



SANYO Semiconductors

DATA SHEET

MCH5823

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

General-Purpose Switching Device Applications

Features

- Composite type with a P-Channel Silicon MOSFET (MCH3339) and a Schottky Barrier Diode (SS10015M) 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 _{DSS}		-12	V
Gate-to-Source Voltage	V _{GSS}		±12	V
Drain Current (DC)	I _D		-1.5	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	-6.0	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (900mm ² ×0.8mm) 1unit	0.8	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		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

Marking : QZ

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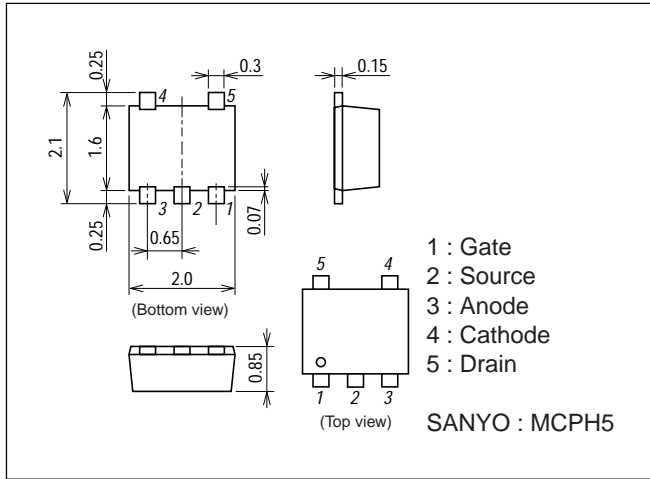
MCH5823

Electrical Characteristics at Ta=25°C

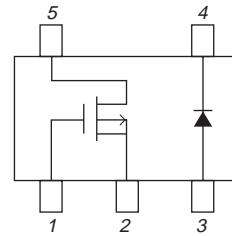
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0$	-12			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-12V, V_{GS}=0$			-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 9.6V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-6V, I_D=-1mA$	-1.0		-2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-6V, I_D=-0.8A$	0.72	1.2		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}	$I_F=0.3A$		0.30	0.33	V
	V_{F2}	$I_F=0.5A$		0.33	0.36	V
Reverse Current	I_R	$V_R=6V$			90	μA
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



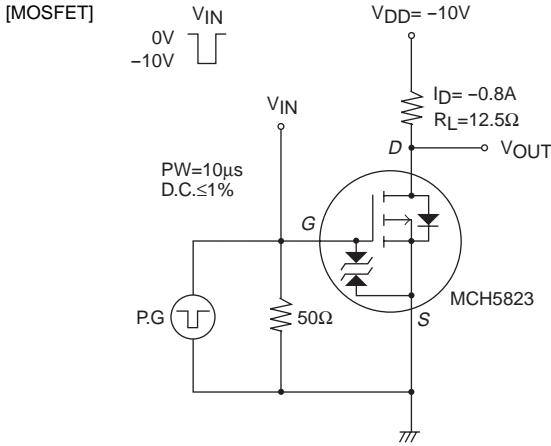
Electrical Connection



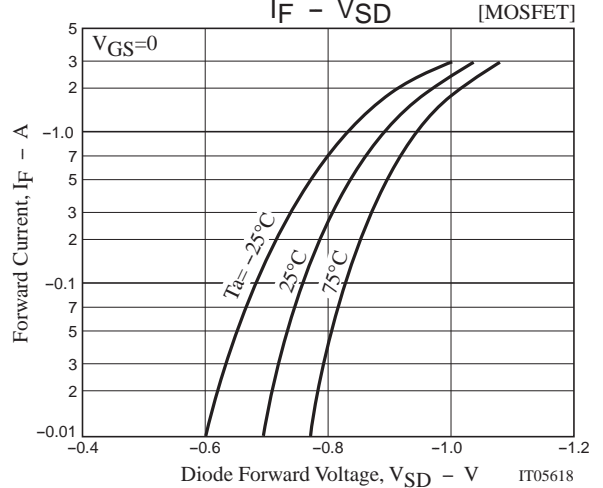
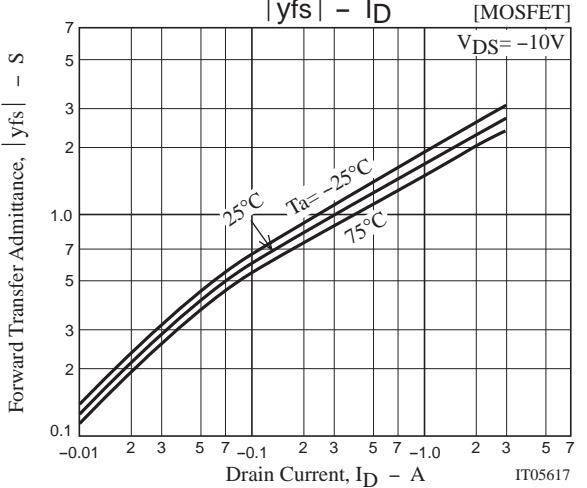
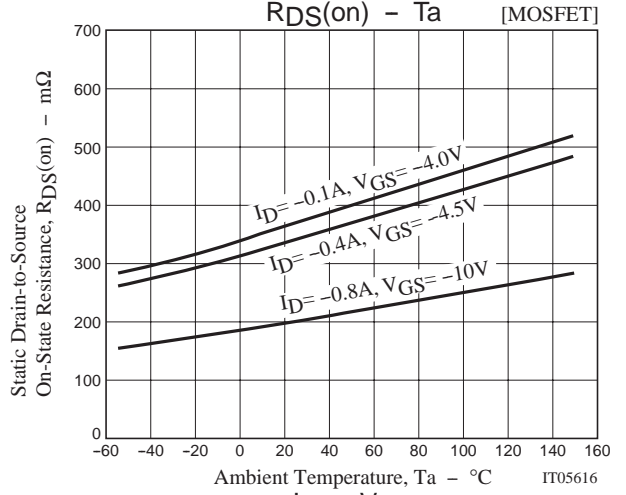
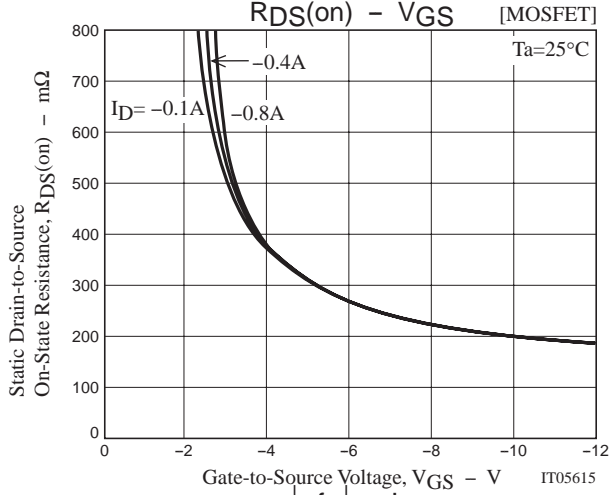
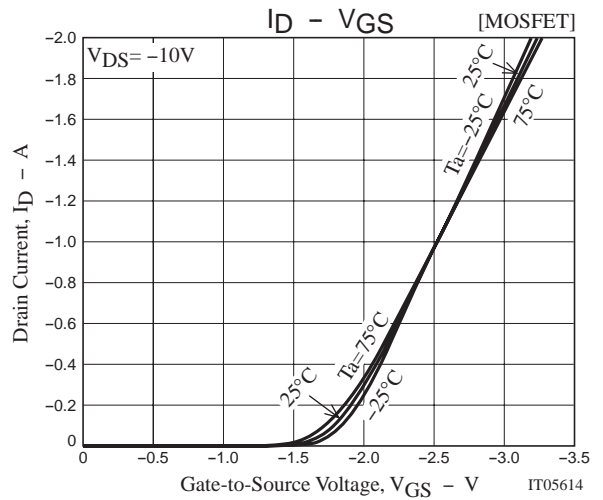
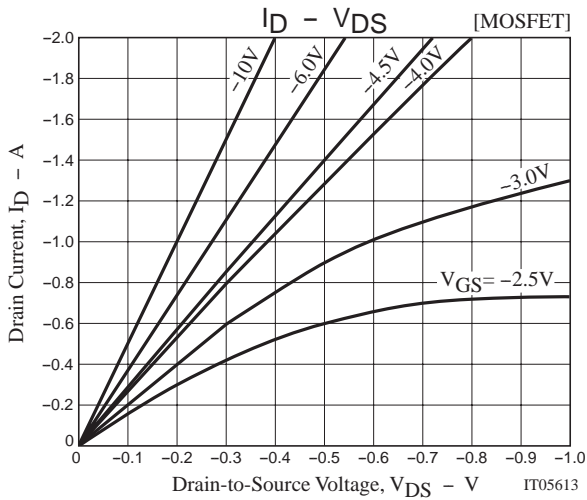
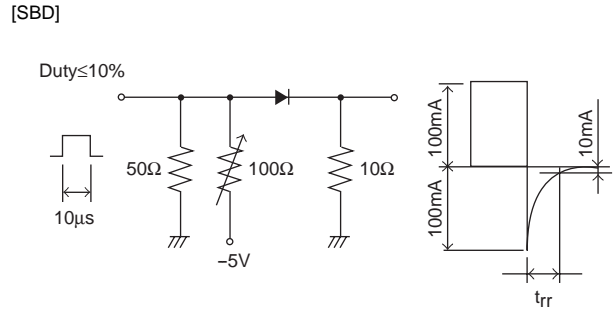
1 : Gate
2 : Source
3 : Anode
4 : Cathode
5 : Drain

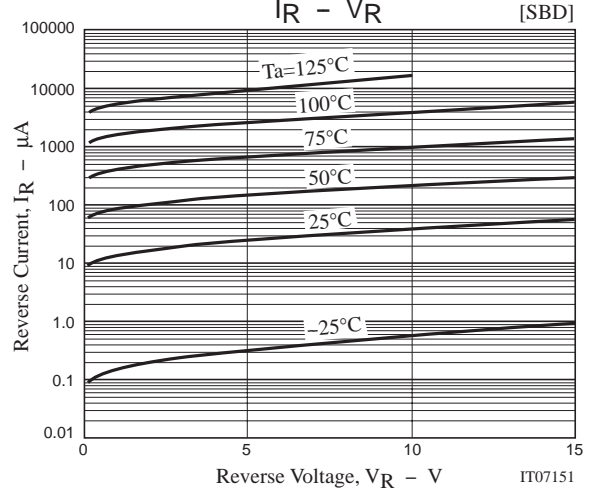
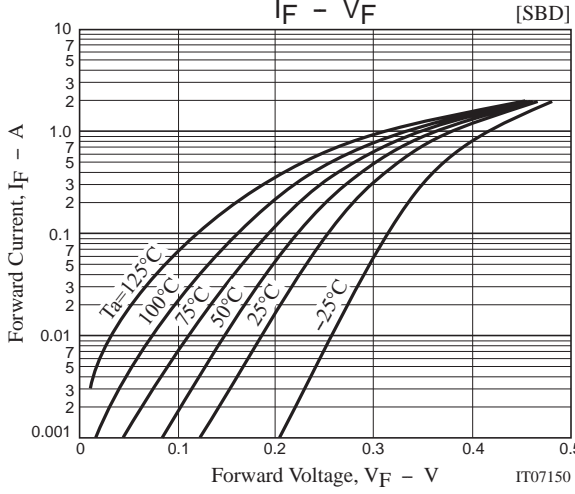
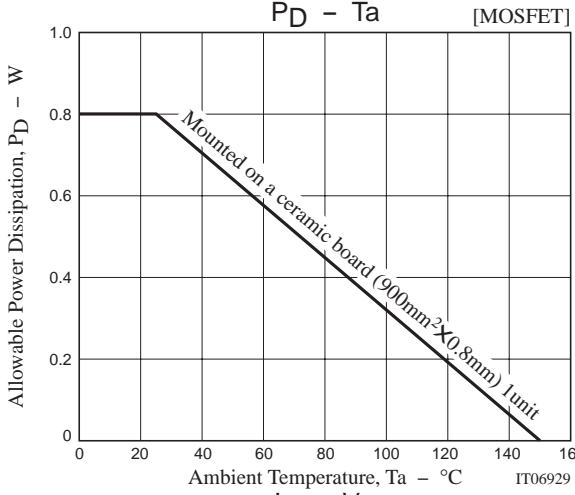
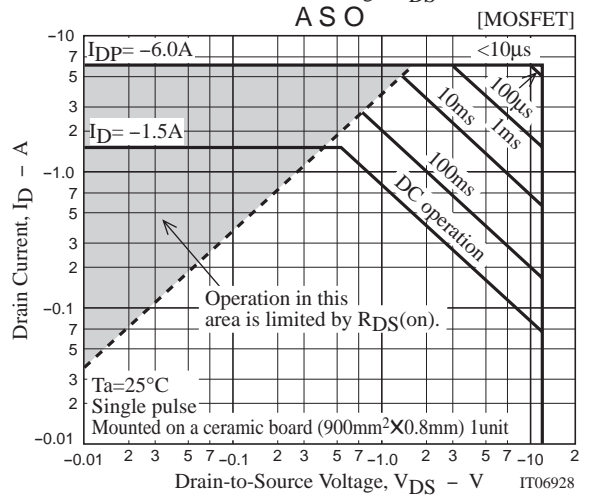
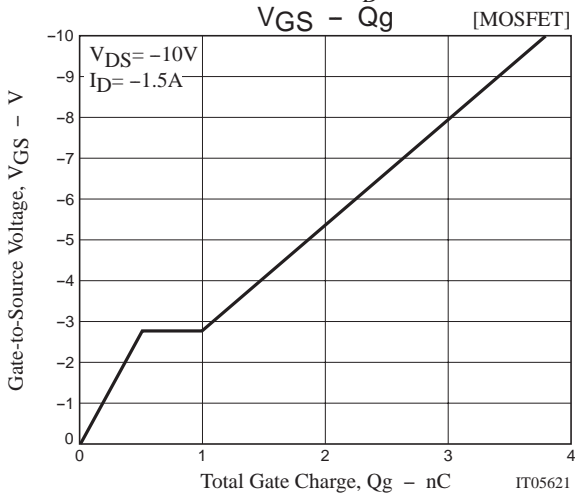
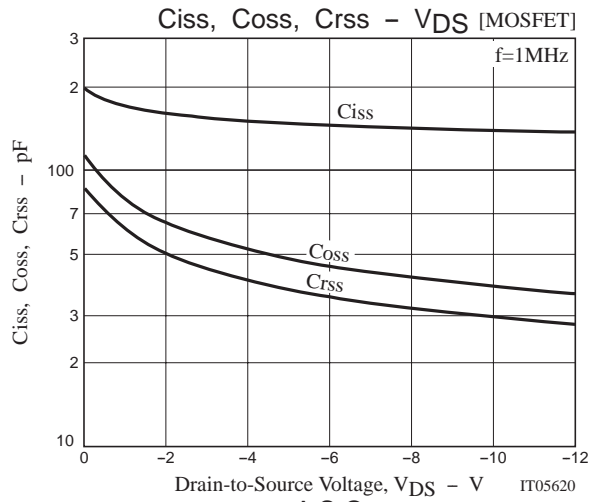
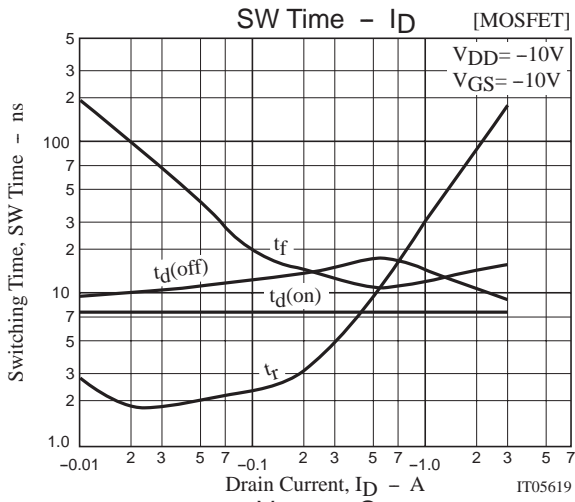
Top view

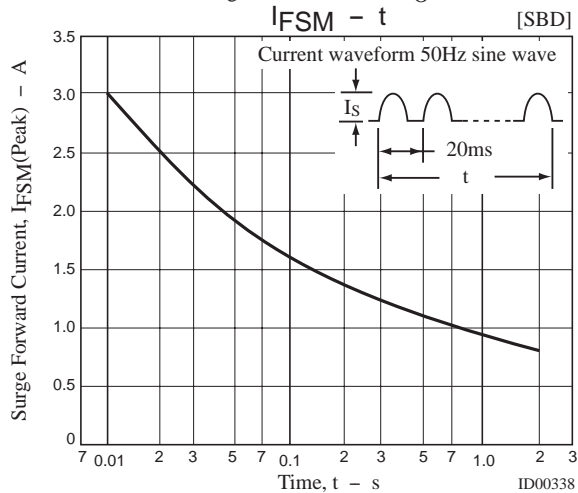
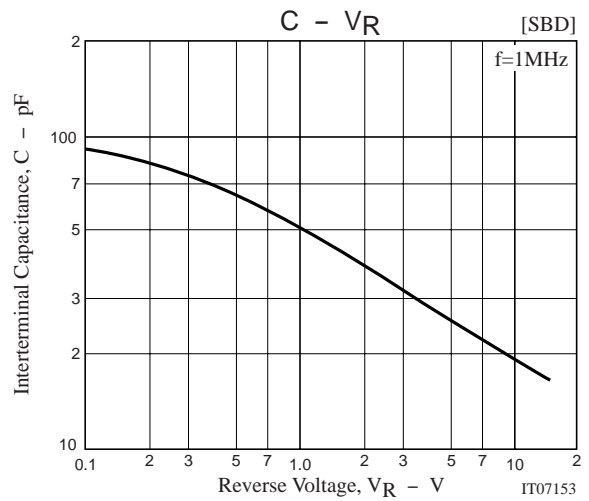
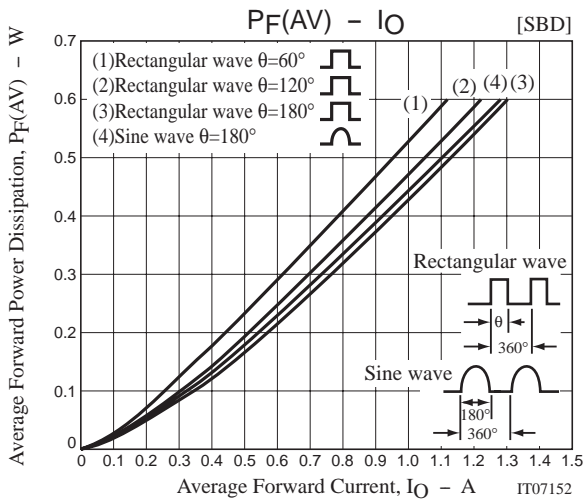
Switching Time Test Circuit



t_{rr} Test Circuit







Note on usage : Since the MCH5823 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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