Ordering number:EN4891

FX851

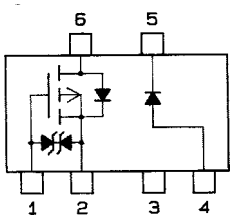
MOSFET:P-Channel Silicon MOSFET
SBD:Schottky Barrier Diode

DC-DC Converter Applications

Features

- Composite type composed of a low ON-resistance P-channel MOSFET for ultrahigh-speed switching and low-voltage driving and a fast-recovery, low forward -voltage Schottky barrier diode. Facilitates high-density mounting.
- The FX851 is formed with 2 chips, one being equivalent to the 2SJ187 and the other the SB07-03P, placed in one package.

Electrical Connection



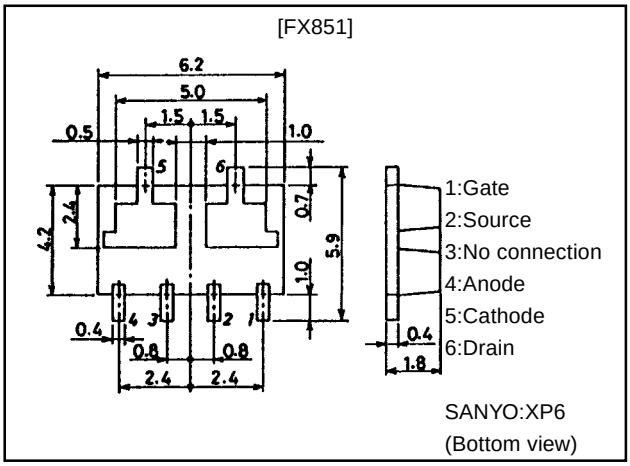
1:Gate
2:Source
3:No connection
4:Anode
5:Cathode
6:Drain

(Top view)

Package Dimensions

unit:mm

2119



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}		±15	V
Drain Current (DC)	I_D		–1	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	–4	A
Allowable Power Dissipation	P_D	Tc=25˚C	6	W
	P_D	Mounted on ceramic board (750mm²×0.8mm)	1.5	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		30	V
Non-repetitive Peak Reverse Surge Voltage	V_{RSM}		35	V
Average Rectified Current	I_O		700	mA
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	5	A
Junction Temperature	Tj		–55 to +125	˚C
Storage Temperature	Tstg		–55 to +150	˚C

· Marking:851

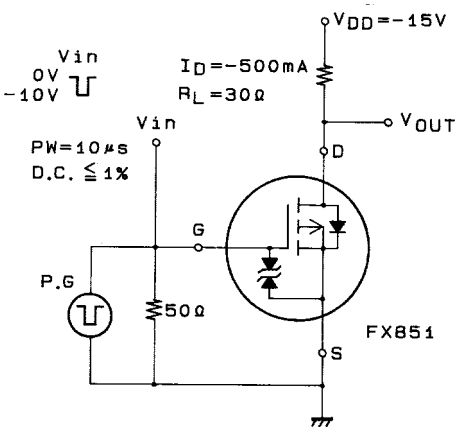
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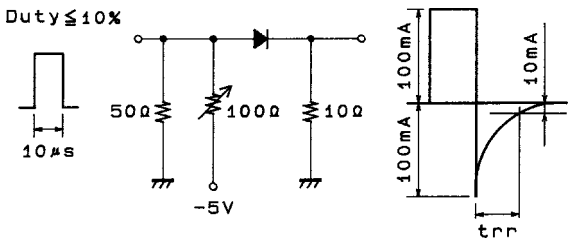
Electrical Characteristics at Ta = 25˚C

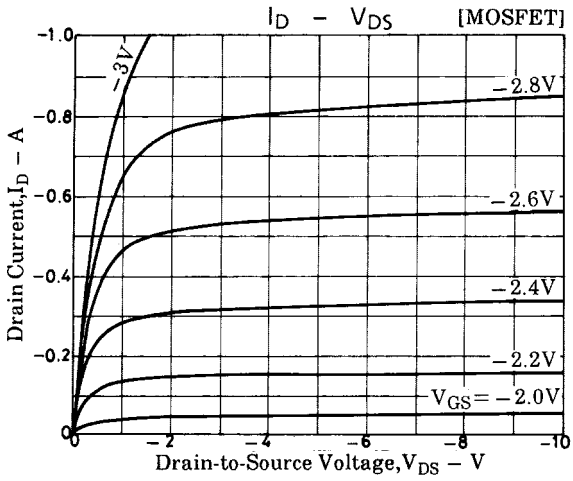
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
D-S Breakdown Voltage	$V_{(BR)DSS}$	I_D=–1mA, V_{GS}=0	–30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=–30V, V_{GS}=0			–100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=–10V, I_D=–1mA	–1.0		–2.0	V
Forward Transfer Admittance	$\|Y_{fs}\|$	V_{DS}=–10V, I_D=–500mA	0.6	1.0		S
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	I_D=–500mA, V_{GS}=–10V		0.5	0.75	Ω
	$R_{DS(on)}$	I_D=–500mA, V_{GS}=–4V		0.75	1.1	Ω
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		170		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		110		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		20		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		10		ns
Rise Time	t_r	See specified Test Circuit		13		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		70		ns
Fall Time	t_f	See specified Test Circuit		30		ns
Diode Forward Voltage	V_{SD}	I_S=–1A, V_{GS}=0		–0.9		V
[SBD]						
Reverse Voltage	V_R	I_R=300μA	30			V
Forward Voltage	V_F	I_F=700mA			0.55	V
Reverse Current	I_R	V_R=15V			80	μA
Interterminal Capacitance	C	V_R=10V, f=1MHz Cycle		26		pF
Reverse Recovery Time	trr	I_F=I_R=100mA, See specified Test CIrcuit			10	ns
Thermal Resistance	Rthj-a	Mounted on ceramic board (750mm²×0.8mm)		100		˚C/W

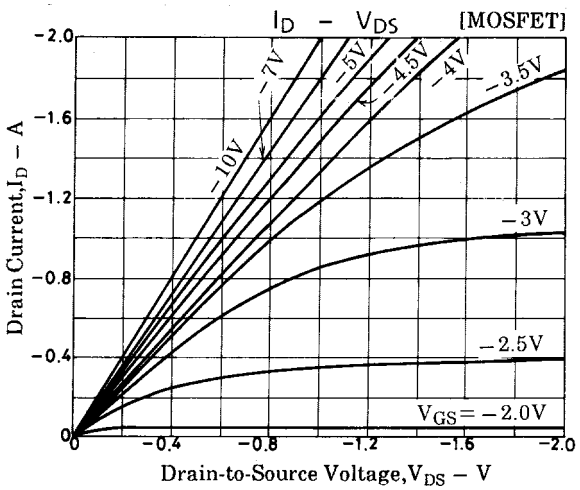
Switching Time Test CIrcuit [MOSFET]

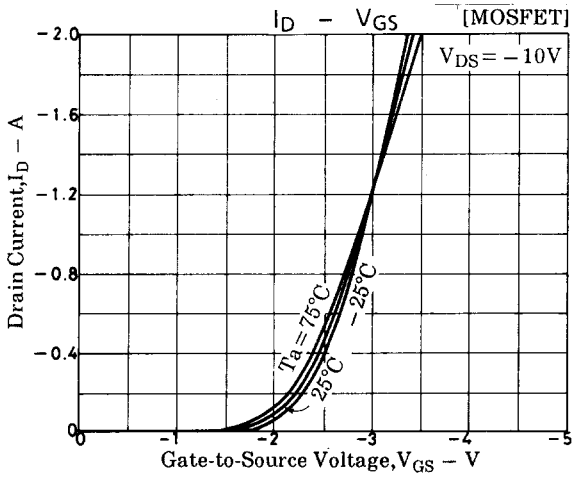


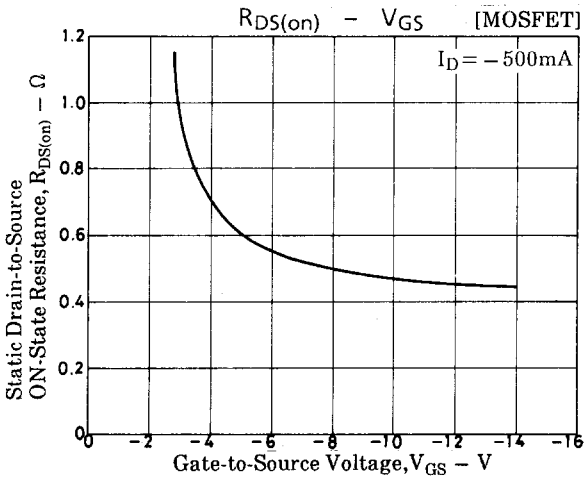
Trr Test Circuit [SBD]

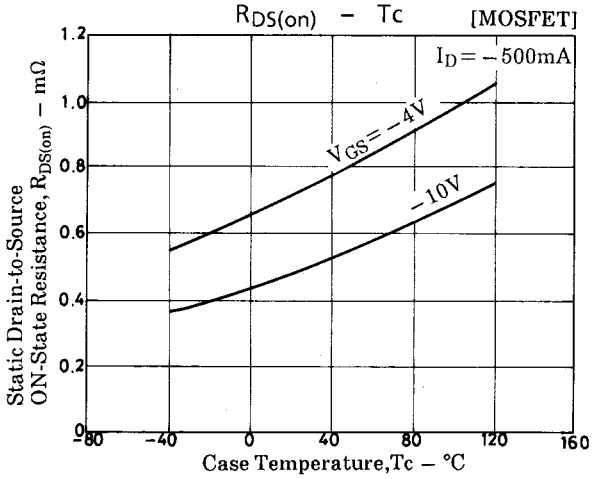


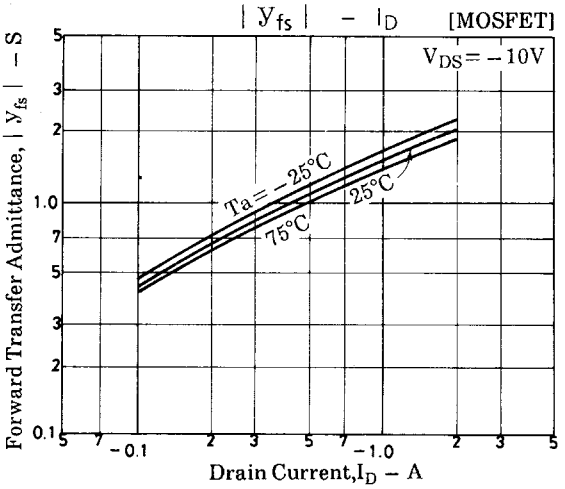


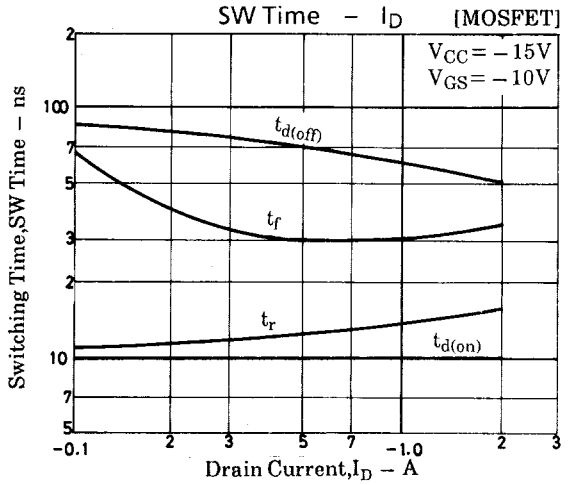


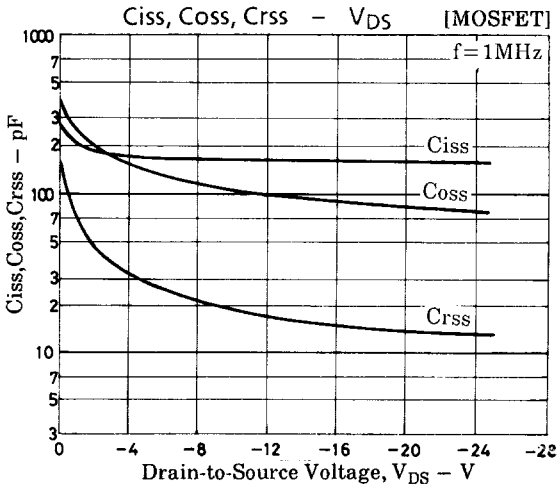

I_D – V_{GS} [MOSFET]
V_{DS} = –10V
Drain Current, I_D – A
Gate-to-Source Voltage, V_{GS} – V
Ta = 75°C
25°C
–25°C

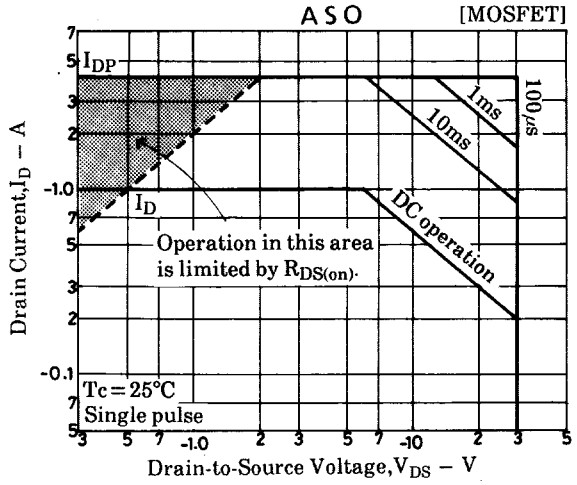

$R_{DS(on)}$ – V_{GS} [MOSFET]
I_D = –500mA
Static Drain-to-Source ON-State Resistance, $R_{DS(on)}$ – Ω
Gate-to-Source Voltage, V_{GS} – V

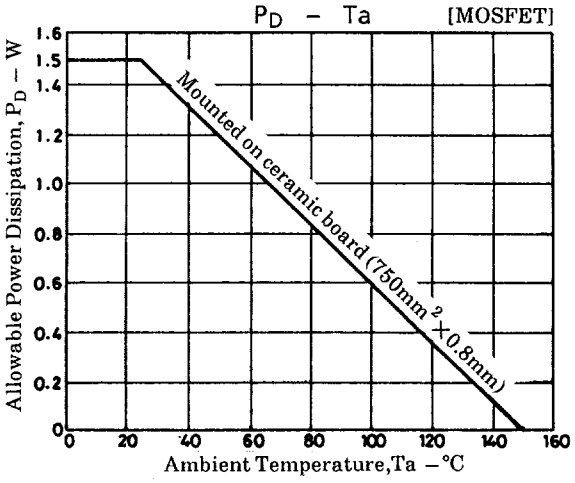

$R_{DS(on)}$ – Tc [MOSFET]
I_D = –500mA
V_{GS} = –4V
–10V
Static Drain-to-Source ON-State Resistance, $R_{DS(on)}$ – mΩ
Case Temperature, Tc – °C

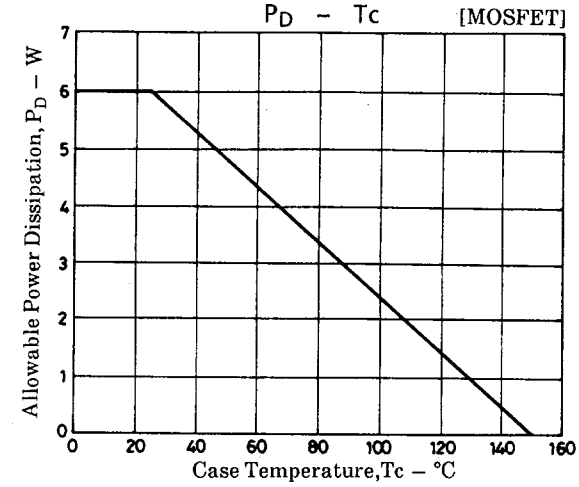

$|y_{fs}|$ – I_D [MOSFET]
V_{DS} = –10V
Ta = –25°C
25°C
75°C
Forward Transfer Admittance, $|y_{fs}|$ – S
Drain Current, I_D – A

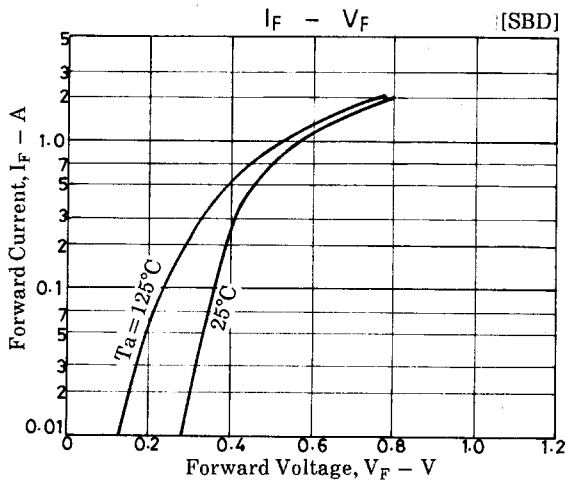

SW Time – I_D [MOSFET]
V_{CC} = –15V
V_{GS} = –10V
$t_{d(off)}$
t_f
t_r
$t_{d(on)}$
Switching Time, SW Time – ns
Drain Current, I_D – A

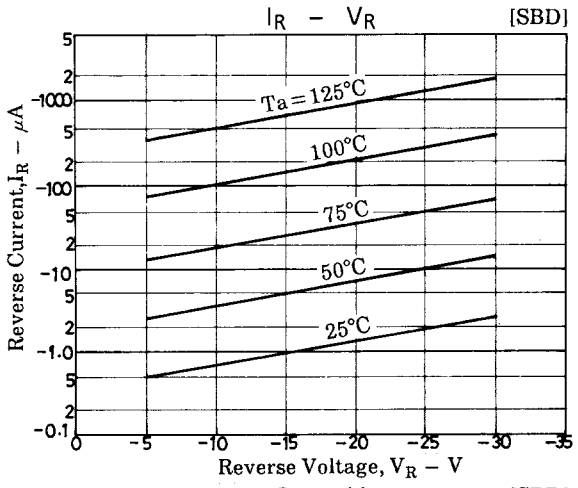

Ciss, Coss, Crss – V_{DS} [MOSFET]
f = 1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, V_{DS} – V

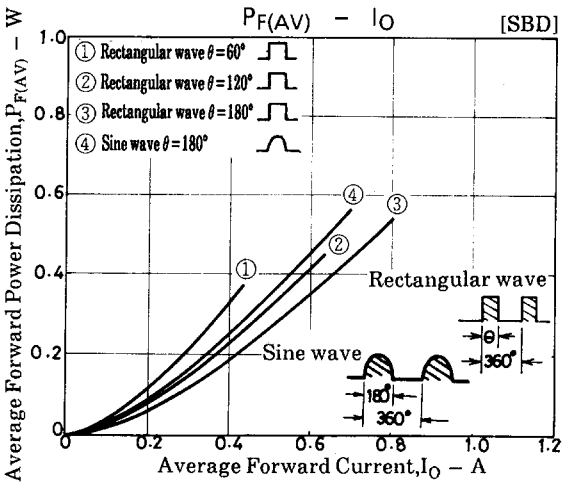

ASO [MOSFET]
I_{DP}
I_D
1ms
10ms
100μs
DC operation
Operation in this area is limited by $R_{DS(on)}$.
Tc = 25°C
Single pulse
Drain Current, I_D – A
Drain-to-Source Voltage, V_{DS} – V

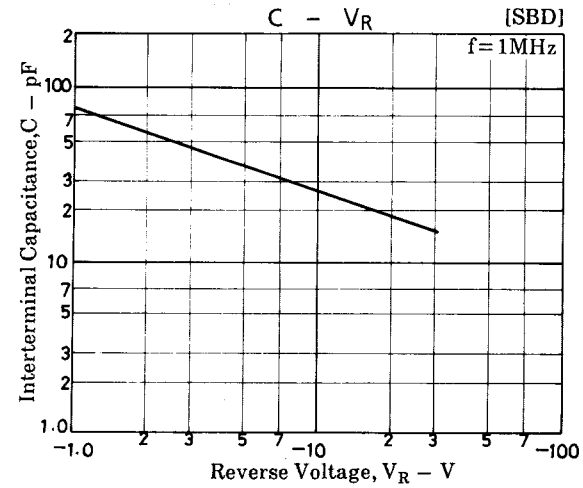

P_D – Ta [MOSFET]
Mounted on ceramic board (750mm² × 0.8mm)
Allowable Power Dissipation, P_D – W
Ambient Temperature, Ta – °C

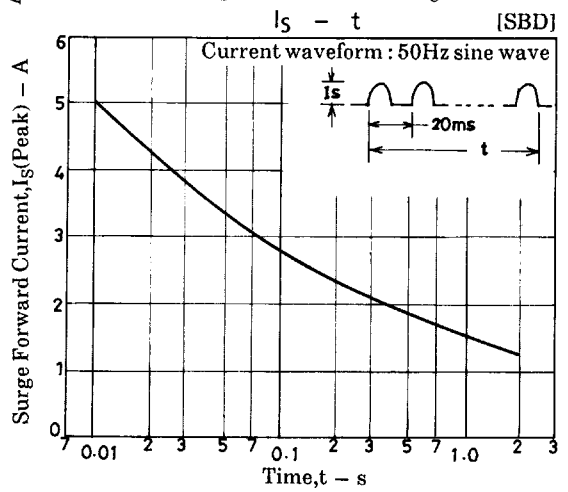












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