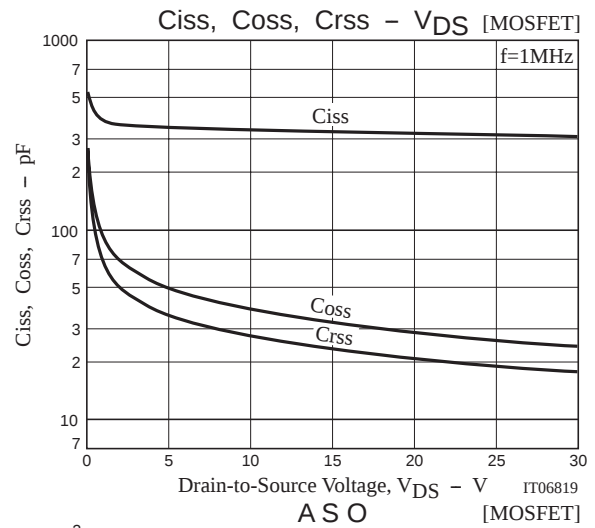
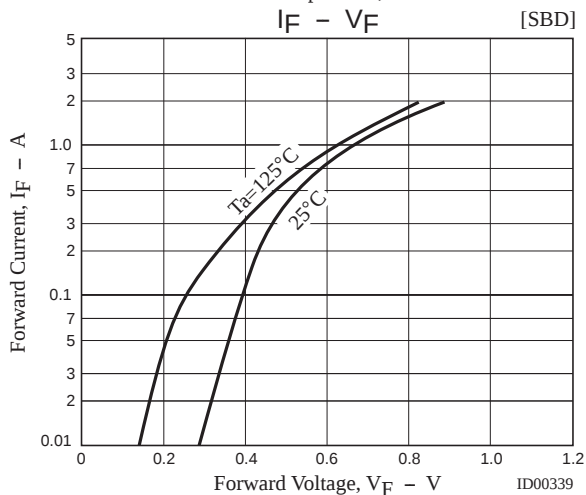
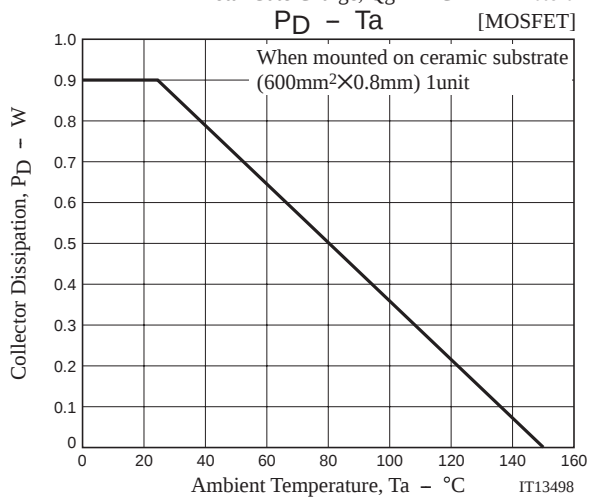
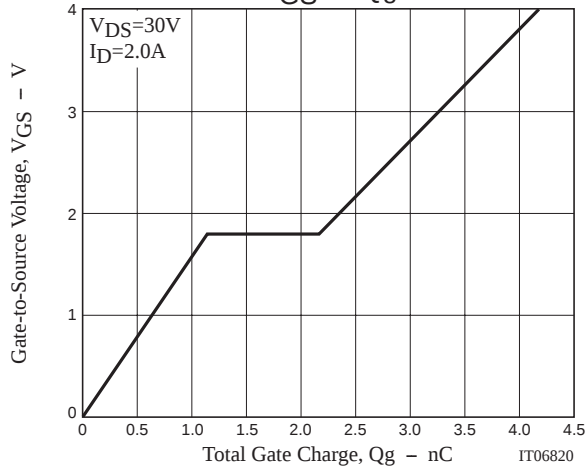
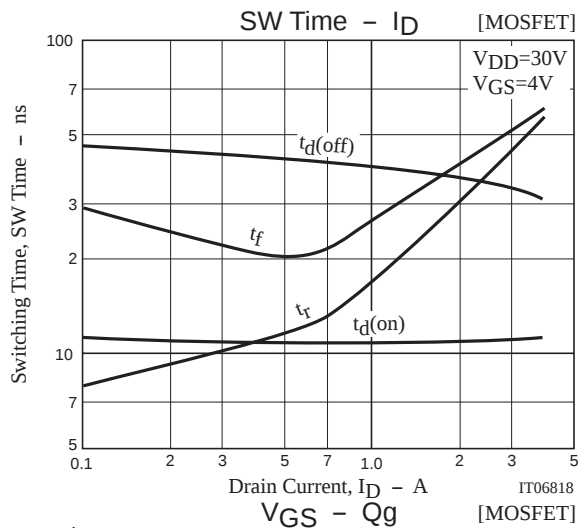
[MOSFET]

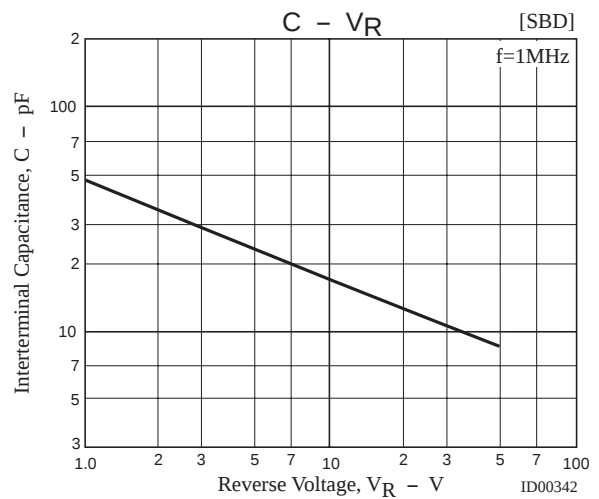
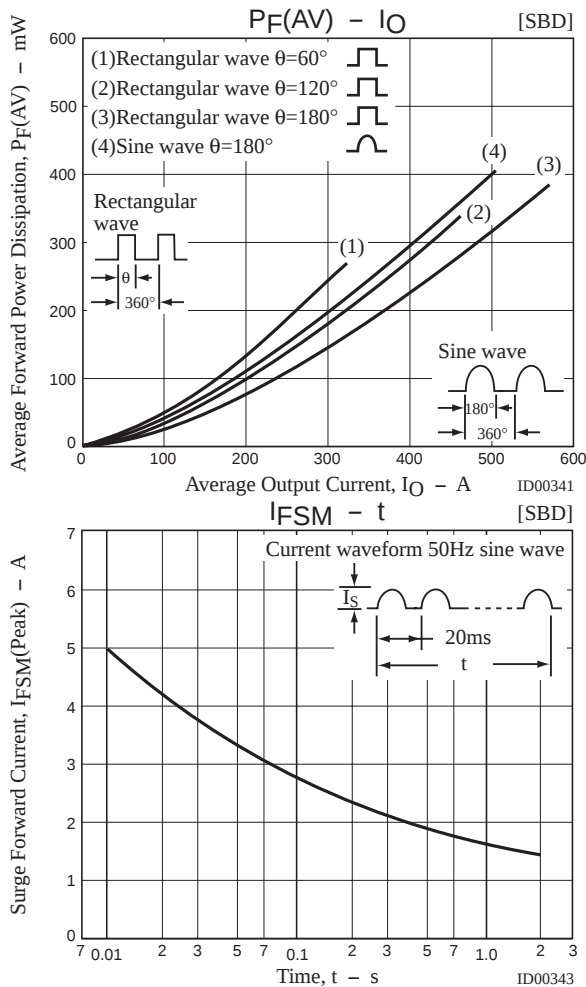


t_{rr} Test Circuit

[SBD]







Note on usage : Since the CPH5870 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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