



SANYO Semiconductors

## DATA SHEET

**MCH5836**

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## General-Purpose Switching Device Applications

### Features

- Composite type with an P-channel silicon MOSFET (MCH3307) and a schottky barrier diode (SS10015M) contained in one package facilitating high-density mounting.
- [MOSFET]
  - Low ON-resistance.
  - 1.8V 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 <sub>DSS</sub>		-20	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-1	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-4	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) 1unit	0.8	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : YA

Continued on next page.

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# MCH5836

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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	$V_{RRM}$		15	V
Nonrepetitive Peak Reverse Surge Voltage	$V_{RSM}$		15	V
Average Output Current	$I_O$		1	A
Surge Forward Current	$I_{FSM}$	50Hz sine wave, 1 cycle	3	A
Junction Temperature	$T_J$		-55 to +125	°C
Storage Temperature	$T_{stg}$		-55 to +125	°C

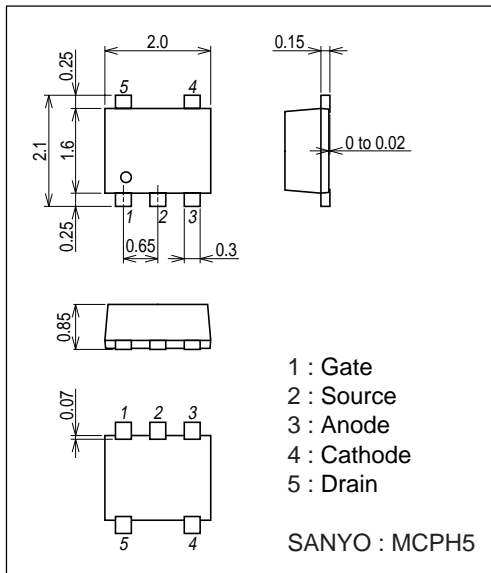
## Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}, V_{GS}=0\text{V}$	-20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}, I_D=-100\mu\text{A}$	-0.4		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}, I_D=-500\text{mA}$	0.72	1.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-500\text{mA}, V_{GS}=-4\text{V}$		380	500	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-300\text{mA}, V_{GS}=-2.5\text{V}$		540	760	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=-100\text{mA}, V_{GS}=-1.8\text{V}$		670	1000	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10\text{V}, f=1\text{MHz}$		115		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10\text{V}, f=1\text{MHz}$		23		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10\text{V}, f=1\text{MHz}$		15		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		8		ns
Rise Time	$t_r$	See specified Test Circuit.		6		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		15		ns
Fall Time	$t_f$	See specified Test Circuit.		7		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10\text{V}, V_{GS}=-4\text{V}, I_D=-1\text{A}$		1.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10\text{V}, V_{GS}=-4\text{V}, I_D=-1\text{A}$		0.4		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10\text{V}, V_{GS}=-4\text{V}, I_D=-1\text{A}$		0.3		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-1\text{A}, V_{GS}=0\text{V}$		-0.89	-1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=0.5\text{mA}$	15			V
Forward Voltage	$V_{F1}$	$I_F=0.3\text{A}$		0.3	0.33	V
	$V_{F2}$	$I_F=0.5\text{A}$		0.33	0.36	V
Reverse Current	$I_R$	$V_R=6\text{V}$			90	$\mu\text{A}$
Interterminal Capacitance	$C$	$V_R=10\text{V}, f=1\text{MHz}$		20		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100\text{mA}$ , See specified Test Circuit.			10	ns

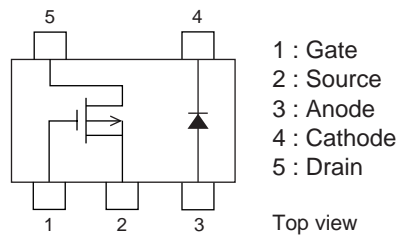
## Package Dimensions

unit : mm (typ)

7021A-008

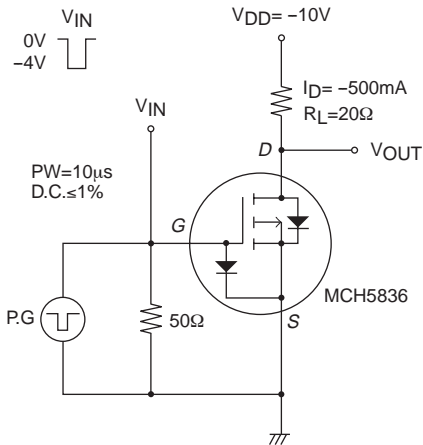


## Electrical Connection



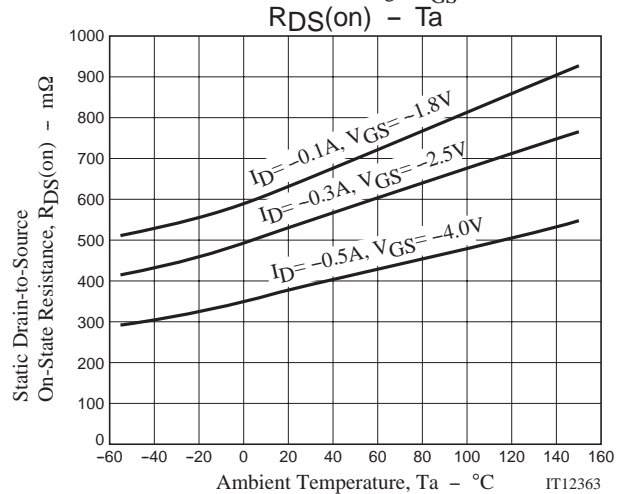
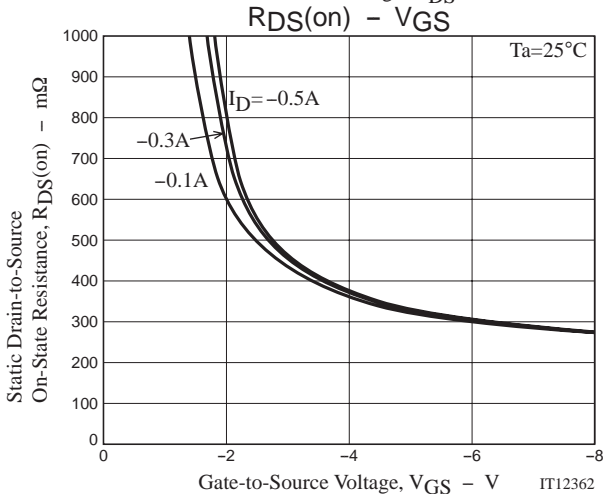
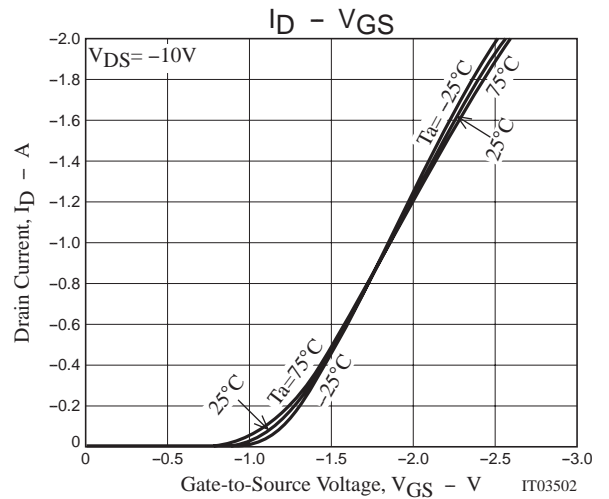
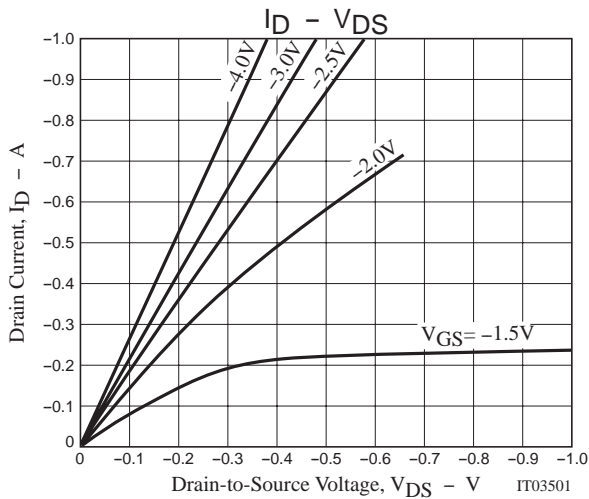
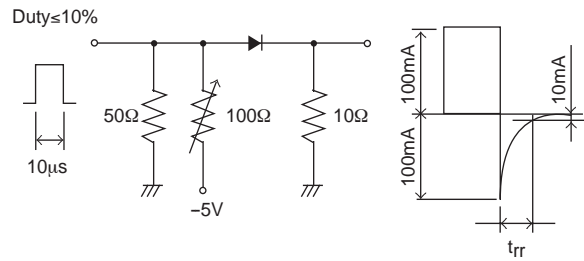
Switching Time Test Circuit

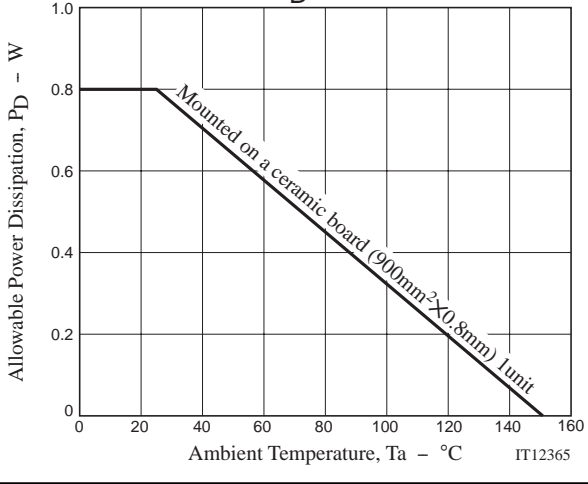
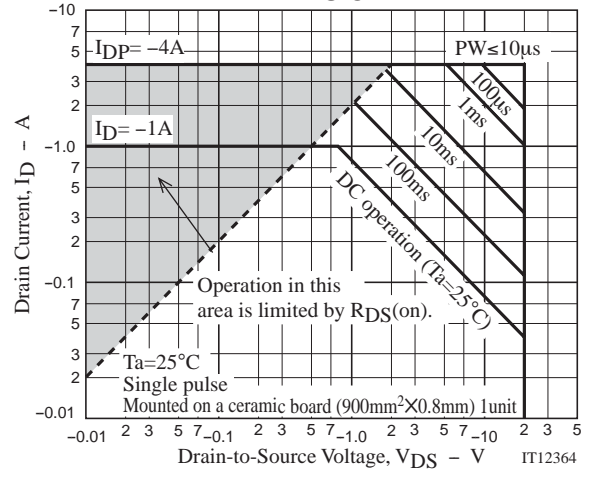
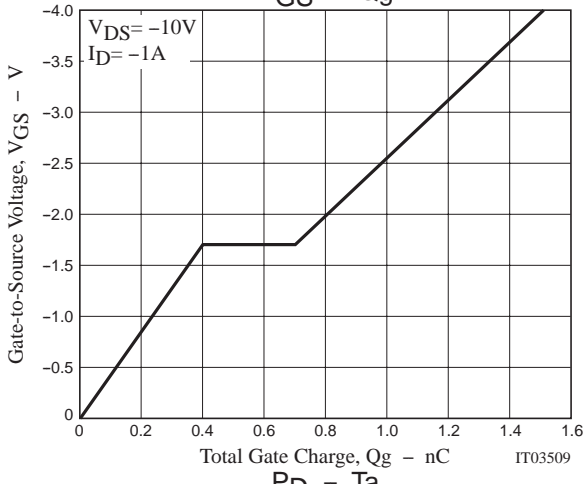
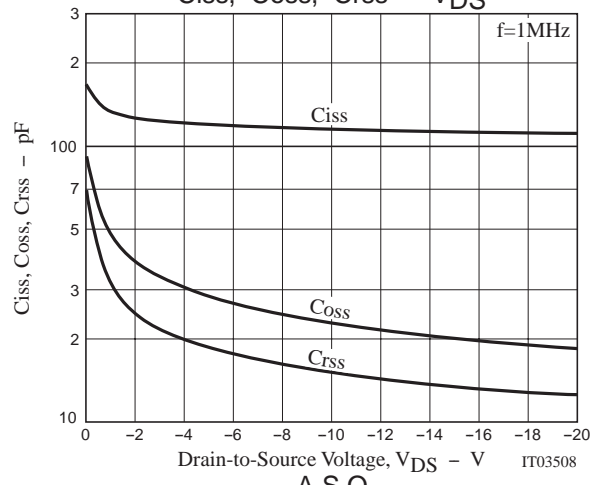
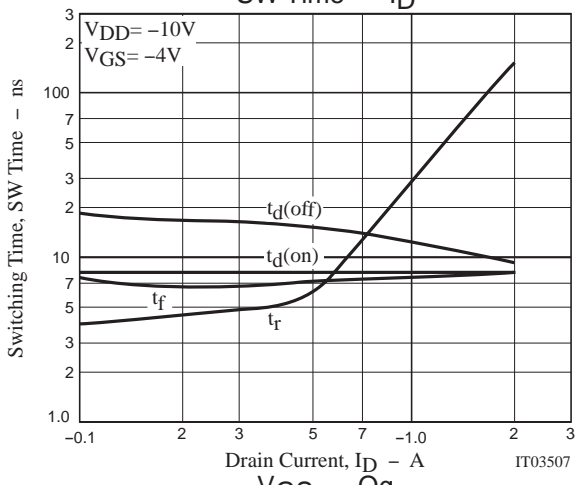
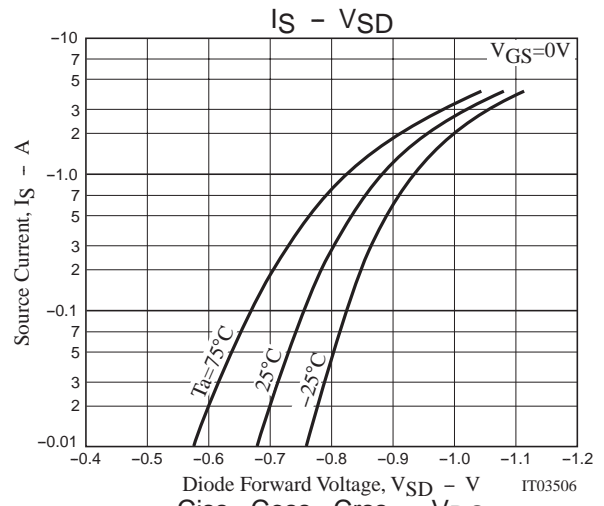
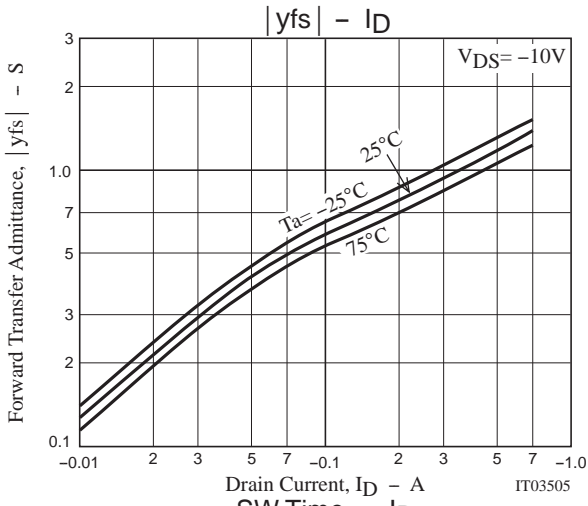
[MOSFET]



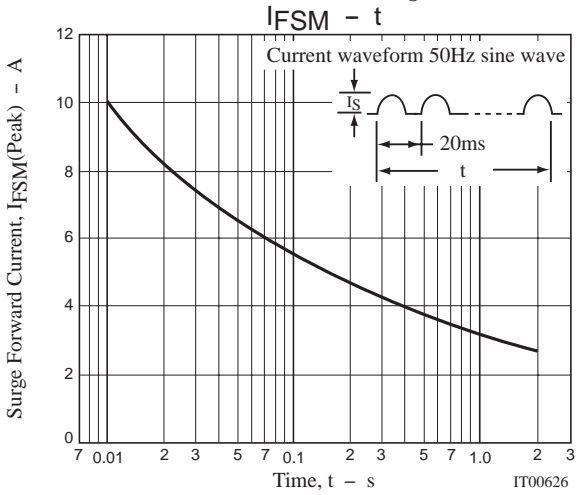
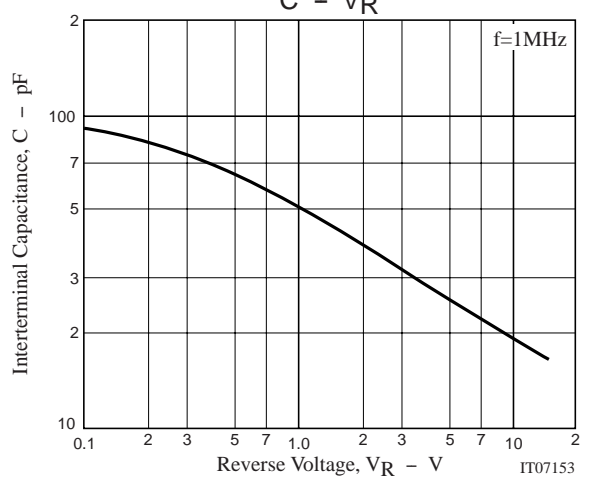
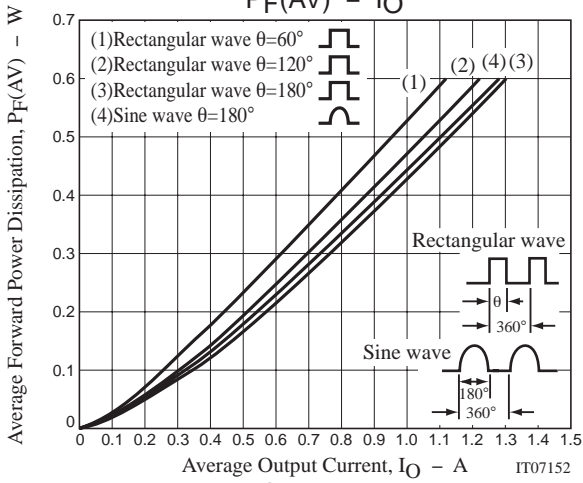
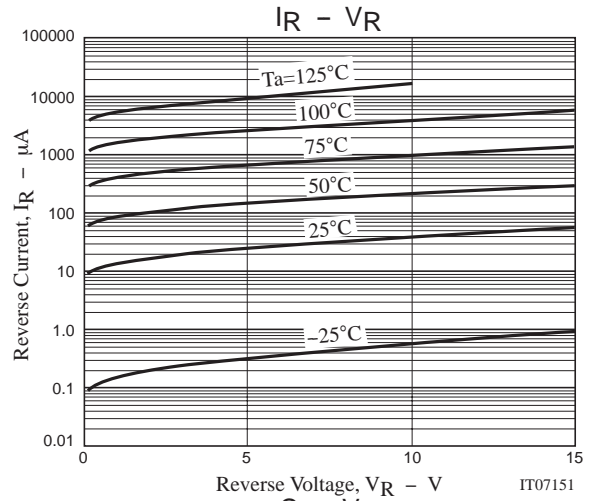
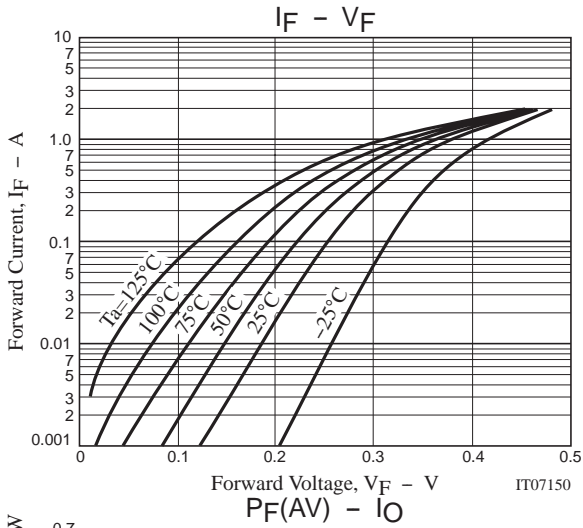
$t_{rr}$  Test Circuit

[SBD]





# MCH5836



Note on usage : Since the MCH5836 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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