Ordering number : ENA0336

SANYO Semiconductors

DATA SHEET

CPH5852

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

General-Purpose Switching Device Applications

Features

- Composite type containing a P-Channel MOSFET (MCH3312) and a Schottky Barrier Diode (SB1003M3), facilitating high-density mounting.
- [MOS]
  - Low ON-resistance
  - Ultrahigh-speed switching
  - 4V drive
- [SBD]
  - Short reverse recovery time
  - Low forward voltage

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}		±20	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 (600mm²×0.8mm) 1unit	0.9	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +125	°C
[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, 1cycle	10	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

Marking : YE

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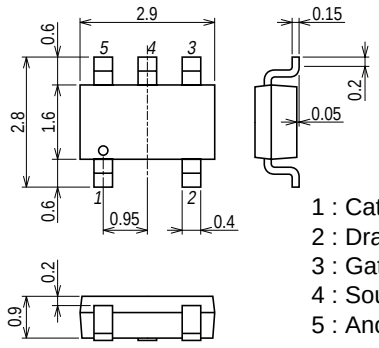
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=–1mA, V_{GS}=0V	–30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–30V, V_{GS}=0V			–1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GSS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=–10V, I_D=–1mA	–1.2		–2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=–10V, I_D=–1A	1.2	2.0		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=–1A, V_{GS}=–10V		110	145	mΩ
	R_{DS}(on)2	I_D=–500mA, V_{GS}=–4V		205	290	mΩ
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		200		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		47		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		32		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		7.2		ns
Rise Time	t_r	See specified Test Circuit.		2.9		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		21		ns
Fall Time	t_f	See specified Test Circuit.		8.7		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		5.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		0.98		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		0.82		nC
Diode Forward Voltage	V_{SD}	I_S=–2A, V_{GS}=0V		–0.85	–1.2	V
[SBD]						
Reverse Voltage	V_R	I_R=0.5mA	30			V
Forward Voltage	V_F1	I_F=0.7A		0.45	0.5	V
	V_F2	I_F=1.0A		0.48	0.53	V
Reverse Current	I_R	V_R=16V			15	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz cycle		27		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit.			10	ns

Package Dimensions

unit : mmm

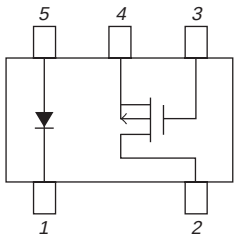
7017A-005



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

SANYO : CPH5

Electrical Connection



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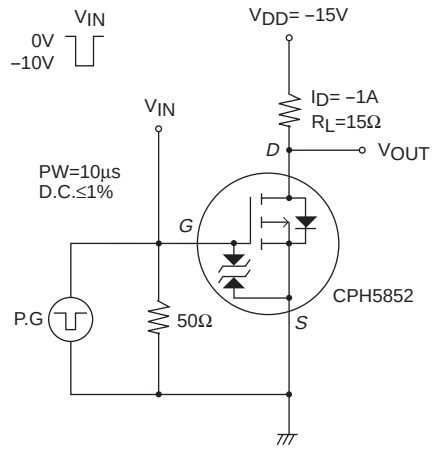
5 : Anode

Top view

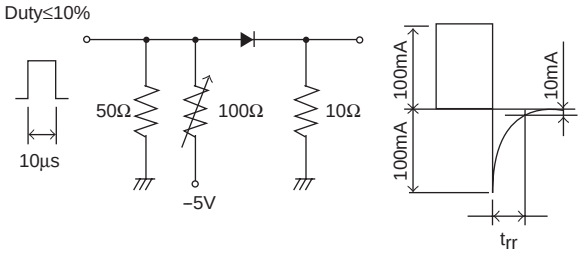
Switching Time Test Circuit

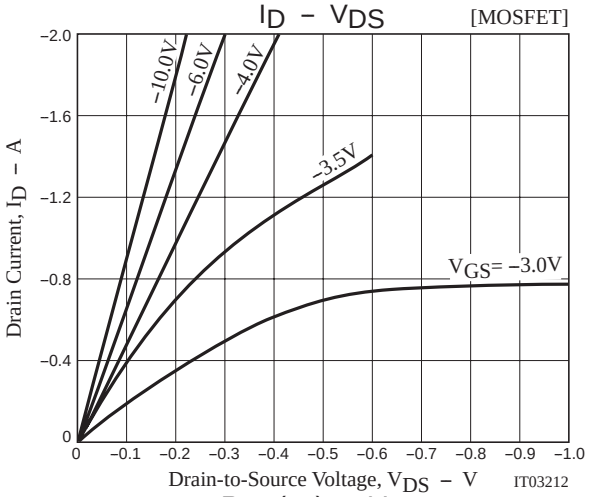
[MOSFET]

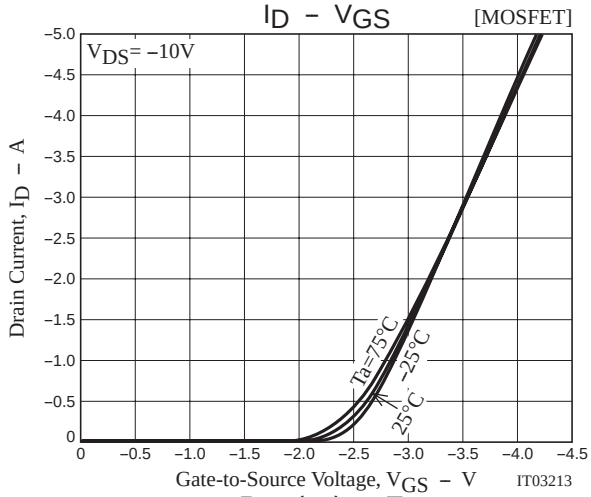


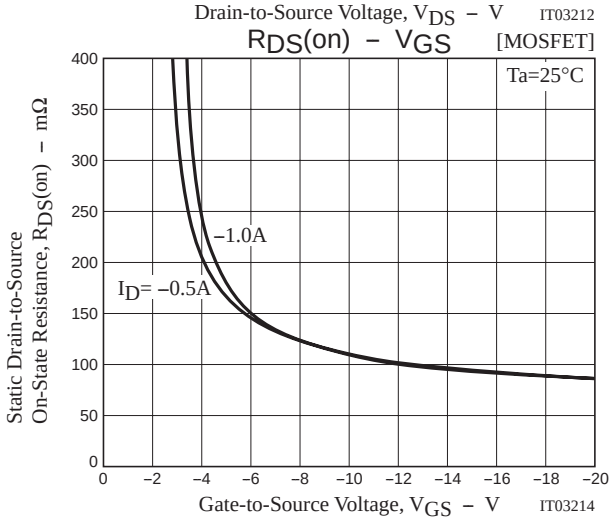
t_{rr} Test Circuit

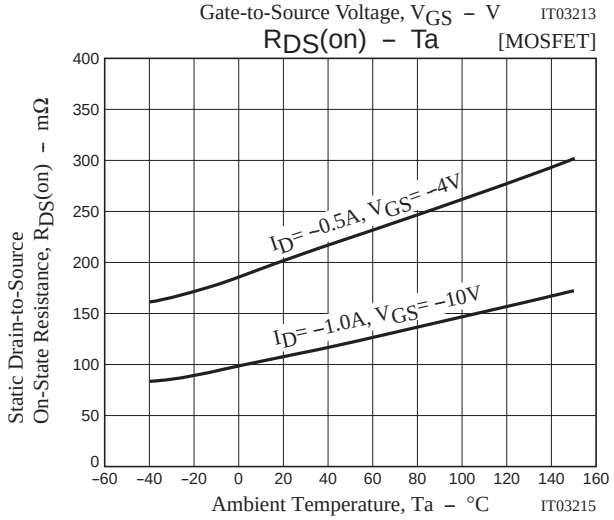
[SBD]

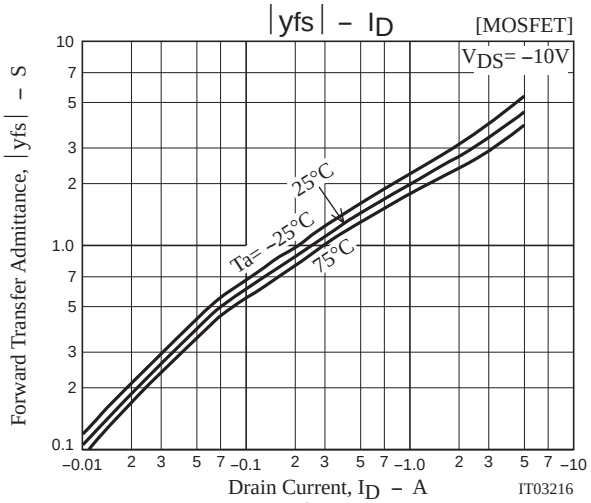


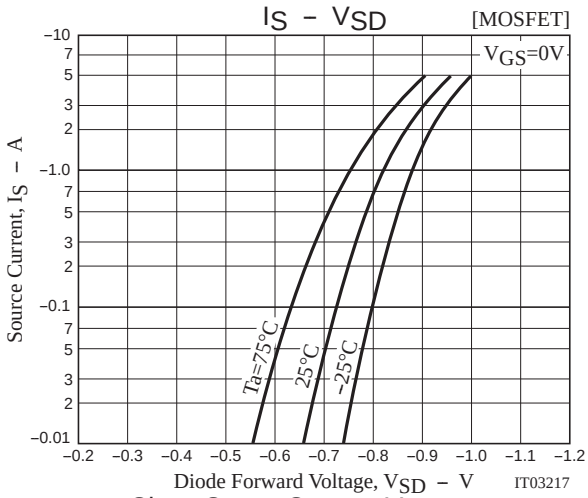


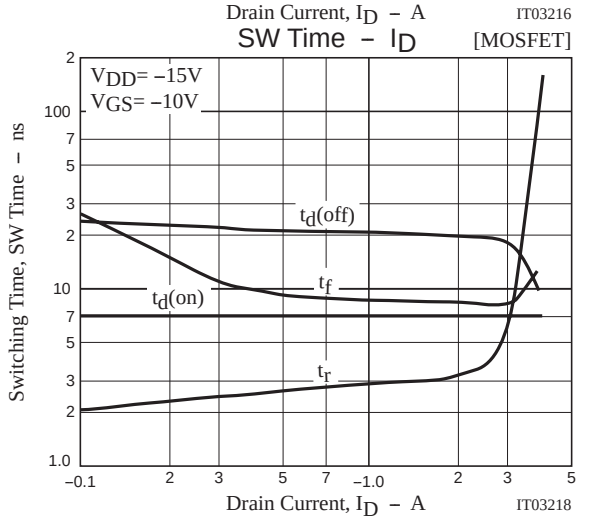


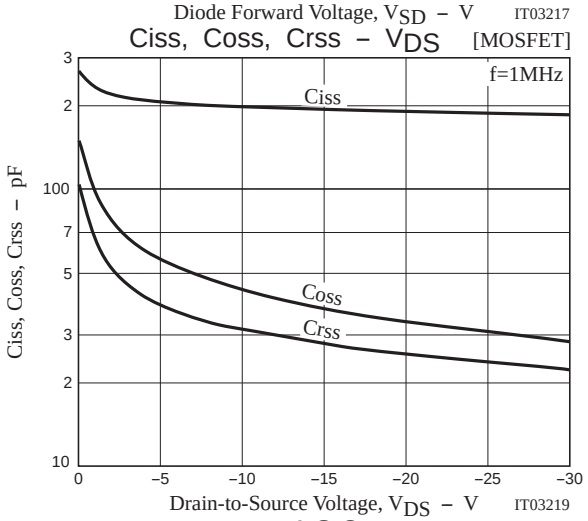


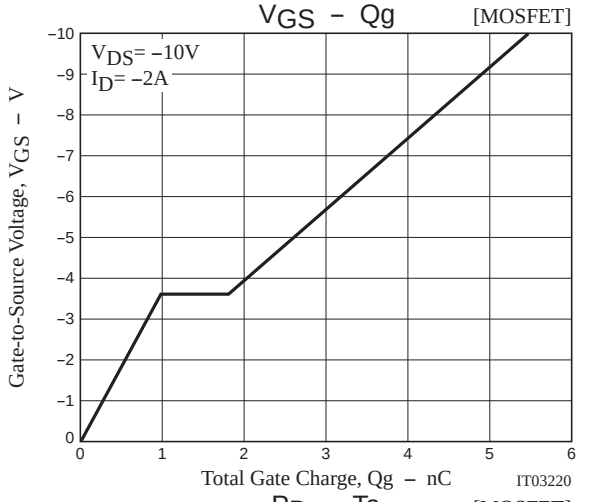


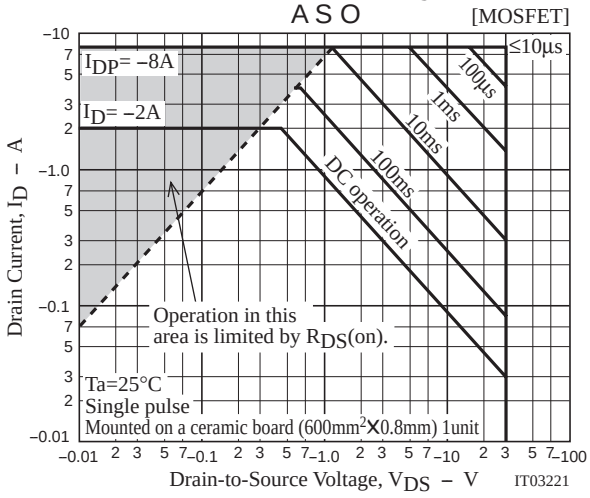

|yfs| – ID [MOSFET]
VDS= –10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT03216

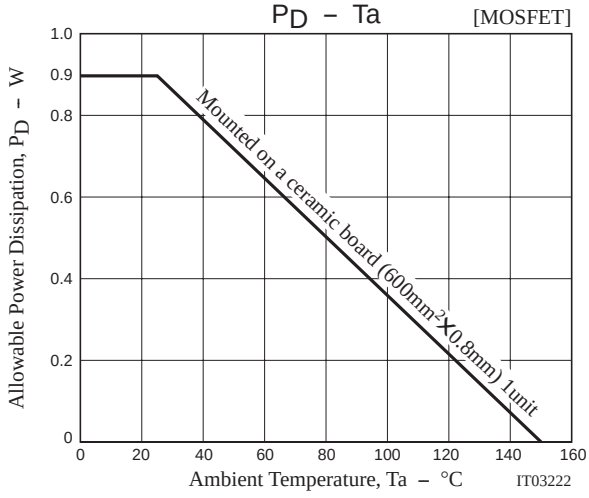

IS – VSD [MOSFET]
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT03217

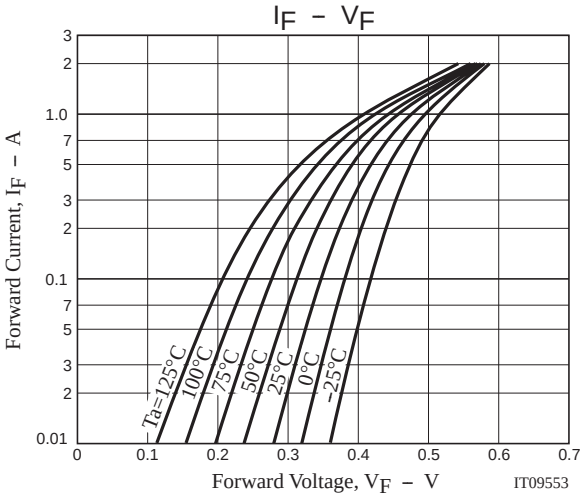

SW Time – ID [MOSFET]
VDD= –15V
VGS= –10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT03218

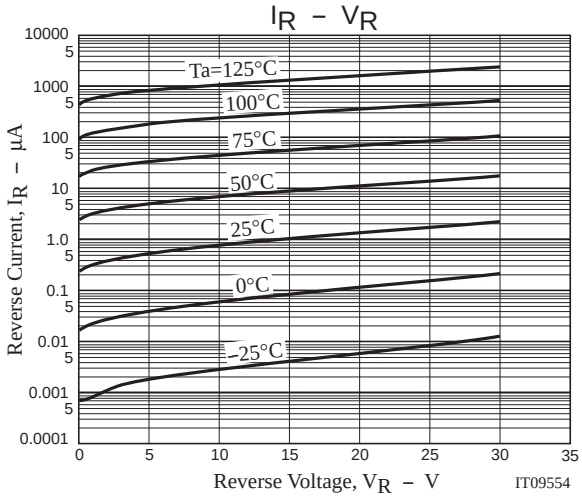

Ciss, Coss, Crss – VDS [MOSFET]
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT03219

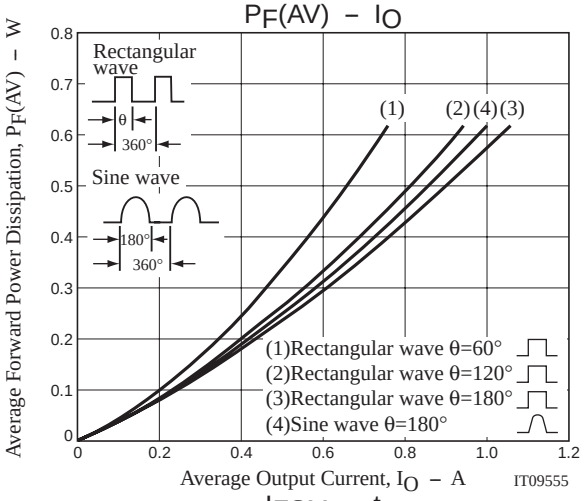

VGS – Qg [MOSFET]
VDS= –10V
ID= –2A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT03220

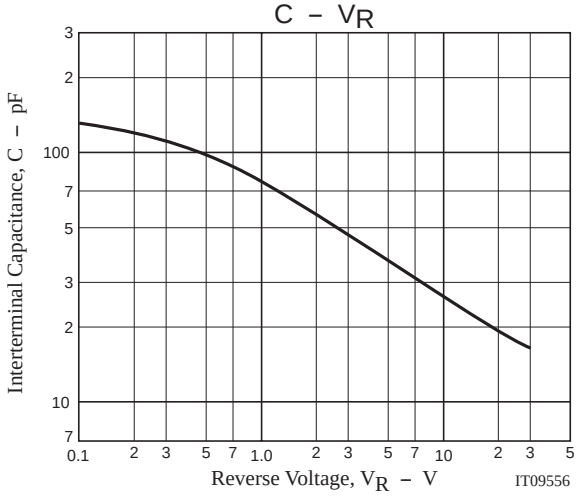

A S O [MOSFET]
IDP= –8A
ID= –2A
≤10µs
100µs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (600mm2×0.8mm) 1unit
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT03221

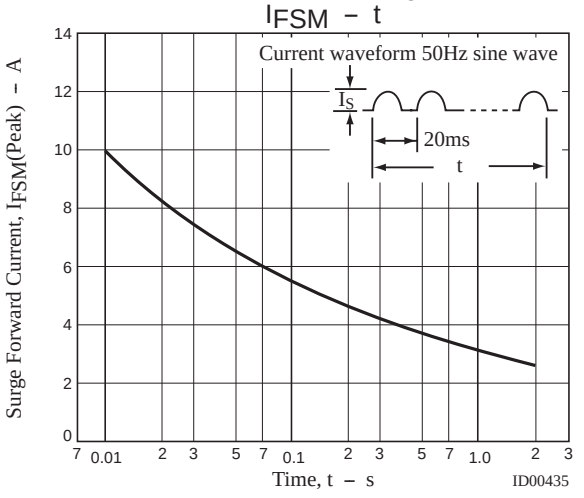

PD – Ta [MOSFET]
Mounted on a ceramic board (600mm2×0.8mm) 1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT03222


IF – VF
Forward Current, IF – A
Forward Voltage, VF – V
Ta=125°C
100°C
75°C
50°C
25°C
0°C
–25°C
IT09553


IR – VR
Reverse Current, IR – µA
Reverse Voltage, VR – V
Ta=125°C
100°C
75°C
50°C
25°C
0°C
–25°C
IT09554


PF(AV) – IO
Average Forward Power Dissipation, PF(AV) – W
Average Output Current, IO – A
Rectangular wave
θ
360°
Sine wave
180°
360°
(1)
(2)(4)(3)
(1)Rectangular wave θ=60°
(2)Rectangular wave θ=120°
(3)Rectangular wave θ=180°
(4)Sine wave θ=180°
IT09555


C – VR
Interterminal Capacitance, C – pF
Reverse Voltage, VR – V
IT09556


IFSM – t
Surge Forward Current, IFSM(Peak) – A
Current waveform 50Hz sine wave
IS
20ms
t
Time, t – s
ID00435

Note on usage : Since the CPH5852 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.