

Ordering number : ENN6958

MOSFET : N-Channel Silicon MOSFET
SBD : Schottky Barrier Diode



MCH5803

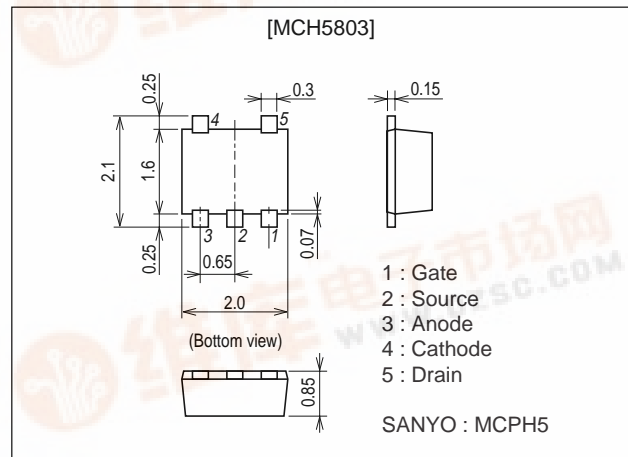
DC / DC Converter Applications

Features

- Composite type with an N-Channel Silicon MOSFET (MCH3408) and a Schottky Barrier Diode (SBS006M) 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.

Package Dimensions

unit : mm
2195



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	V _{GSS}		±20	V
Drain Current (DC)	I _D		1.4	A
Drain Current (Pulse)	I _{DP}	PW≤10μs, duty cycle≤1%	5.6	A
Allowable Power Dissipation	P _D	Mounted on a ceramic board (600mm ² X0.8mm) 1unit	0.8	W
Channel Temperature	T _{ch}		150	°C
Storage Temperature	T _{stg}		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V _R RM		30	V
Nonrepetitive Peak Reverse Surge Voltage	V _R S		30	V
Average Output Current	I _O		0.5	A
Surge Forward Current	I _F SM	50Hz sine wave, 1 cycle	10	A
Junction Temperature	T _J		-55 to +125	°C
Storage Temperature	T _{stg}		-55 to +125	°C

Marking : QC

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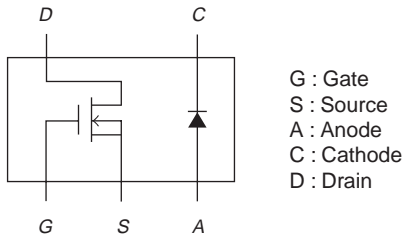


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Electrical Characteristics at Ta=25°C

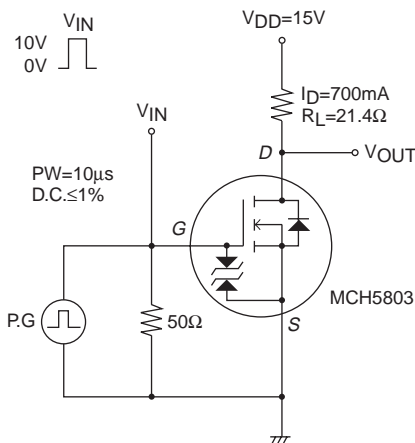
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V, V_{DS}=0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=700mA$	0.85	1.2		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=700mA, V_{GS}=10V$		230	300	$m\Omega$
	$R_{DS(on)2}$	$I_D=400mA, V_{GS}=4V$		370	520	$m\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10V, f=1MHz$		70		pF
Output Capacitance	C_{oss}	$V_{DS}=10V, f=1MHz$		15		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=10V, f=1MHz$		10		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		6		ns
Rise Time	t_r	See specified Test Circuit		3		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		10		ns
Fall Time	t_f	See specified Test Circuit		4		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		2.6		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		0.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=10V, I_D=1.4A$		0.5		nC
Diode Forward Voltage	V_{SD}	$I_S=1.4A, V_{GS}=0$		0.9	1.2	V
[SBD]						
Reverse Voltage	V_R	$I_R=0.5mA$	30			V
Forward Voltage	V_{F1}	$I_F=0.3A$		0.35	0.40	V
	V_{F2}	$I_F=0.5A$		0.42	0.47	V
Reverse Current	I_R	$V_R=10V$			200	μA
Interterminal Capacitance	C	$V_R=10V, f=1MHz$		20		pF
Reverse Recovery Time	t_{rr}	$I_F=I_R=100mA$, See specified Test Circuit.			10	ns

Electrical Connection (Top view)



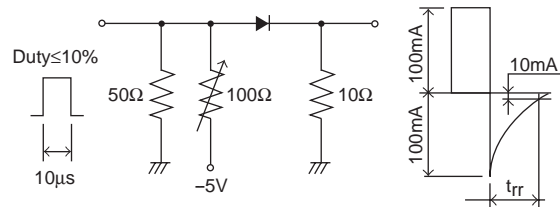
Switching Time Test Circuit

[MOSFET]

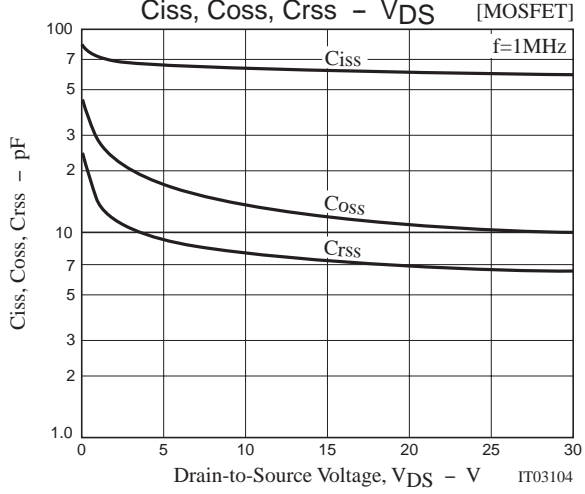
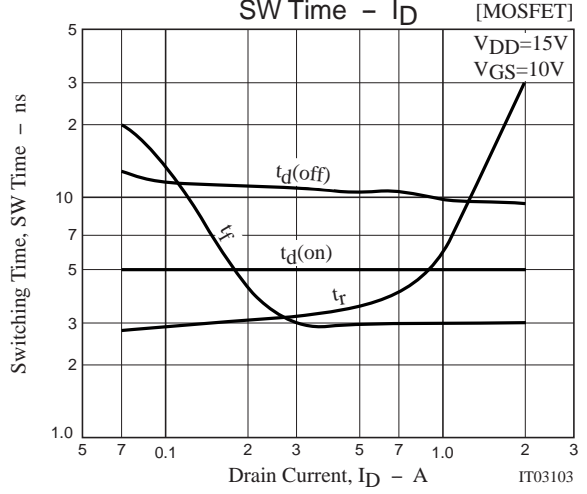
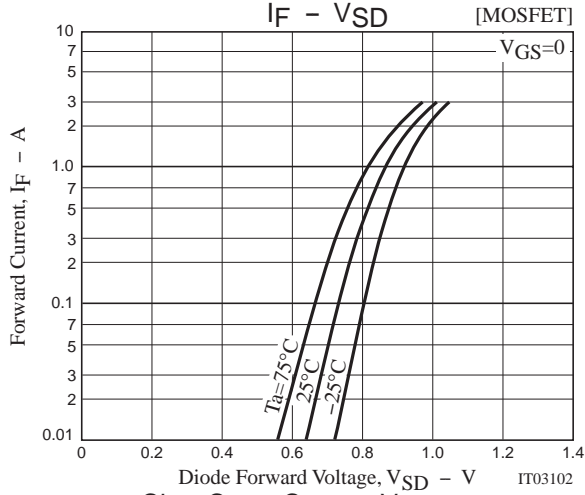
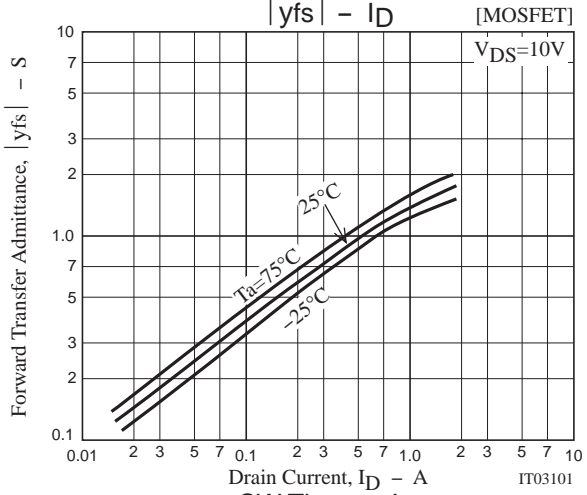
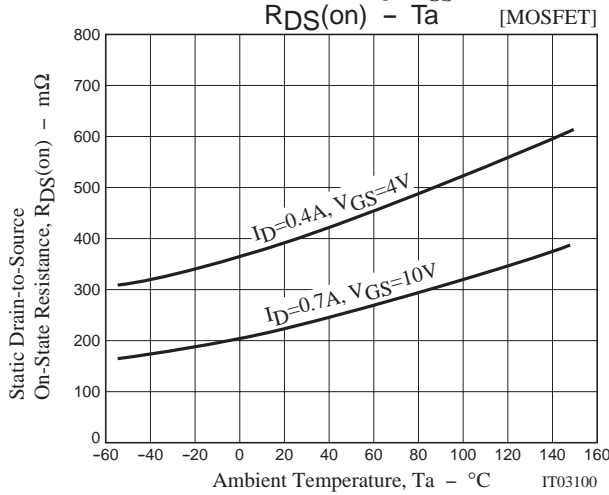
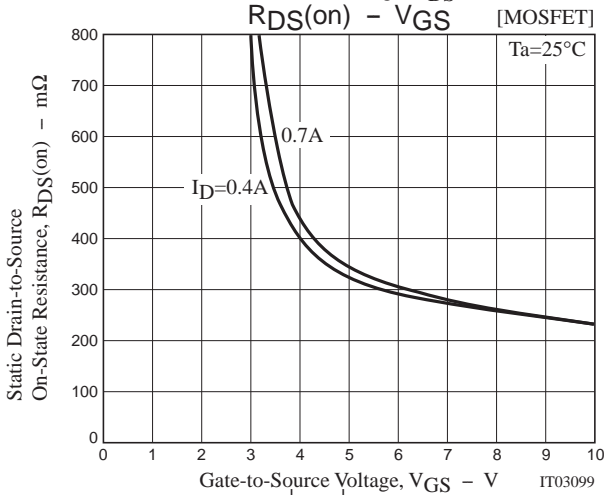
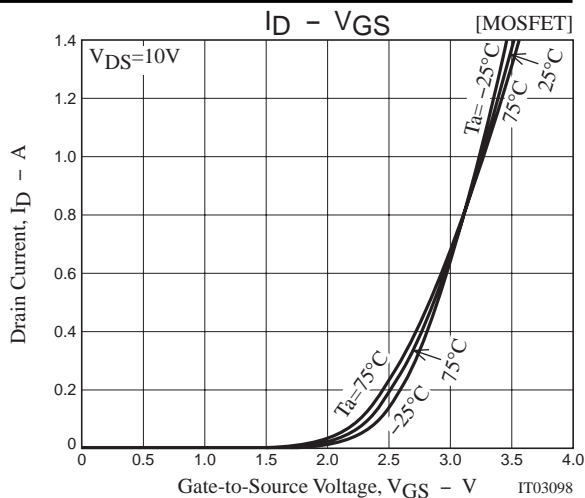
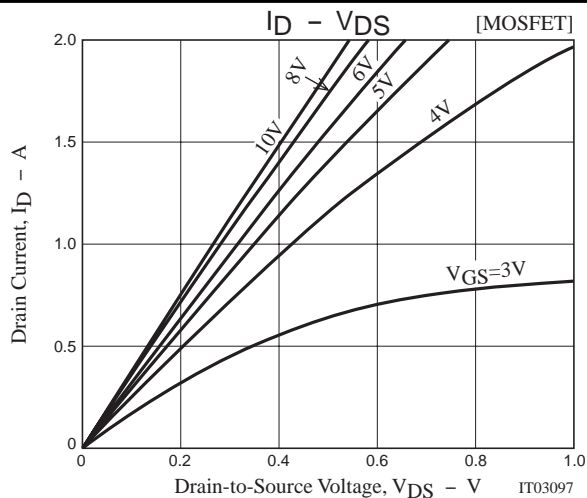


t_{rr} Test Circuit

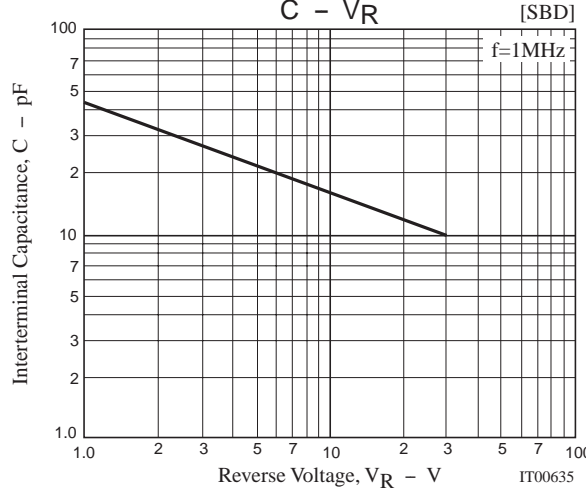
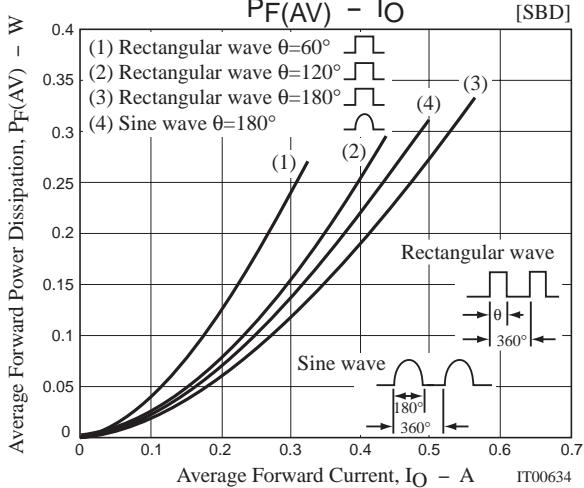
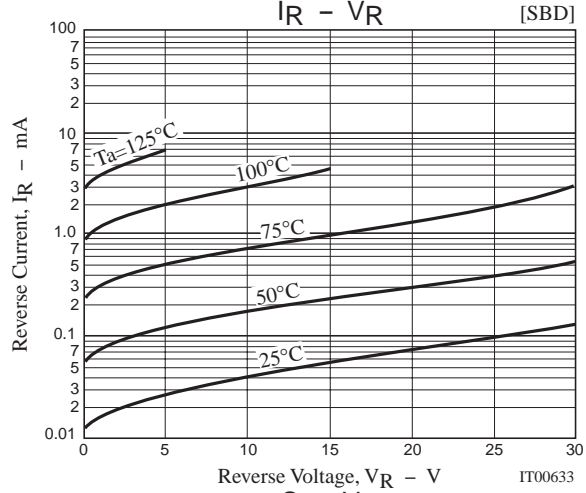
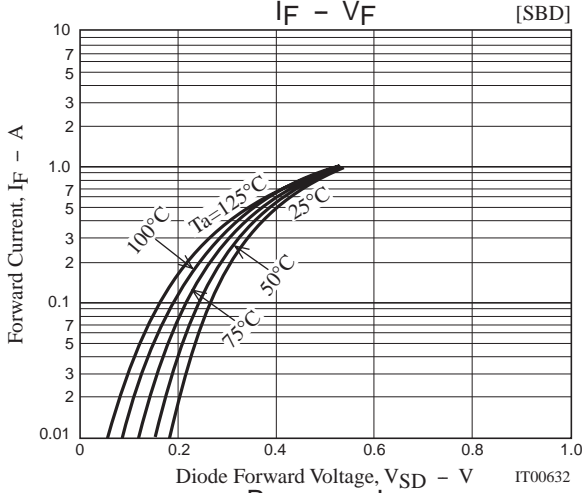
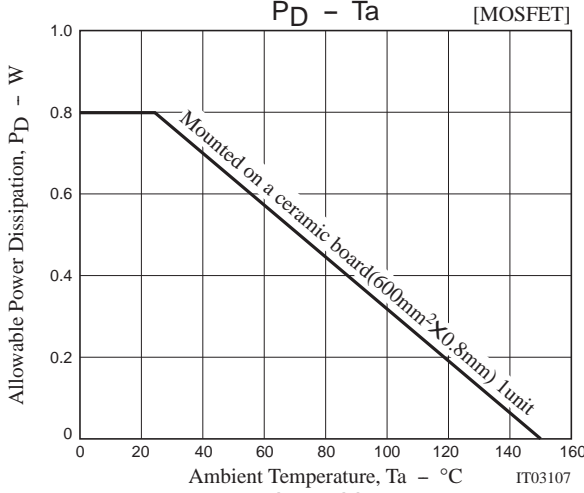
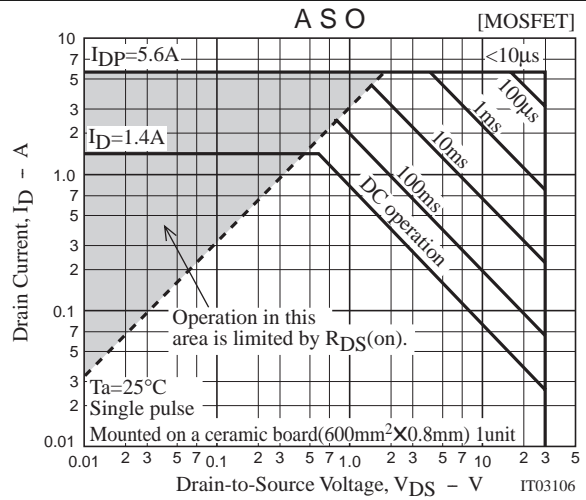
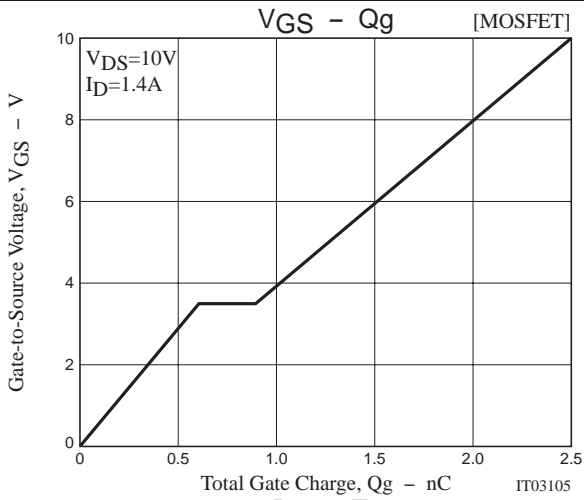
[SBD]



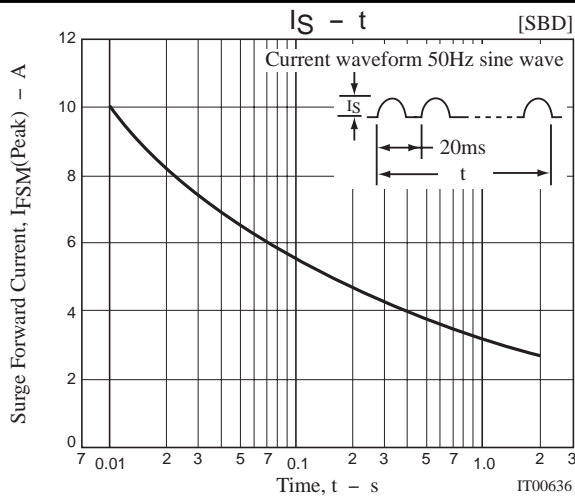
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