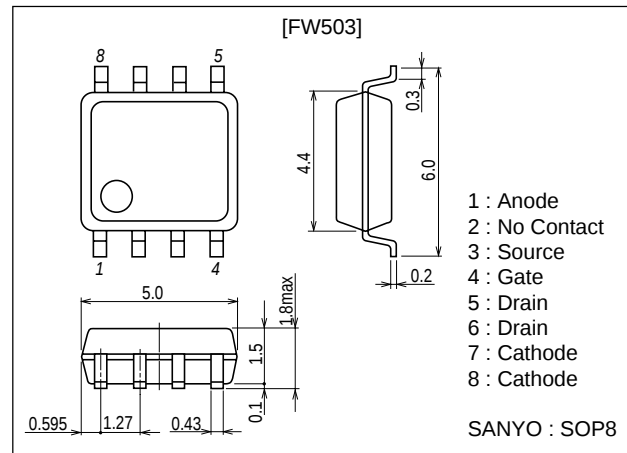


**FW503****DC / DC Converter Applications****Features**

- 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 Dimensionsunit : 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	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	10	A
Junction Temperature	T _J		-55 to +125	°C
Storage Temperature	T _{stg}		-55 to +125	°C

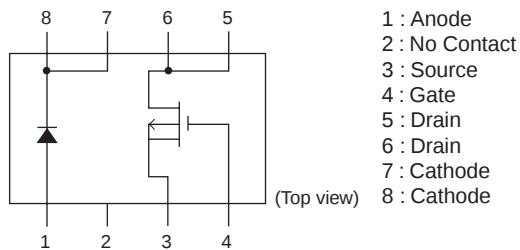
Marking : W503

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Electrical Characteristics at $T_a=25^{\circ}\text{C}$

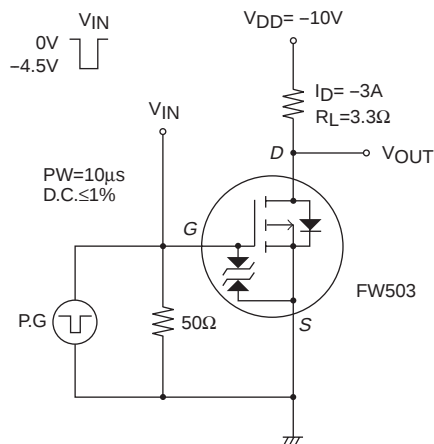
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=-1mA, VGS=0	-20			V
Zero-Gate Voltage Drain Current	IDSS	VDS=-20V, VGS=0			-10	μA
Gate-to-Source Leakage Current	IGSS	VGSS=±8V, VDS=0			±10	μA
Cutoff Voltage	VGS(off)	VDS=-10V, ID=-1mA	-0.3		-1.0	V
Forward Transfer Admittance	yfs	VDS=-10V, ID=-3A	3.5	5		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=-3A, VGS=-4.5V		130	170	mΩ
	RDS(on)2	ID=-2.5A, VGS=-2.5V		170	240	mΩ
	RDS(on)3	ID=-0.1A, VGS=-1.8V		230	340	mΩ
Input Capacitance	Ciss	VDS=-10V, f=1MHz		410		pF
Output Capacitance	Coss	VDS=-10V, f=1MHz		60		pF
Reverse Transfer Capacitance	Crss	VDS=-10V, f=1MHz		40		pF
Turn-ON Delay Time	td(on)	See specified Test Circuit.		9		ns
Rise Time	tr	See specified Test Circuit.		27		ns
Turn-OFF Delay Time	td(off)	See specified Test Circuit.		42		ns
Fall Time	tf	See specified Test Circuit.		38		ns
Total Gate Charge	Qg	VDS=-10V, VGS=-4.5V, ID=-3A		5.0		nC
Gate-to-Source Charge	Qgs	VDS=-10V, VGS=-4.5V, ID=-3A		0.6		nC
Gate-to-Drain "Miller" Charge	Qgd	VDS=-10V, VGS=-4.5V, ID=-3A		1.2		nC
Diode Forward Voltage	VSD	IS=-3A, VGS=0		-1.0	-1.2	V
[SBD]						
Reverse Voltage	VR	IR=1mA	15			V
Forward Voltage	VF1	IF=0.5A		0.3	0.35	V
	VF2	IF=1A		0.35	0.4	V
Reverse Current	IR	VR=15V			500	μA
Interterminal Capacitance	C	VR=10V, f=1MHz cycle		42		pF
Reverse Recovery Time	trr	IF=IR=100mA, See specified Test Circuit.			15	ns

Electrical Connection

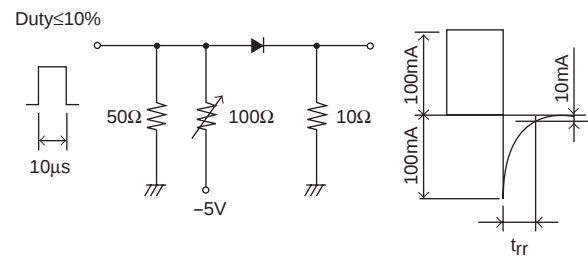


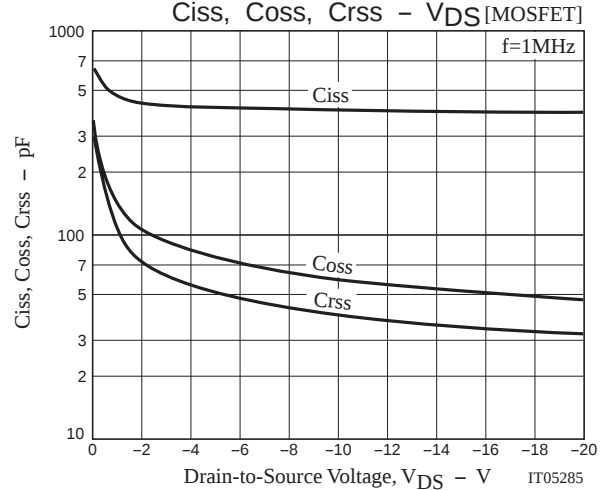
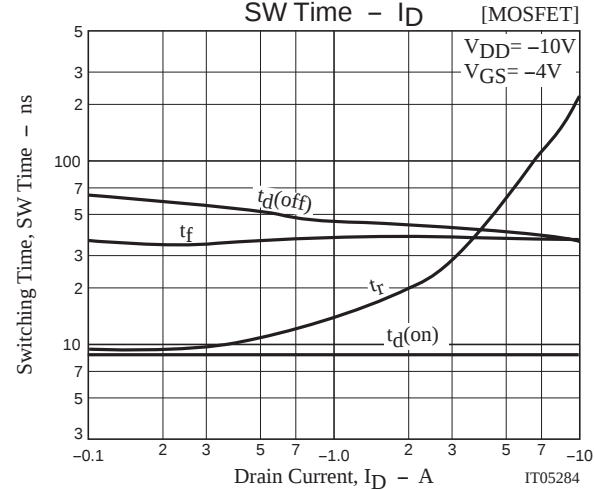
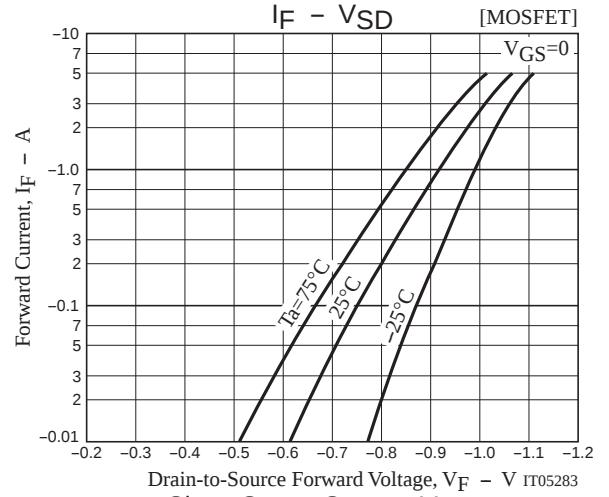
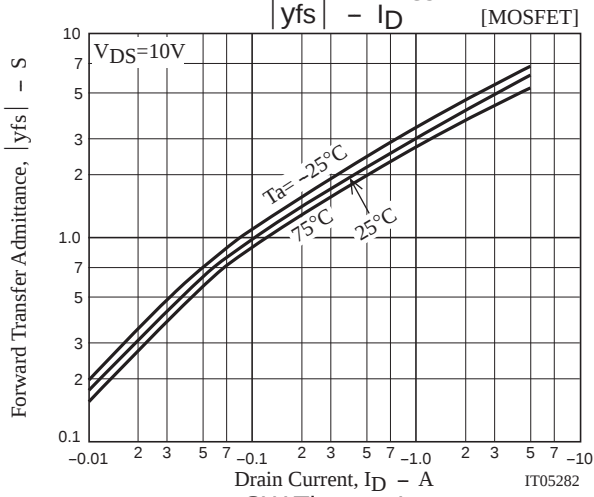
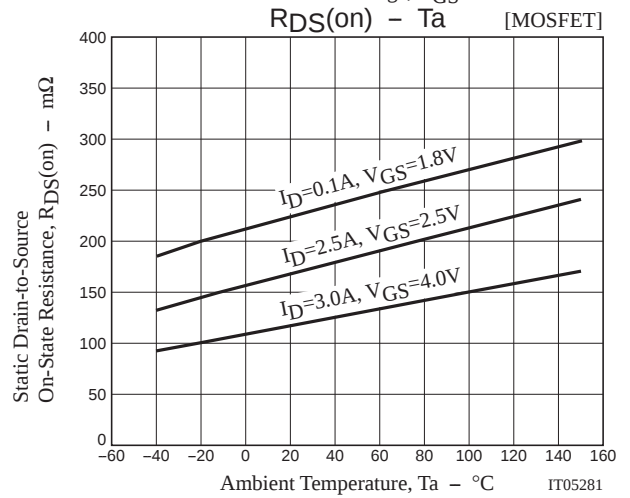
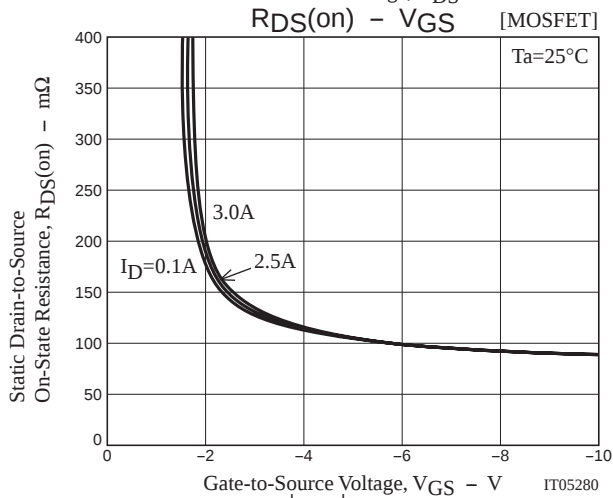
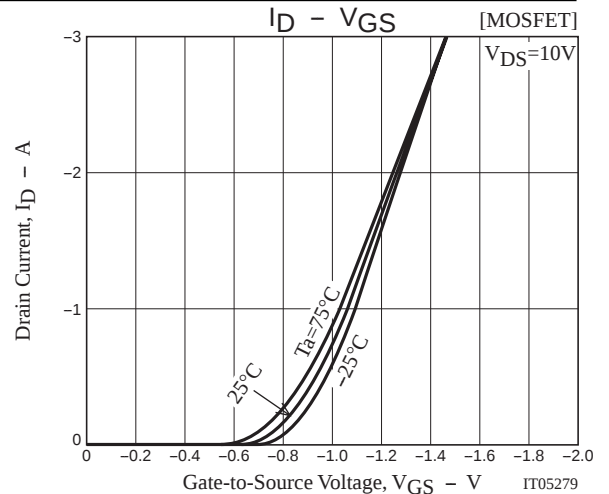
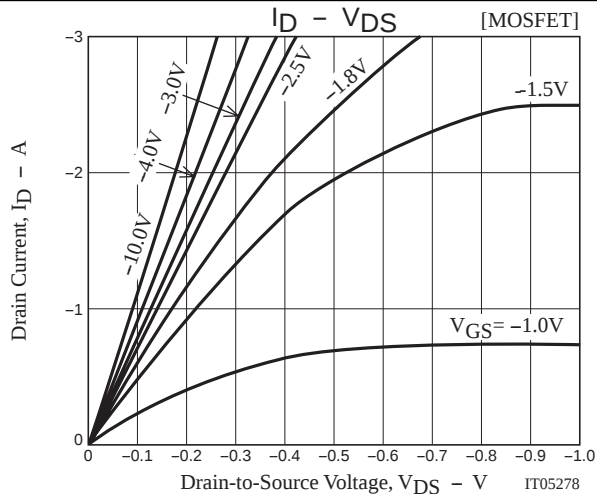
Switching Time Test Circuit

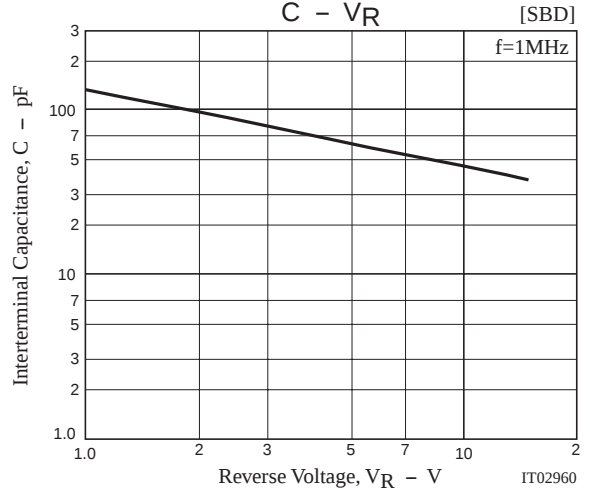
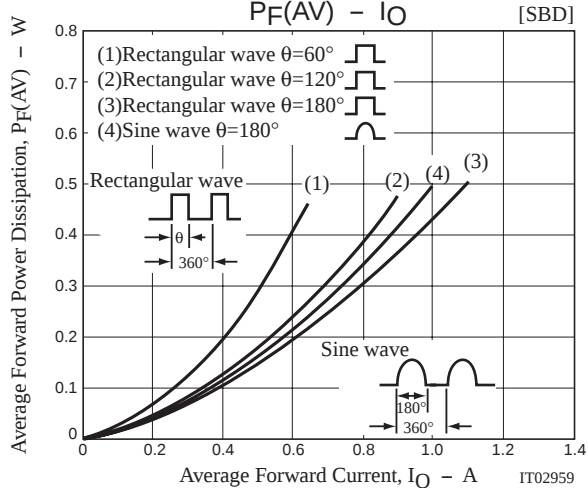
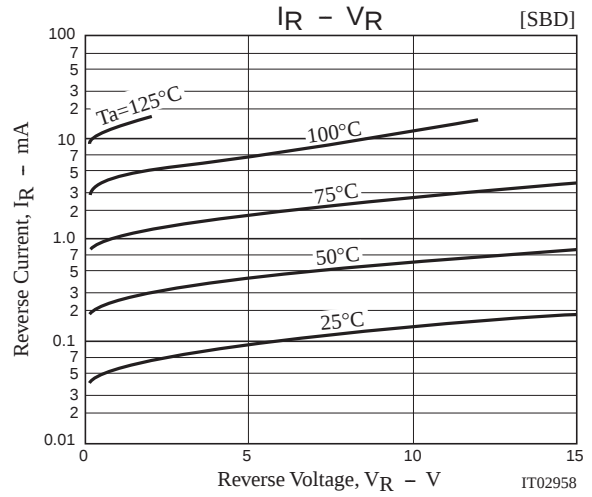
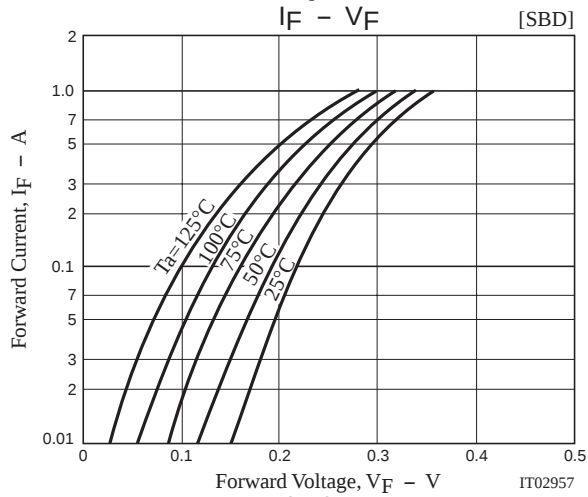
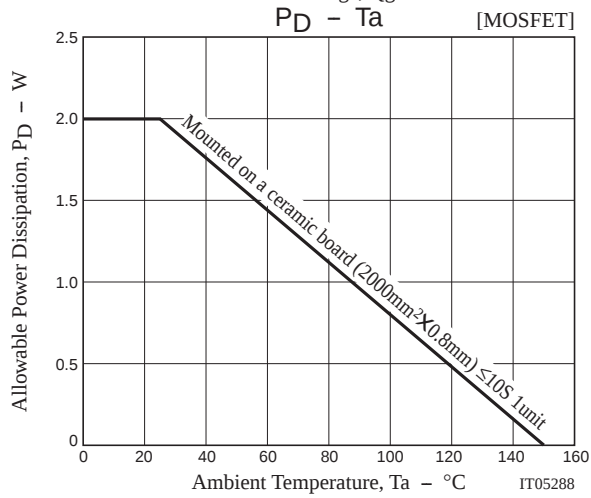
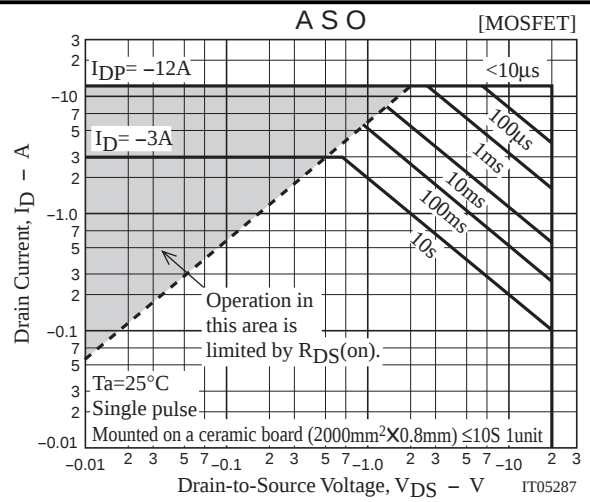
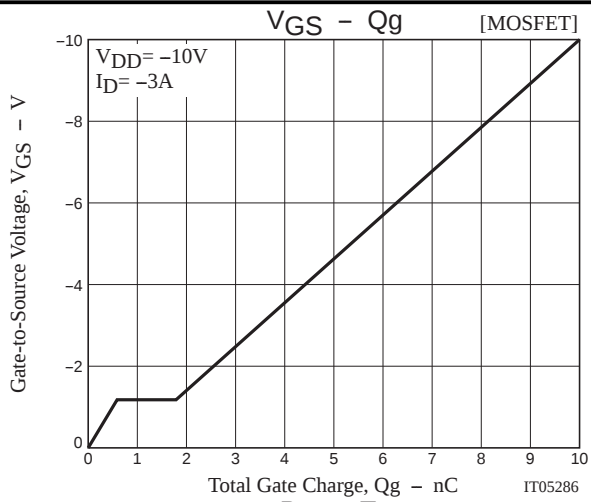
[MOSFET]

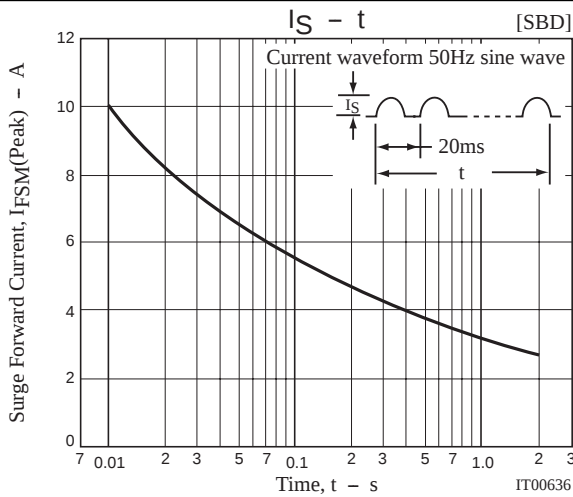
 t_{rr} Test Circuit

[SBD]









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