



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 _{GSS}		-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 _{RRM}		15	V
Nonrepetitive Peak Reverse Surge Voltage	V _{RSM}		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

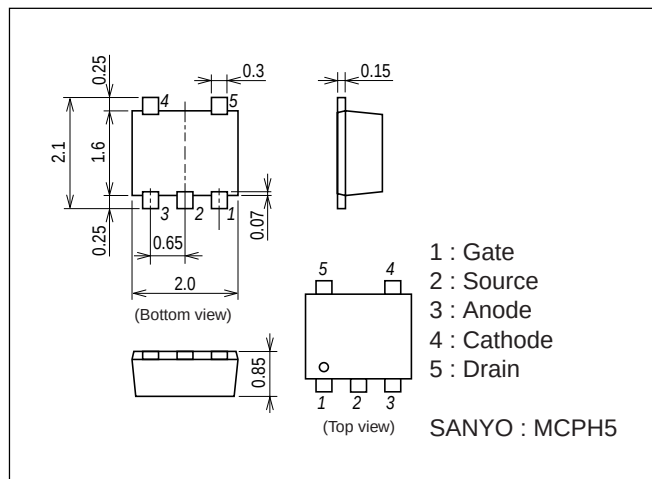
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0	-30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-30V, VGS=0			-1	μA
Gate-to-Source Leakage Current	IGSS	VGS=-8V, VDS=0			-1	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-100μA	-0.4		-1.4	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-0.2A	0.2	0.42		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-0.2A, VGS=-4.5V		1.4	1.8	Ω
	RDS(on)2	ID=-0.1A, VGS=-2.5V		2.0	2.8	Ω
Input Capacitance	Ciss	VDS=-10V, f=1MHz		40		pF
Output Capacitance	Coss	VDS=-10V, f=1MHz		8		pF
Reverse Transfer Capacitance	Crss	VDS=-10V, f=1MHz		4.5		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		10		ns
Rise Time	tr	See specified Test Circuit.		5		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		10		ns
Fall Time	tf	See specified Test Circuit.		5		ns
Total Gate Charge	Qg	VDS=-10V, VGS=-4.5V, ID=-0.4A		0.83		nC
Gate-to-Source Charge	Qgs	VDS=-10V, VGS=-4.5V, ID=-0.4A		0.25		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=-10V, VGS=-4.5V, ID=-0.4A		0.17		nC
Diode Forward Voltage	VSD	IS=-0.4A, VGS=0		-1.0	-1.5	V
[SBD]						
Reverse Voltage	VR	IR=0.5mA	15			V
Forward Voltage	VF1	IF=100mA		0.32	0.36	V
	VF2	IF=150mA		0.35	0.41	V
Reverse Current	IR	VR=6V			45	μA
Interterminal Capacitance	C	VR=10V, f=1MHz		10		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			10	ns

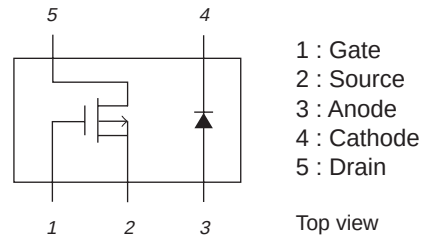
Package Dimensions

unit : mm

2195

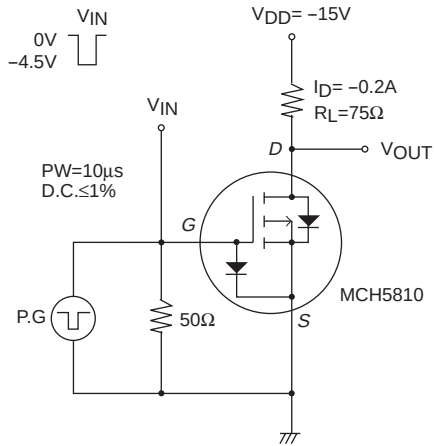


Electrical Connection

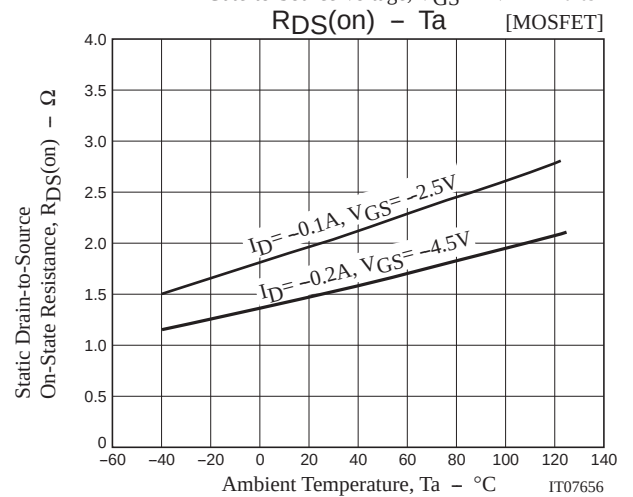
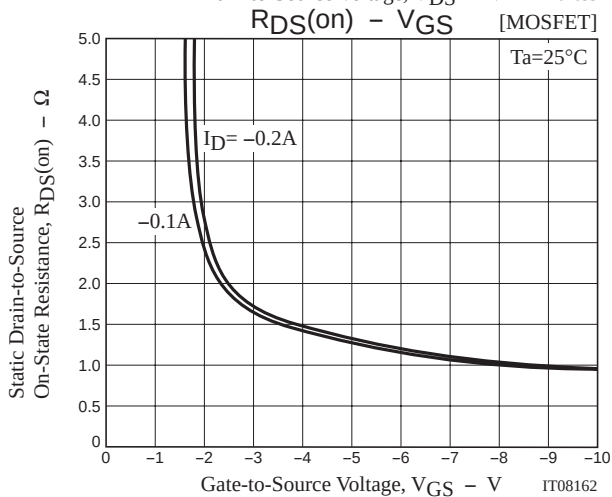
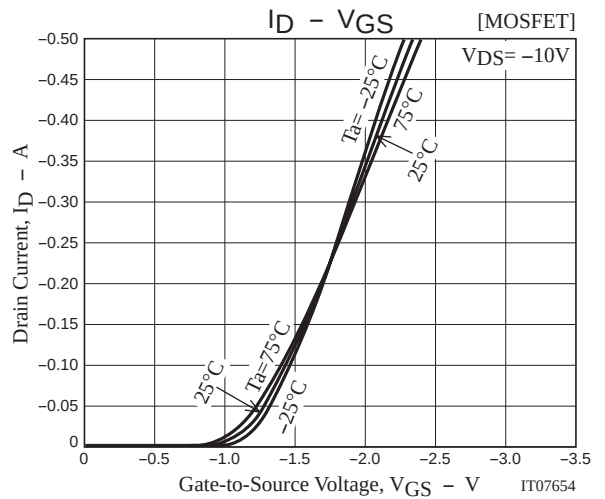
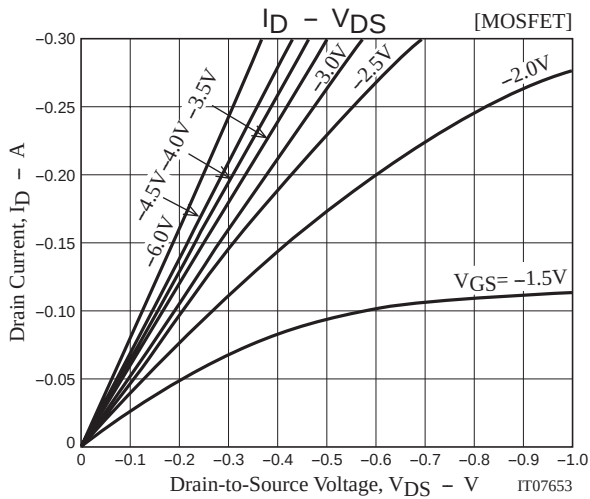
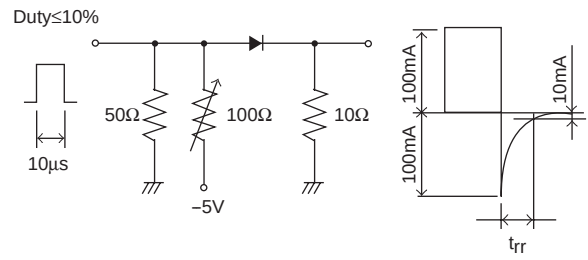


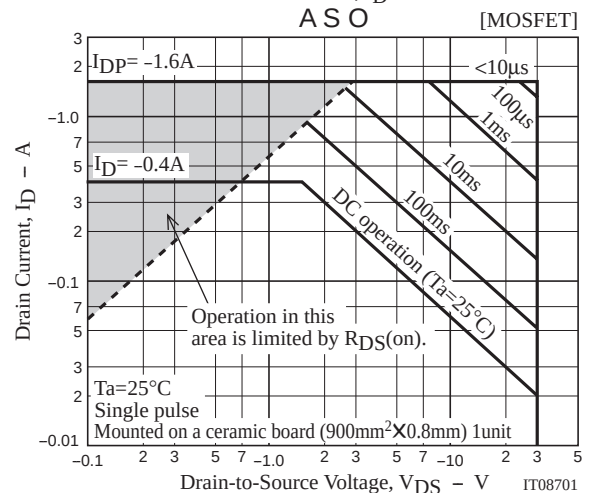
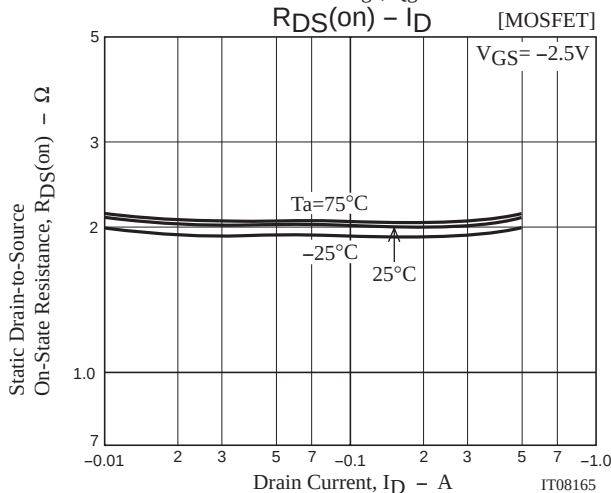
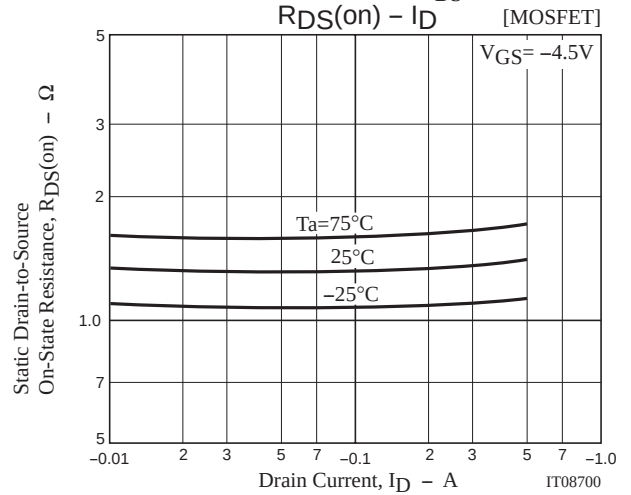
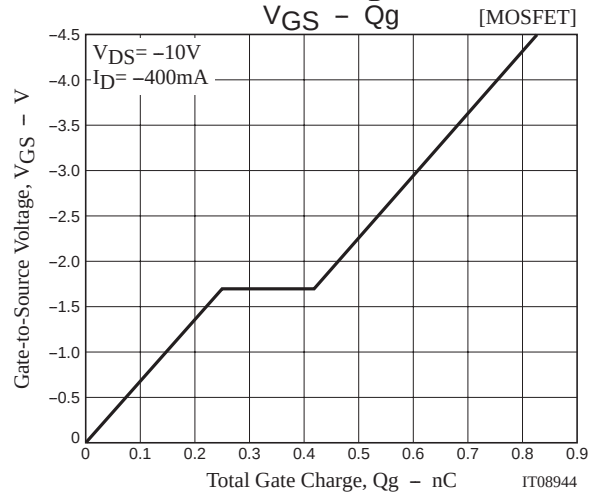
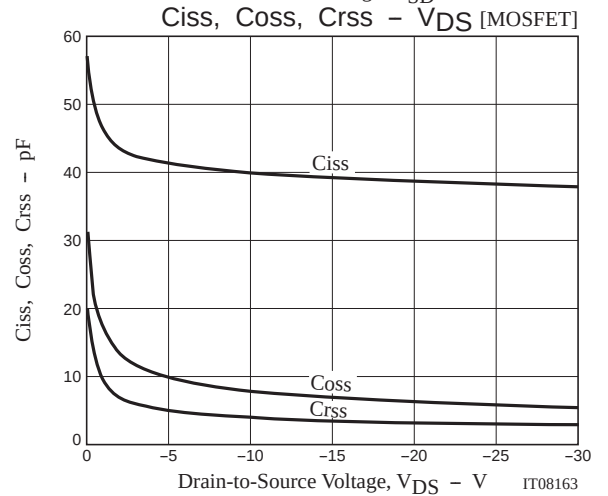
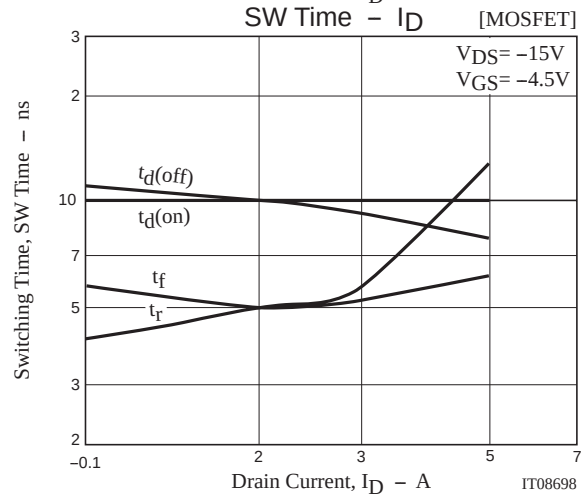
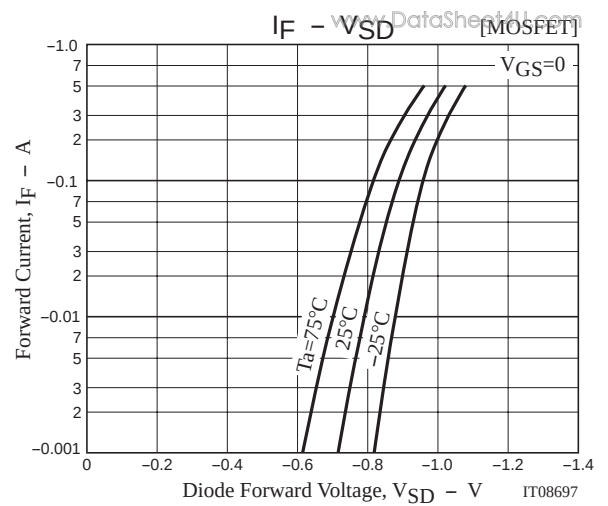
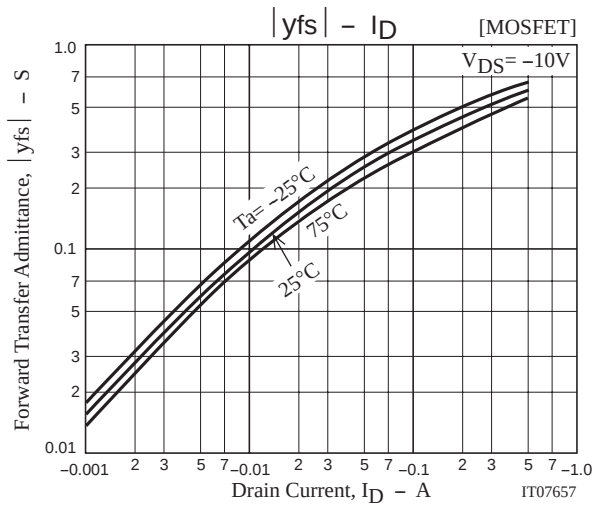
Switching Time Test Circuit

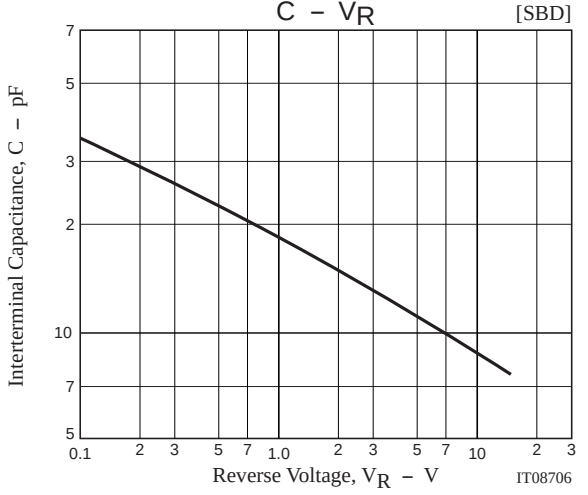
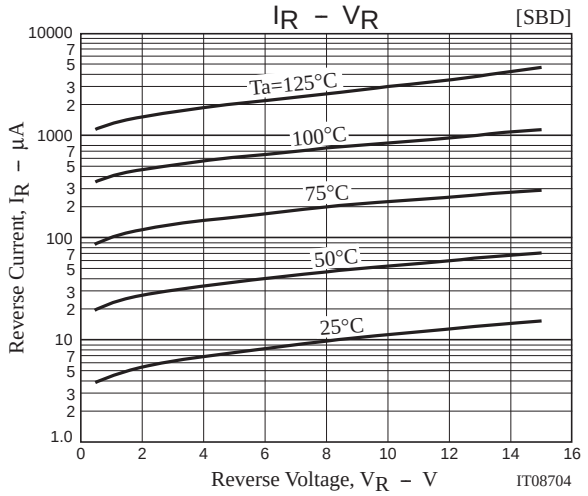
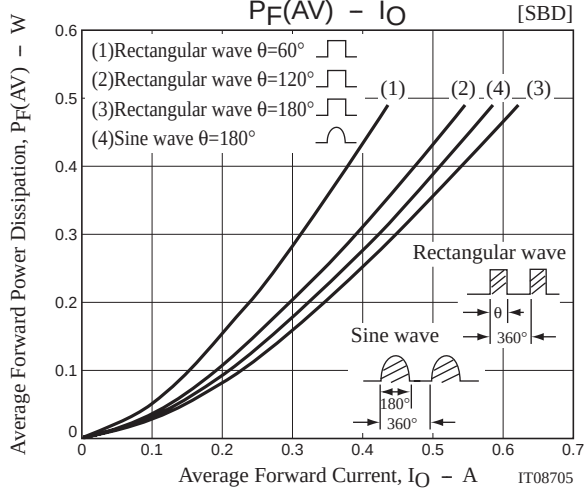
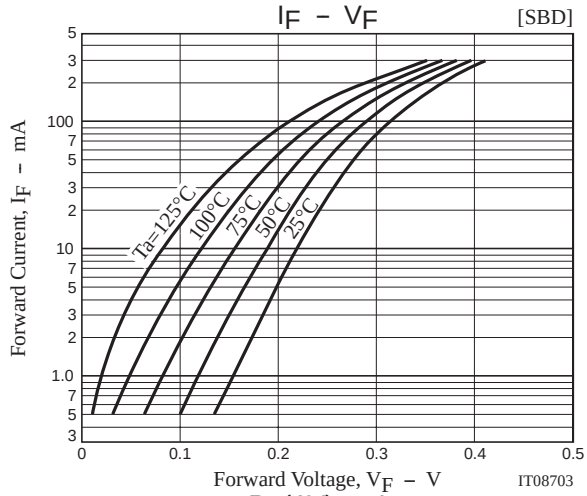
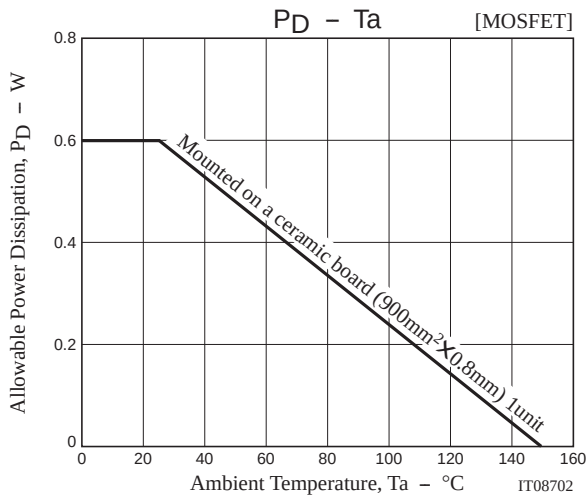
[MOSFET]

 t_{rr} Test Circuit

[SBD]







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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