Ordering number : ENN7312

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

FW503

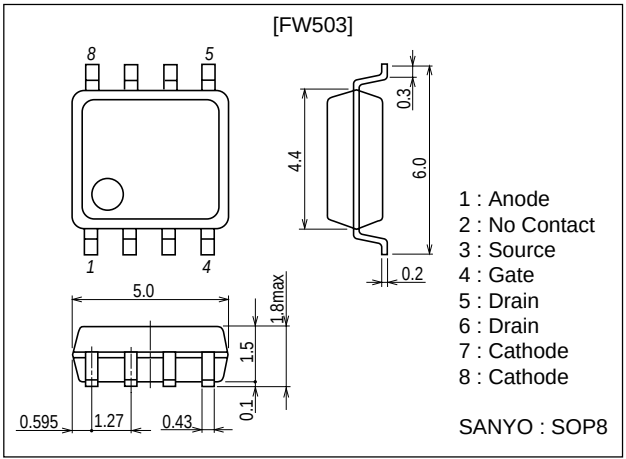
DC / DC Converter Applications

Features

- Composite type with a low ON-resistance, ultrahigh-speed switching, low voltage drive, P-channel MOSFET and a short reverse recovery time, low forward voltage schottky barrier diode facilitating high-density mounting.
- The FW503 incorporates two chips being equivalent to the MCH3306 and the SBS004 in one package.

Package Dimensions

unit : mm
2210



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V_{DSS}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−12	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (2000mm²×0.8mm) ≤10S	2	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−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	10	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

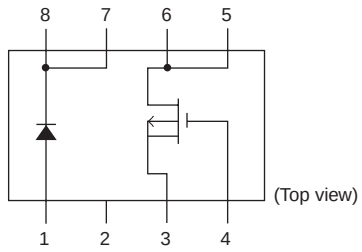
Marking : W503

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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	–20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–20V, V_{GS}=0			–10	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GSS}=±8V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=–10V, I_D=–1mA	–0.3		–1.0	V
Forward Transfer Admittance	|yfs|	V_{DS}=–10V, I_D=–3A	3.5	5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=–3A, V_{GS}=–4.5V		130	170	mΩ
	R_{DS}(on)2	I_D=–2.5A, V_{GS}=–2.5V		170	240	mΩ
	R_{DS}(on)3	I_D=–0.1A, V_{GS}=–1.8V		230	340	mΩ
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		410		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		40		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		9		ns
Rise Time	t_r	See specified Test Circuit.		27		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		42		ns
Fall Time	t_f	See specified Test Circuit.		38		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–3A		5.0		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–3A		0.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–4.5V, I_D=–3A		1.2		nC
Diode Forward Voltage	V_{SD}	I_S=–3A, V_{GS}=0		–1.0	–1.2	V
[SBD]						
Reverse Voltage	V_R	I_R=1mA	15			V
Forward Voltage	V_F1	I_F=0.5A		0.3	0.35	V
	V_F2	I_F=1A		0.35	0.4	V
Reverse Current	I_R	V_R=15V			500	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz cycle		42		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit.			15	ns

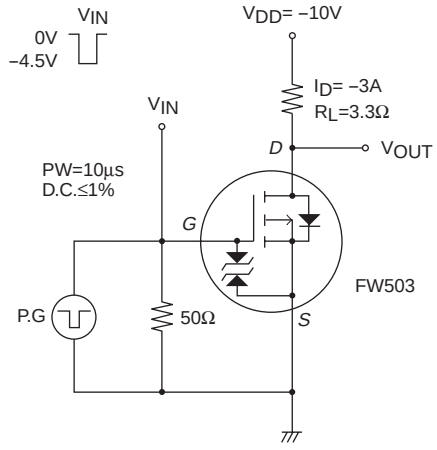
Electrical Connection



1 : Anode
2 : No Contact
3 : Source
4 : Gate
5 : Drain
6 : Drain
7 : Cathode
8 : Cathode

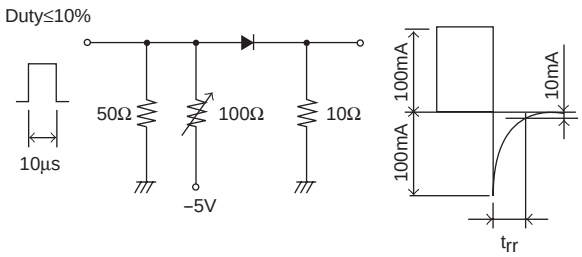
Switching Time Test Circuit

[MOSFET]

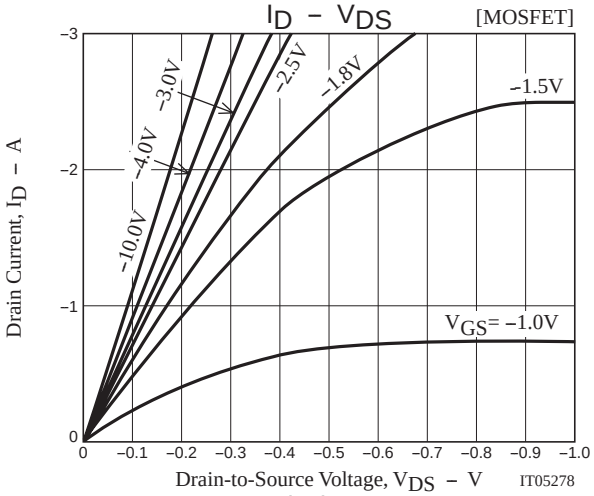


t_{rr} Test Circuit

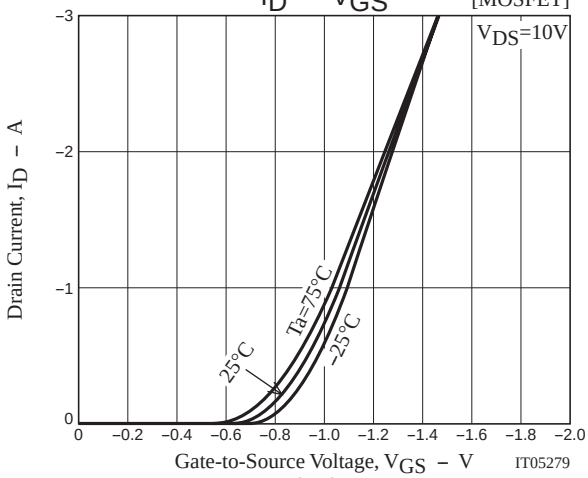
[SBD]



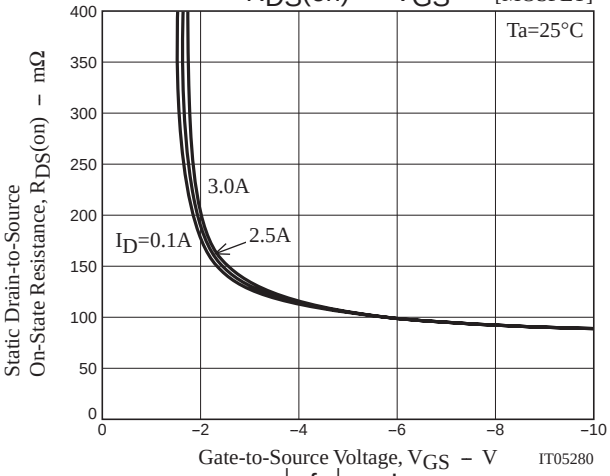
I_D – V_{DS} [MOSFET]



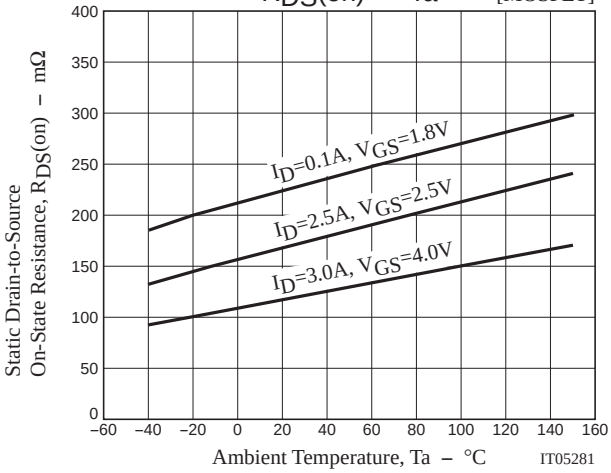
I_D – V_{GS} [MOSFET]



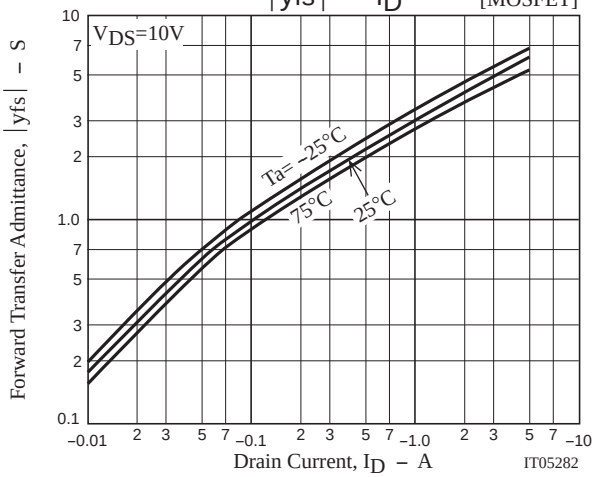
$R_{DS}(on)$ – V_{GS} [MOSFET]



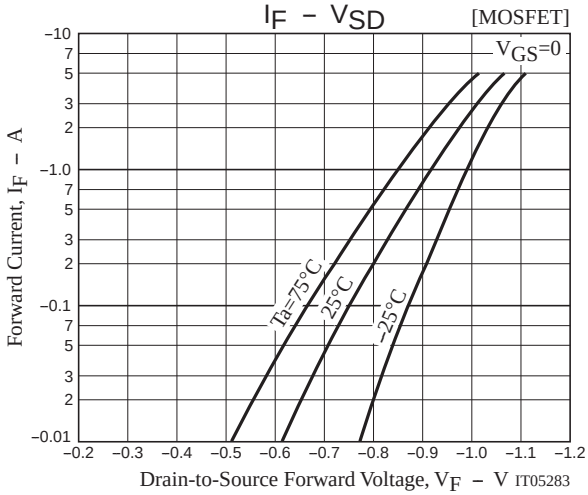
$R_{DS}(on)$ – Ta [MOSFET]



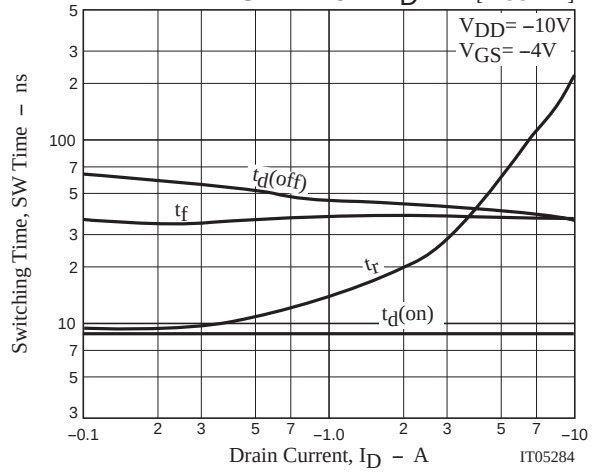
$|yfs|$ – I_D [MOSFET]



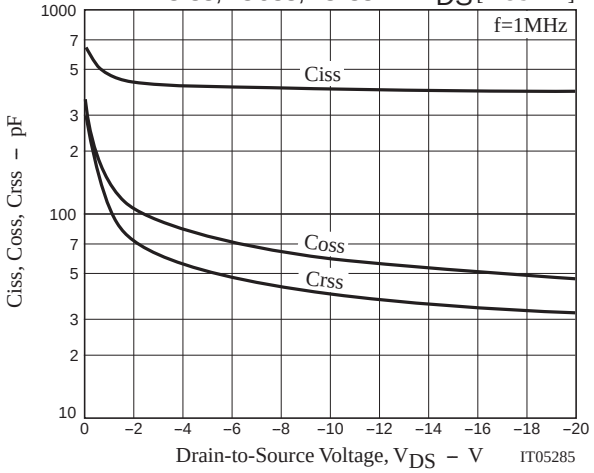
I_F – V_{SD} [MOSFET]



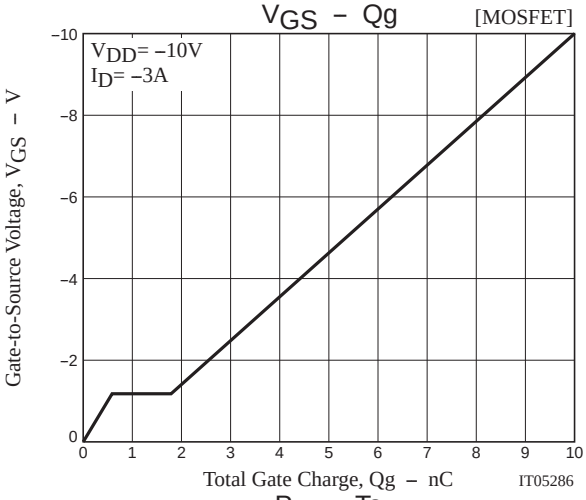
SW Time – I_D [MOSFET]



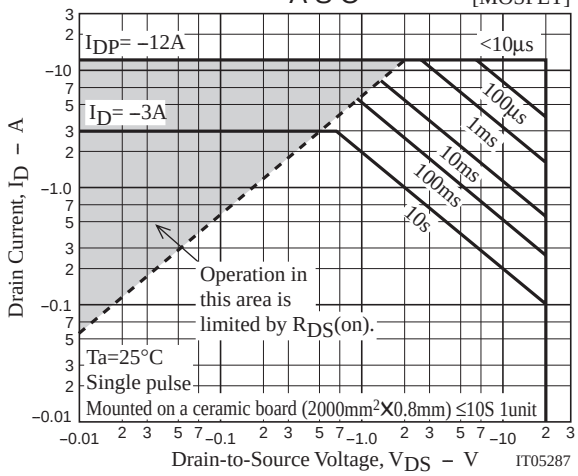
Ciss, Coss, Crss – V_{DS} [MOSFET]



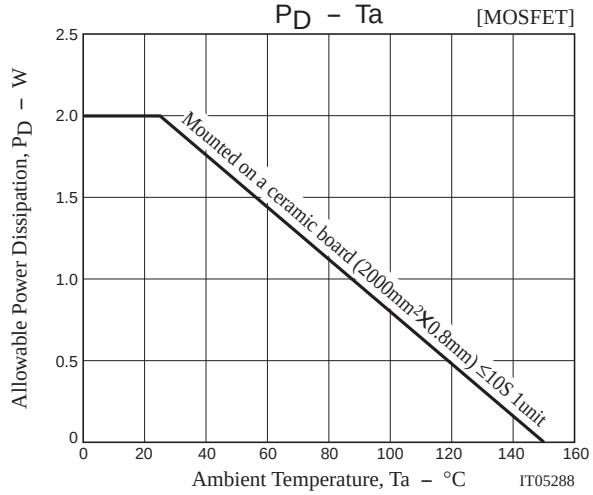
V_{GS} – Qg [MOSFET]



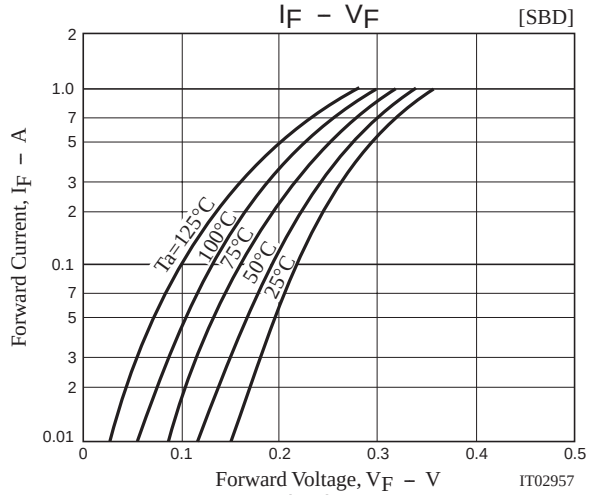
A S O [MOSFET]



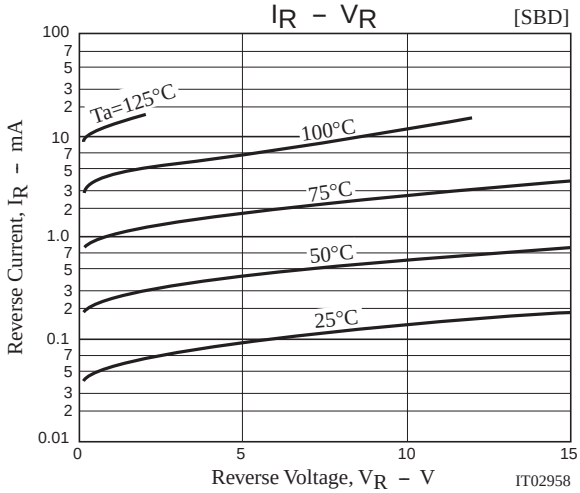
P_D – Ta [MOSFET]



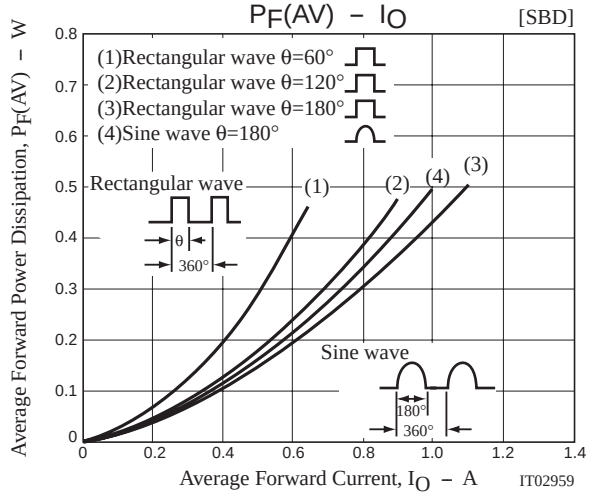
I_F – V_F [SBD]



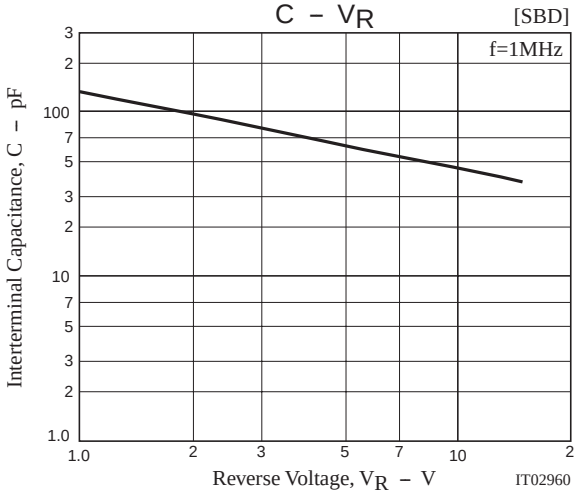
I_R – V_R [SBD]

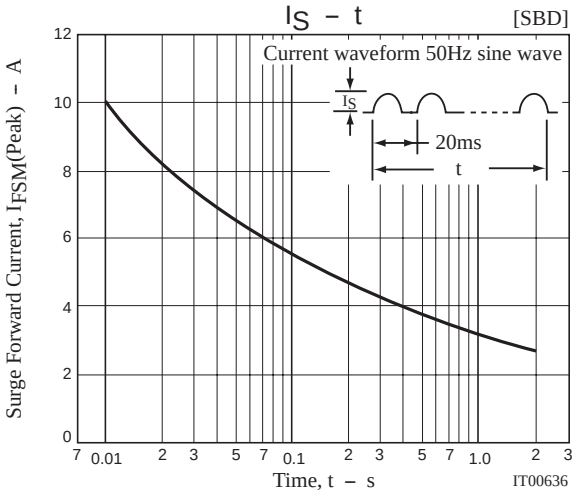


$P_{F(AV)}$ – I_O [SBD]



C – V_R [SBD]





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