



SANYO Semiconductors

DATA SHEET

MCH5810

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

DC / DC Converter Applications**Features**

- Composite type with a P-Channel Silicon MOSFET (MCH3335) and a Schottky Barrier Diode (SBS011) contained in one package facilitating high-density mounting.
- [MOSFET]
 - 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(*1)	V _{GS}		-9	V
Drain Current (DC)	I _D		-0.4	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	-1.6	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² ×0.8mm) 1unit	0.6	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V _R RM		15	V
Nonrepetitive Peak Reverse Surge Voltage	V _R SM		15	V
Average Output Current	I _O		150	mA
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

Marking : QK

(*1) : When designing a circuit using this product, that this P-channel MOSFET has a gate (oxide film) protection diode connected only between its gate and source.

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MCH5810

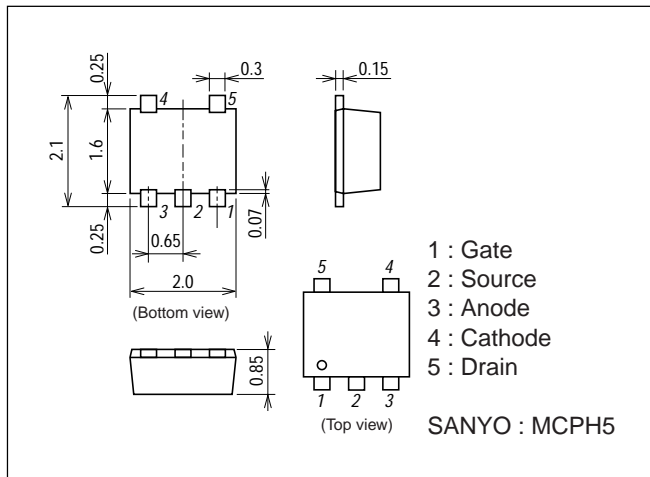
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=-8V, V_{DS}=0$			-1	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-100\mu A$	-0.4		-1.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-0.2A$	0.2	0.42		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-0.2A, V_{GS}=-4.5V$		1.4	1.8	Ω
	$R_{DS(on)2}$	$I_D=-0.1A, V_{GS}=-2.5V$		2.0	2.8	Ω
Input Capacitance	C_{iss}	$V_{DS}=-10V, f=1MHz$		40		pF
Output Capacitance	C_{oss}	$V_{DS}=-10V, f=1MHz$		8		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=-10V, f=1MHz$		4.5		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		10		ns
Rise Time	t_r	See specified Test Circuit.		5		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		10		ns
Fall Time	t_f	See specified Test Circuit.		5		ns
Total Gate Charge	Q_g	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.4A$		0.83		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.4A$		0.25		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.4A$		0.17		nC
Diode Forward Voltage	V_{SD}	$I_S=-0.4A, V_{GS}=0$		-1.0	-1.5	V
[SBD]						
Reverse Voltage	V_R	$I_R=0.5mA$	15			V
Forward Voltage	V_{F1}	$I_F=100mA$		0.32	0.36	V
	V_{F2}	$I_F=150mA$		0.35	0.41	V
Reverse Current	I_R	$V_R=6V$			45	μA
Interterminal Capacitance	C	$V_R=10V, f=1MHz$		10		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100mA$, See specified Test Circuit.			10	ns

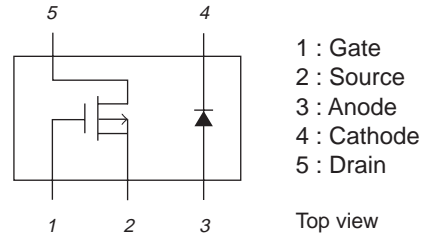
Package Dimensions

unit : mm

2195



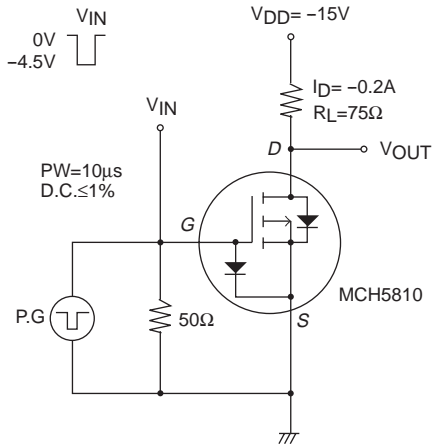
Electrical Connection



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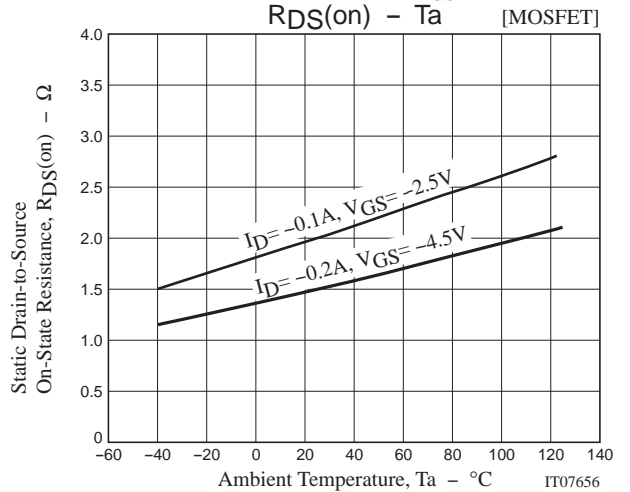
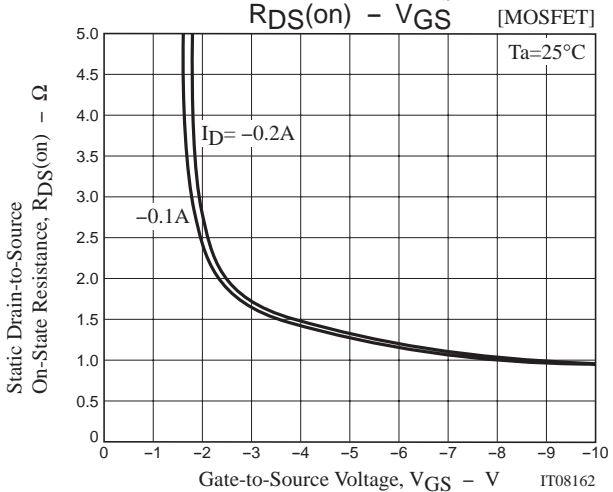
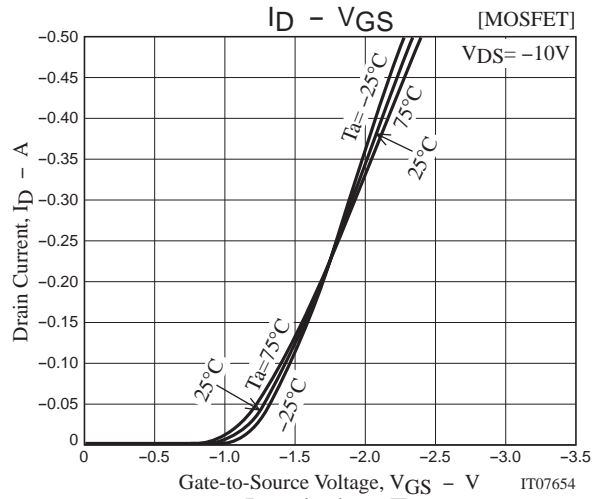
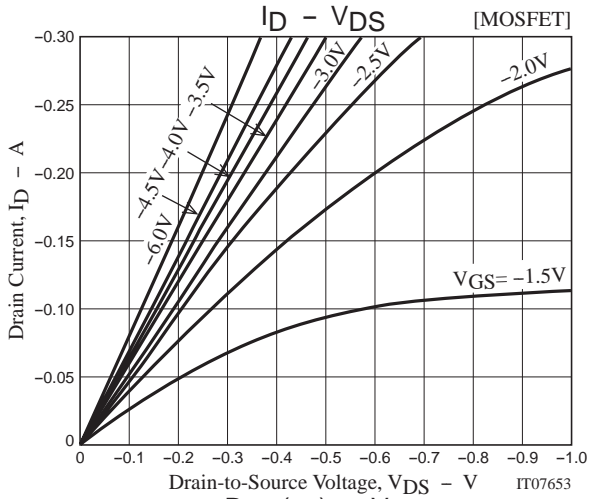
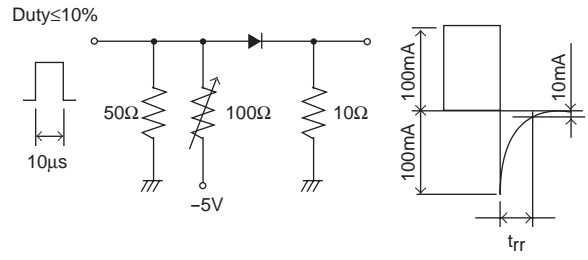
Switching Time Test Circuit

[MOSFET]

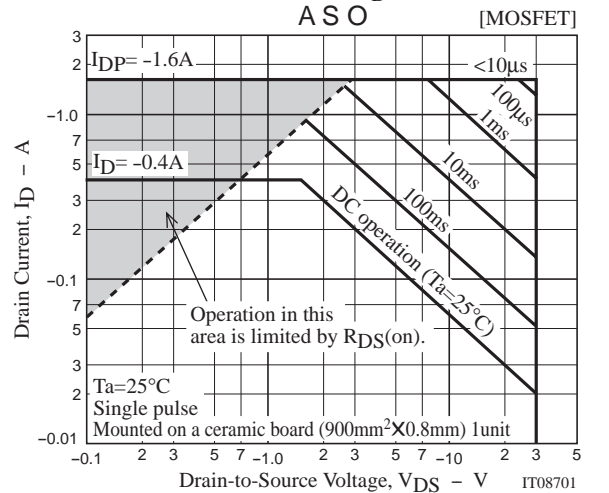
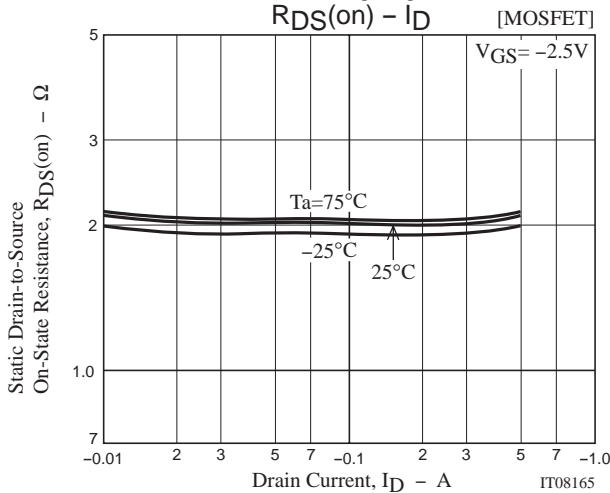
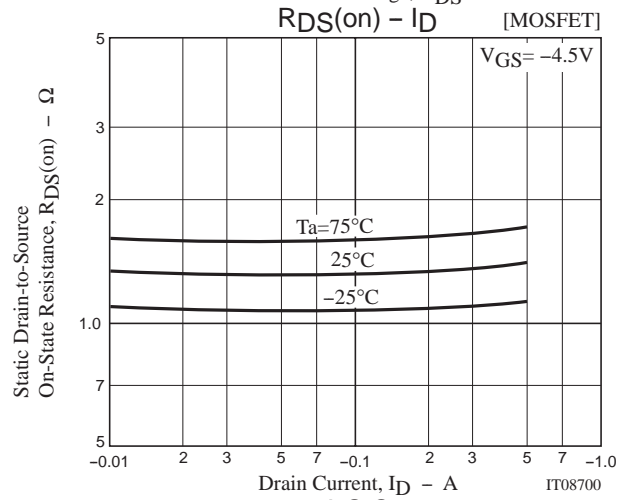
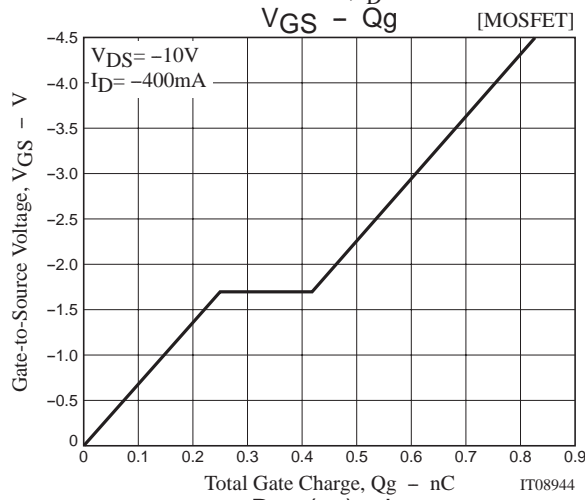
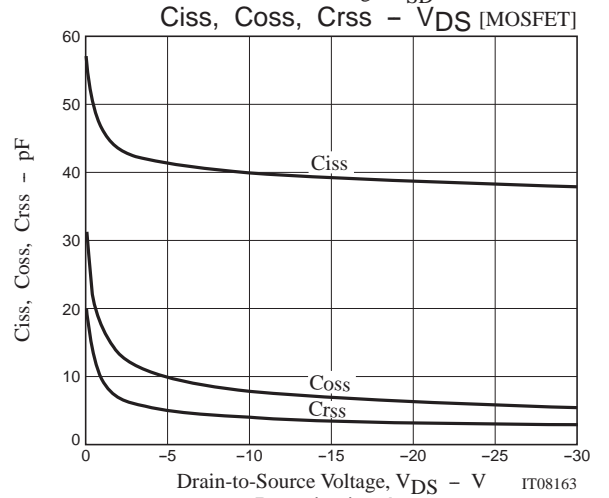
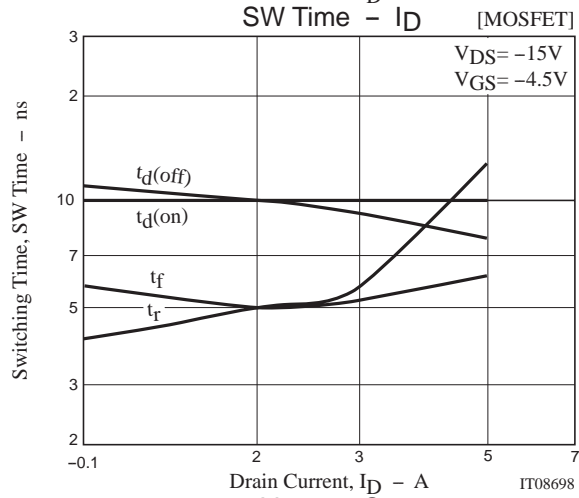
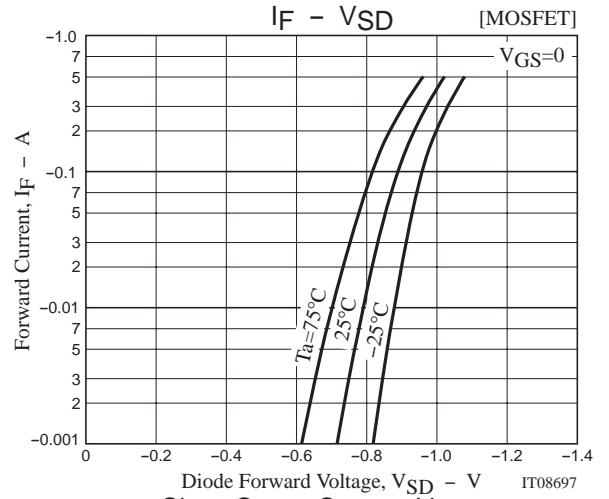
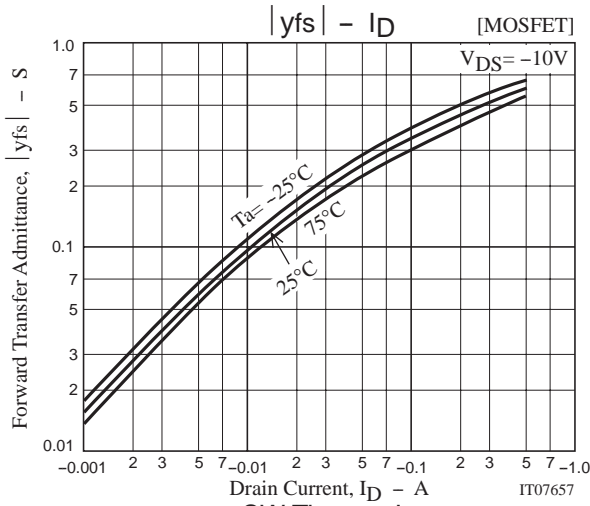


t_{rr} Test Circuit

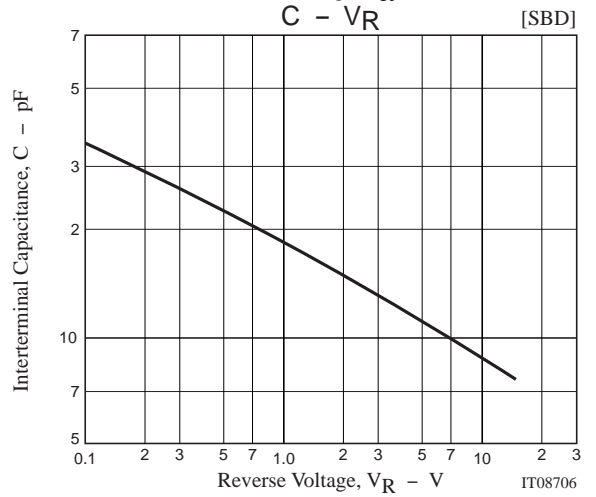
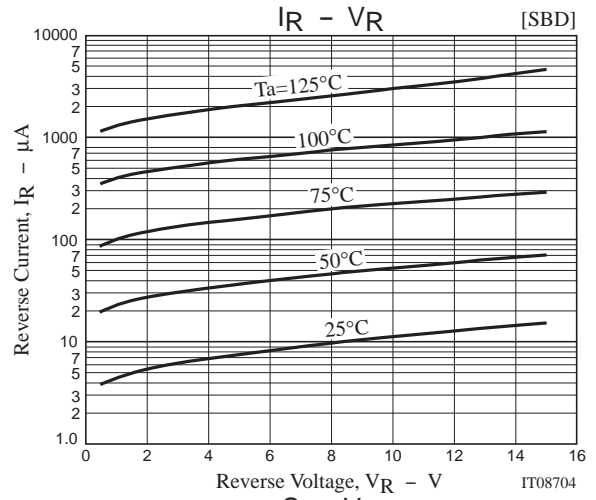
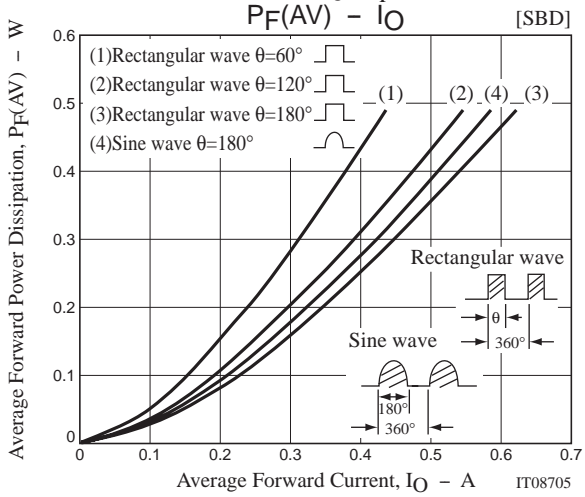
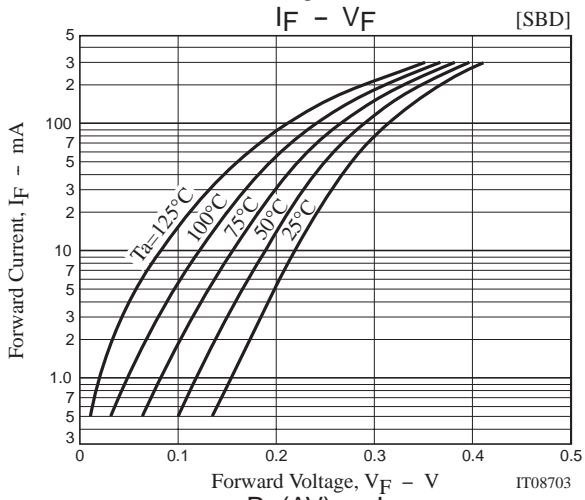
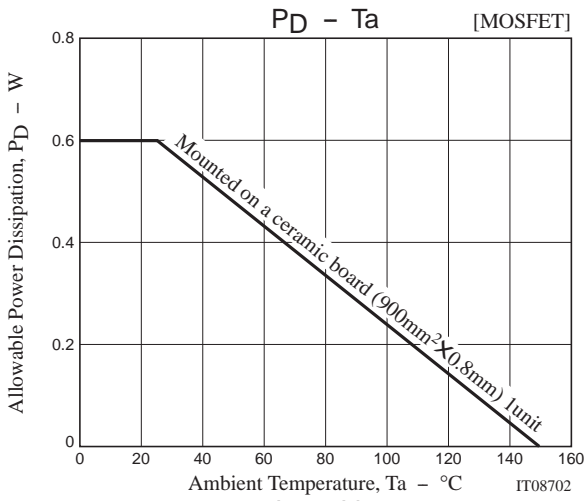
[SBD]



MCH5810



MCH5810



Note on usage : Since the MCH5810 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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