



SANYO Semiconductors

## DATA SHEET

**MCH5818**

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

**DC / DC Converter Applications****Features**

- Composite type with a P-Channel Silicon MOSFET (MCH3339) and a Schottky Barrier Diode (SBS007M) contained in one package facilitating high-density mounting.

[MOSFET]

- Low ON-resistance.
- Ultrahigh-speed switching.

[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>		-12	V
Gate-to-Source Voltage	V <sub>GS</sub>		±12	V
Drain Current (DC)	I <sub>D</sub>		-1.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-6.0	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
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>R</sub> RM		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>R</sub> SM		15	V
Average Output Current	I <sub>O</sub>		0.5	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	3	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : QU

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**SANYO Electric Co.,Ltd. Semiconductor Company**

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

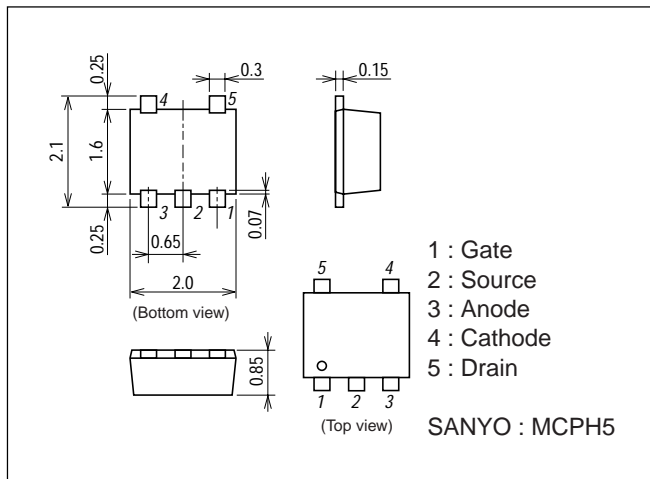
# MCH5818

## Electrical Characteristics at Ta=25°C

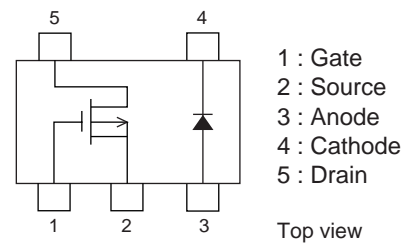
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-12			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-12V, V_{GS}=0$			-1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 9.6V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-6V, I_D=-1mA$	-1.0		-2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-6V, I_D=-0.8A$	0.9	1.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-0.8A, V_{GS}=-10V$		200	270	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.4A, V_{GS}=-4.5V$		340	490	$m\Omega$
	$R_{DS(on)3}$	$I_D=-0.1A, V_{GS}=-4V$		370	530	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, f=1MHz$		145		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-6V, f=1MHz$		45		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-6V, f=1MHz$		35		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		7.5		ns
Rise Time	$t_r$	See specified Test Circuit		20		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		16		ns
Fall Time	$t_f$	See specified Test Circuit		12		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.5A$		3.8		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.5A$		0.5		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-1.5A$		0.5		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-1.5A, V_{GS}=0$		-0.94	-1.5	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=0.5mA$	15			V
Forward Voltage	$V_{F1}$	$I_F=0.3A$		0.35	0.41	V
	$V_{F2}$	$I_F=0.5A$		0.4	0.46	V
Reverse Current	$I_R$	$V_R=6V$			200	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz, 1 \text{ cycle}$		20		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA, \text{ See specified Test Circuit.}$			10	ns

## Package Dimensions

unit : mm  
2195

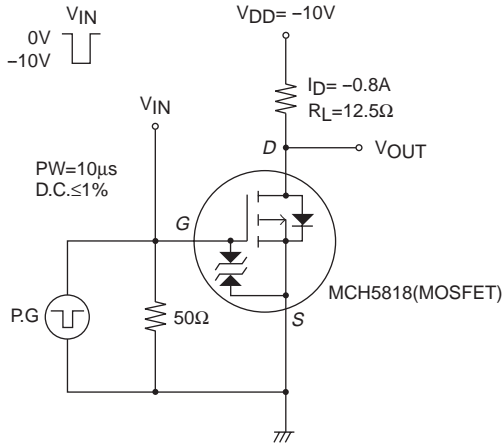


## Electrical Connection



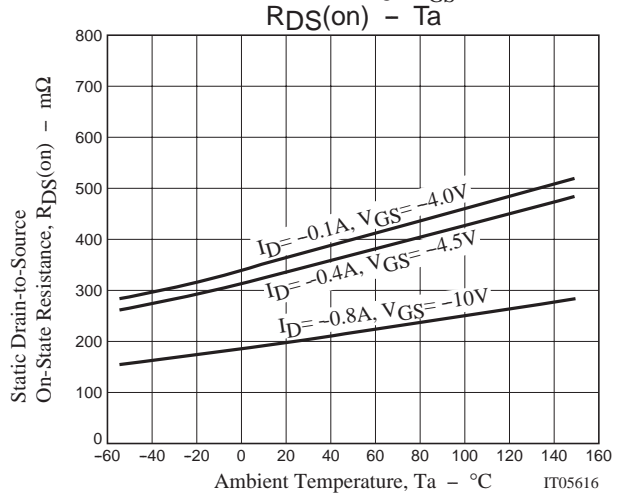
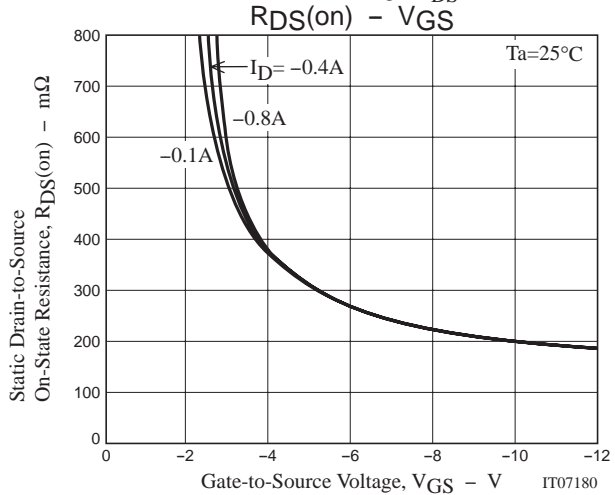
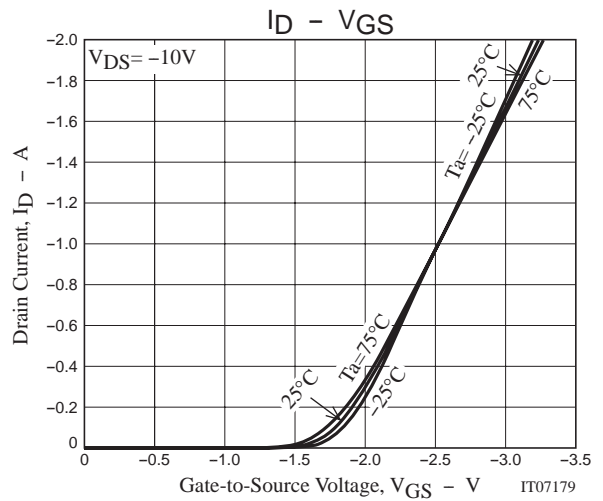
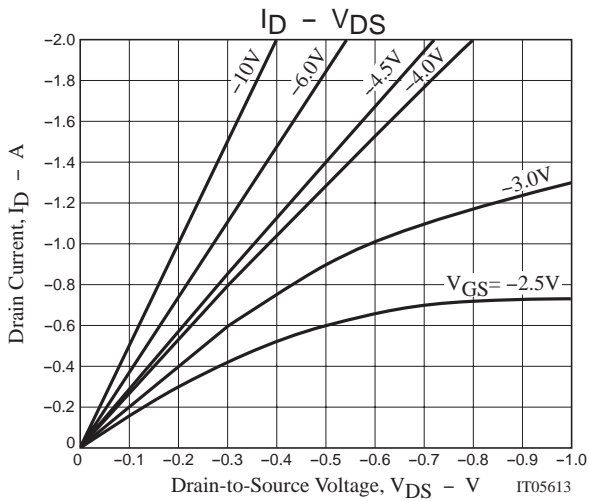
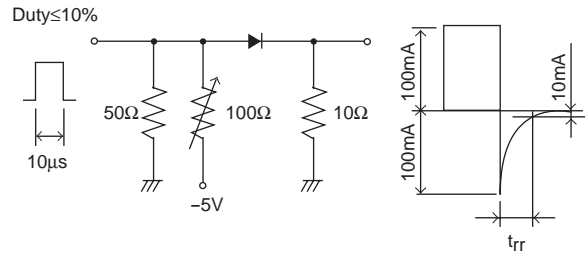
Switching Time Test Circuit

[MOSFET]

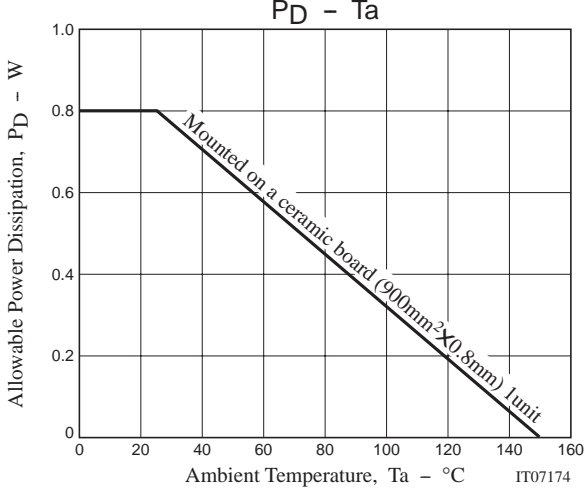
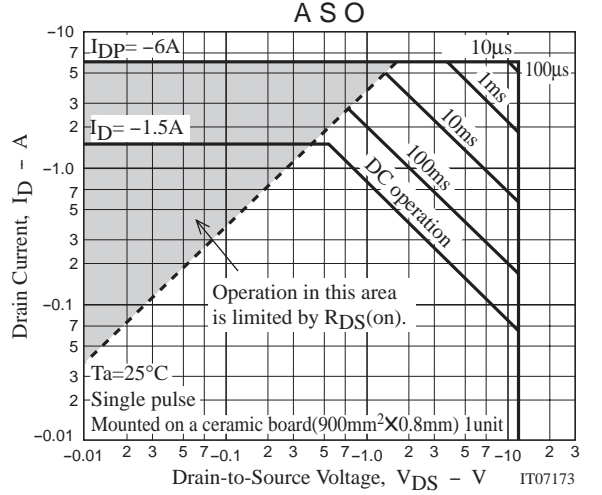
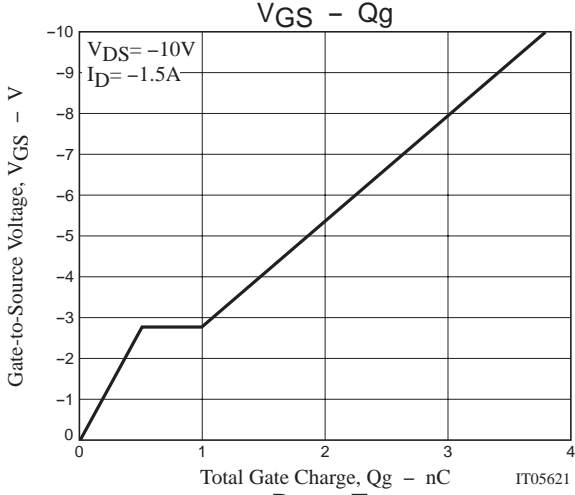
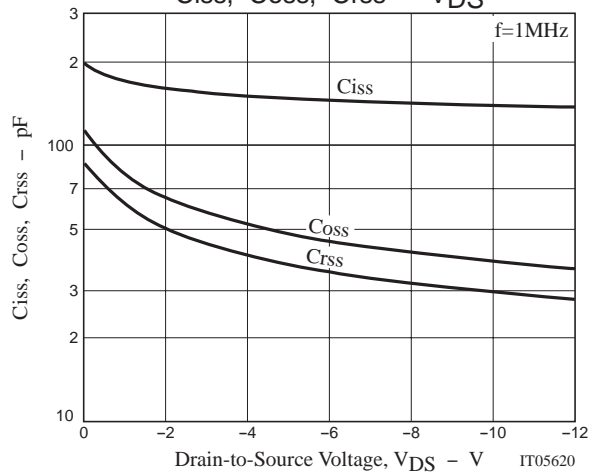
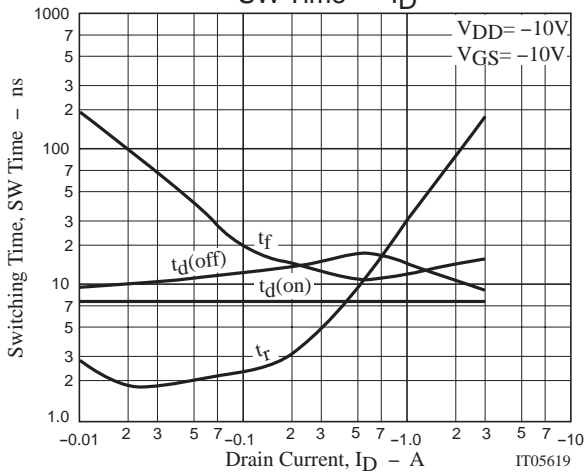
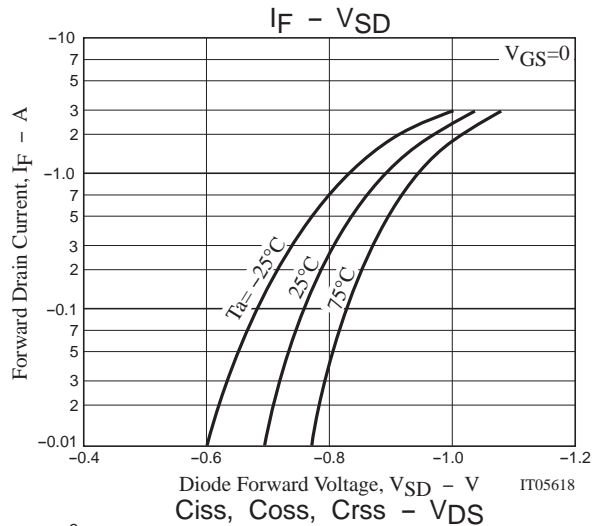
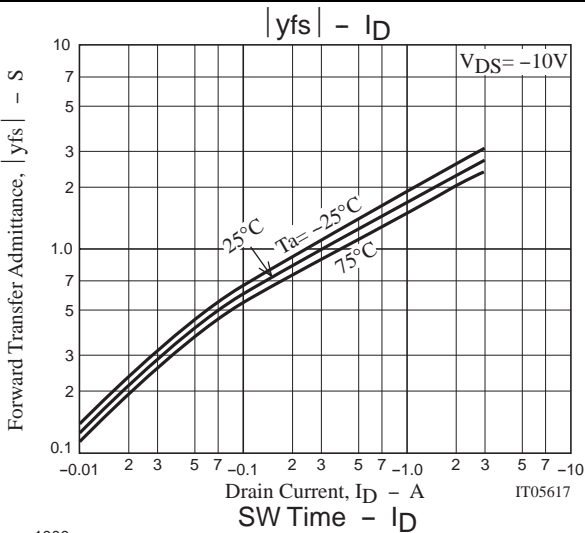


$t_{rr}$  Test Circuit

[SBD]



# MCH5818



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