Ordering number : ENN8403

SANYO Semiconductors

DATA SHEET

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

FW507 — General-Purpose Switching Device 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 FW507 incorporates two chips being equivalent to the MCH3312 and the SB1003M in one package.

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		−3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−12	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (3000mm²X0.8mm) ≤10s 1unit	2	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		35	V
Average Output Current	I_O		1	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	Tj		−55 to +125	°C
Storage Temperature	Tstg		−55 to +125	°C

Marking : W507

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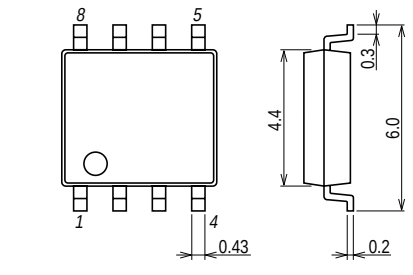
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=–1mA, V_{GS}=0V	–30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–30V, V_{GS}=0V			–1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=–10V, I_D=–1mA	–1.2		–2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=–10V, I_D=–3A	1.9	3.3		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=–3A, V_{GS}=–10V		115	150	mΩ
	R_{DS}(on)2	I_D=–1.5A, V_{GS}=–4V		210	295	mΩ
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		200		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		47		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		32		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		7.2		ns
Rise Time	t_r	See specified Test Circuit.		6.8		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		18		ns
Fall Time	t_f	See specified Test Circuit.		8.0		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		5.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		0.98		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–3A		0.82		nC
Diode Forward Voltage	V_{SD}	I_S=–3A, V_{GS}=0V		–0.91	–1.2	V
[SBD]						
Reverse Voltage	V_R	I_R=200μA	30			V
Forward Voltage	V_F	I_F=1A		0.47	0.55	V
Reverse Current	I_R	V_R=15V			15	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz		27		pF
Reverse Recovery Time	t_{rr}	I_F=I_R=100mA, See specified Test Circuit.			10	ns

Package Dimensions

unit : mm

7005-012



1 : Anode
2 : Anode
3 : Source
4 : Gate
5 : Drain
6 : Drain
7 : Cathode
8 : Cathode

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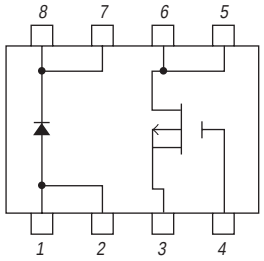
Electrical Connection



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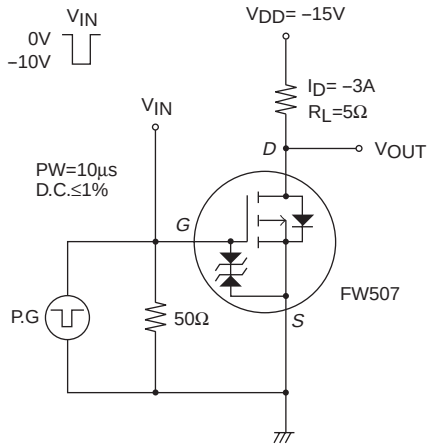
Top view

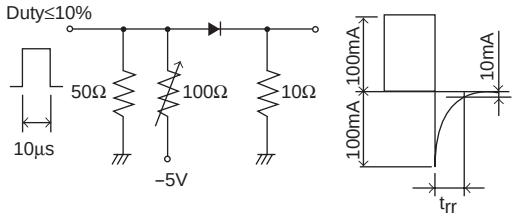
Switching Time Test Circuit

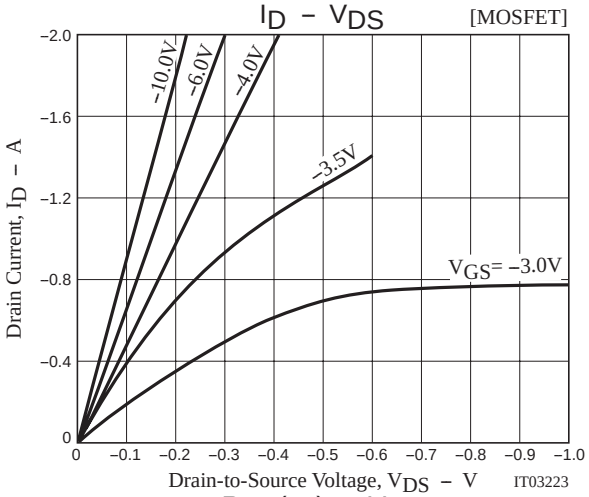
[MOSFET]

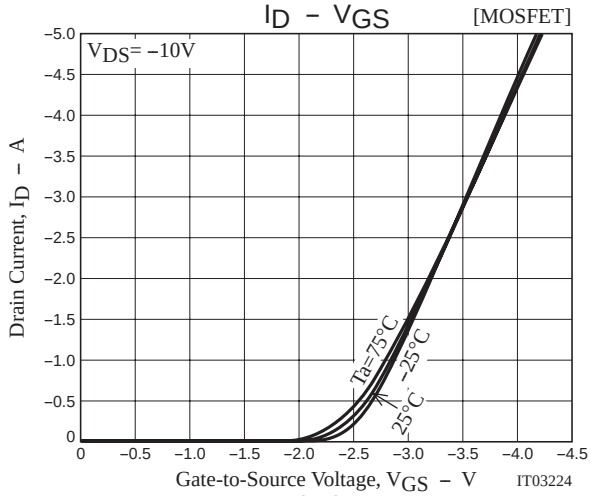


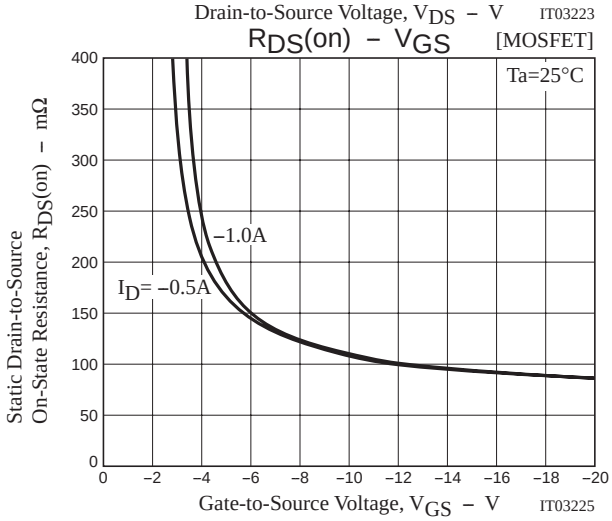
t_{rr} Test Circuit

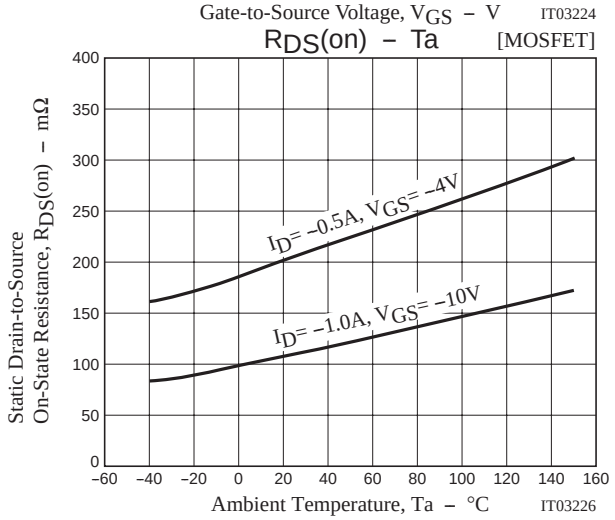
[SBD]

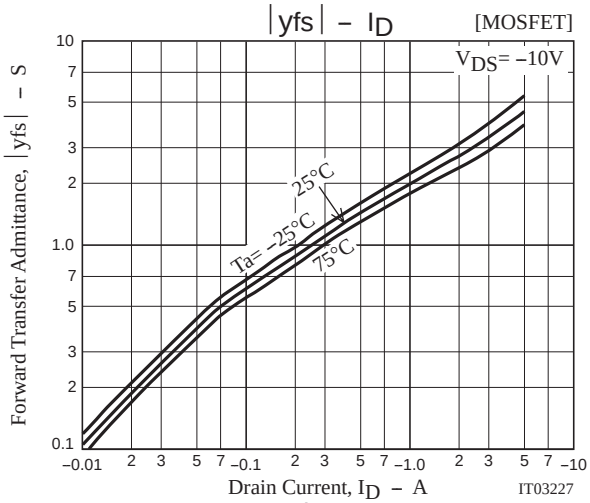


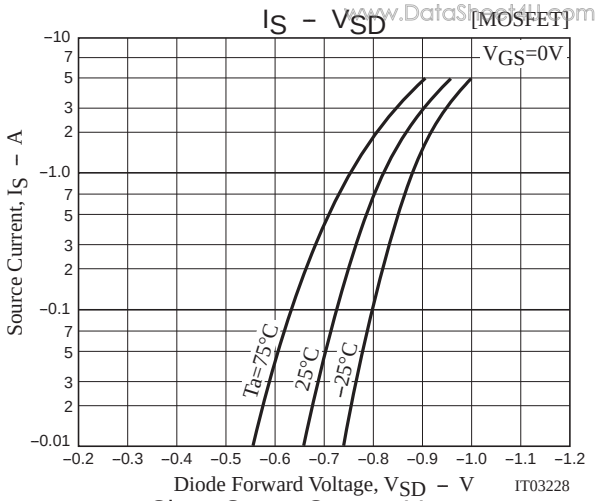


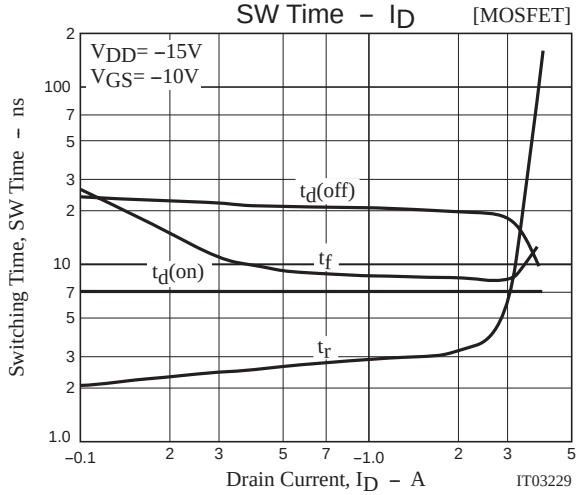


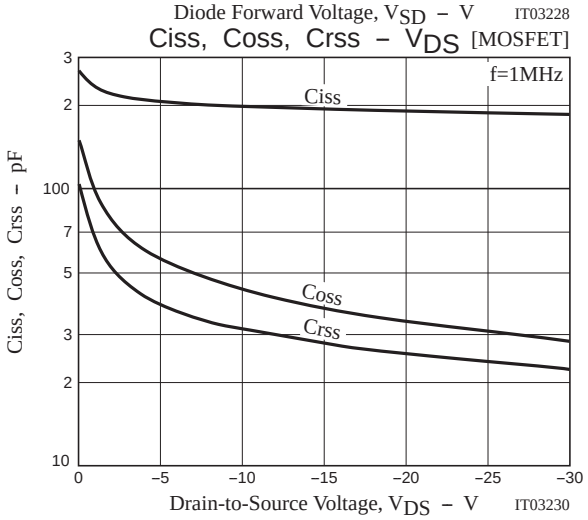


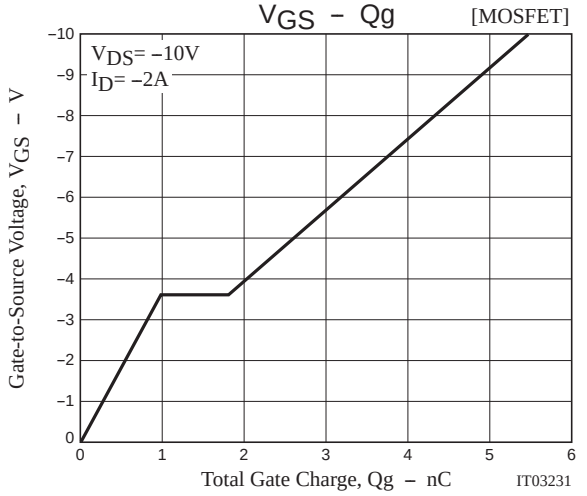


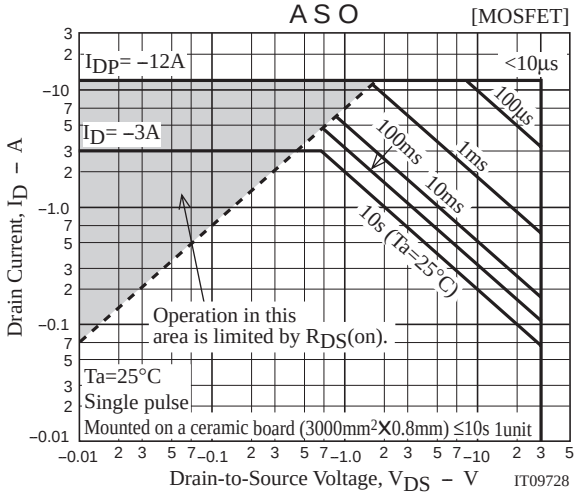


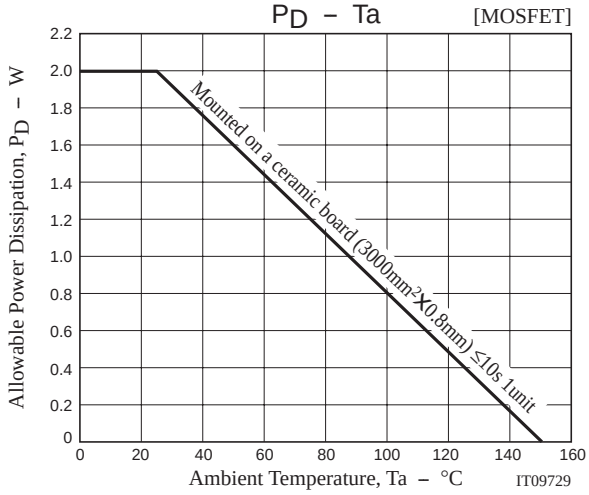




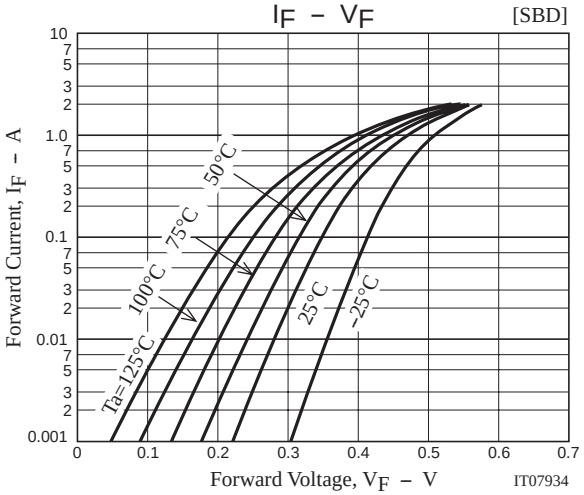




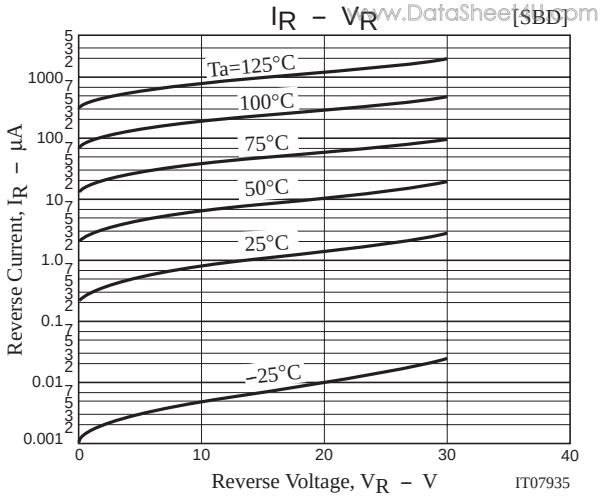




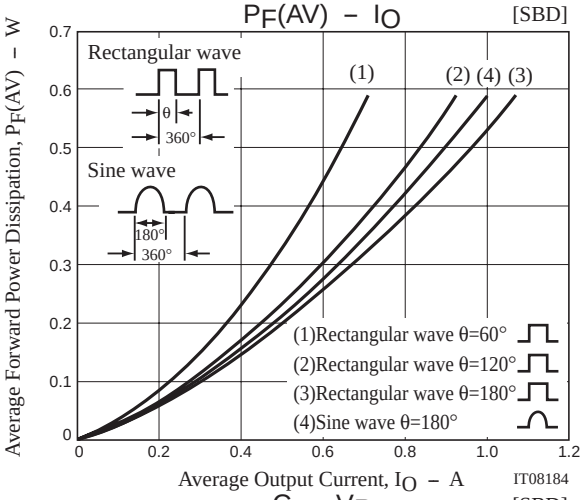
$I_F - V_F$ [SBD]



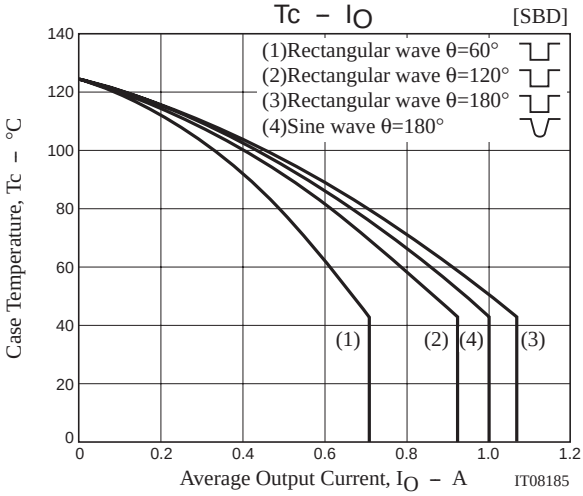
$I_R - V_R$ [SBD]



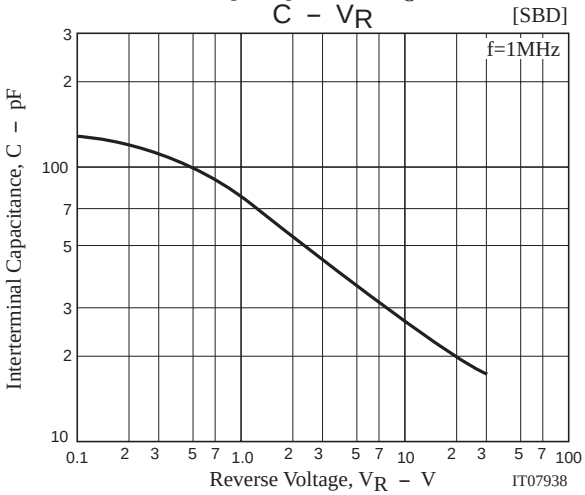
$P_{F(AV)} - I_O$ [SBD]



$T_C - I_O$ [SBD]



$C - V_R$ [SBD]



Note on usage : Since the FW507 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.