Ordering number : ENN6939

N-Channel Silicon MOSFET

FW241

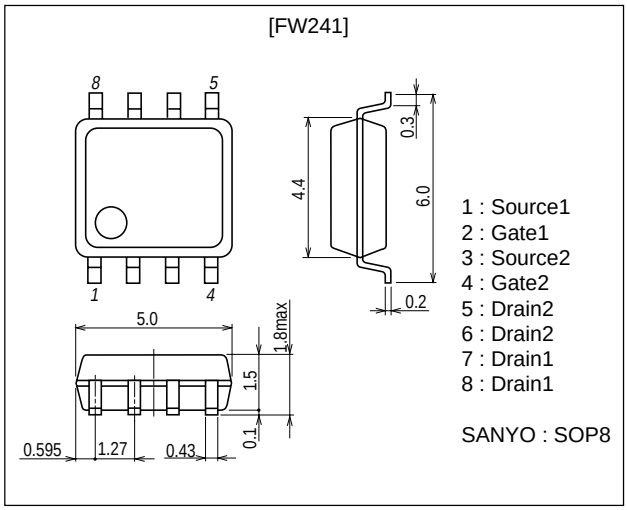
Ultrahigh-Speed Swiching Applications

Features

- This composite device allows high density mounting by incorporating two MOSFET chips in one package that feature low on-resistance, ultrahigh switching speed, and drive voltage of 4.5V.
- The two chips have near characteristics, and especially suited for HDD.

Package Dimensions

unit : mm
2129



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		3.5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	14	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (2000mm²×0.8mm)1unit	1.4	W
		Tc=25°C	2.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
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}=±16V, V_{DS}=0			±10	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.2		2.5	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=3.5A	3.7	5.3		S

Marking : W241

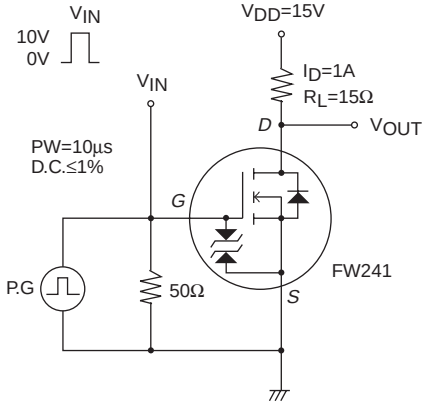
Continued on next page.

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

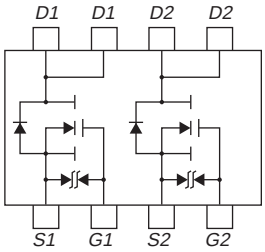
Continued from preceding page.

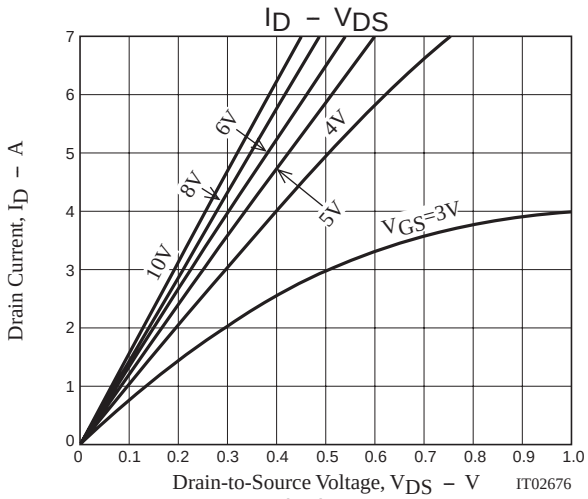
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=3.5A, V_{GS}=10V		64	84	mΩ
	$R_{DS}(on)2$	I_D=1.8A, V_{GS}=4.5V		105	150	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		180		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		42		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		25		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit		7		ns
Rise Time	t_r	See specified Test Circuit		3		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit		20		ns
Fall Time	t_f	See specified Test Circuit		6		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		5.0		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		0.9		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		0.6		nC
Diode Forward Voltage	V_{SD}	I_S=3.5A, V_{GS}=0		0.88	1.2	V

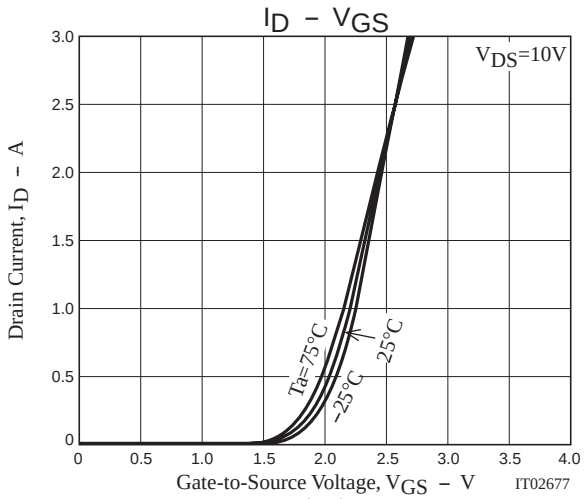
Switching Time Test Circuit

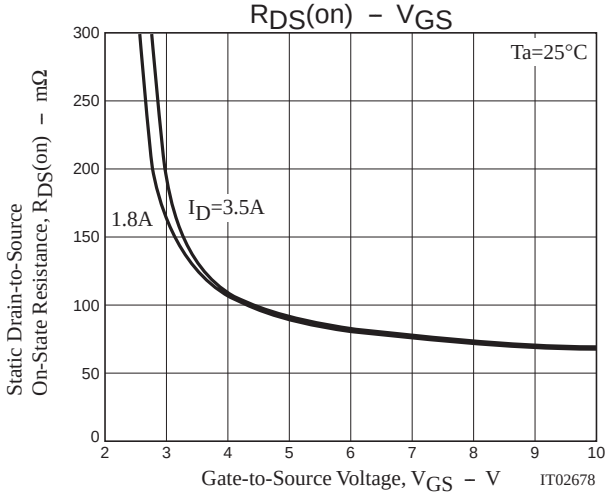


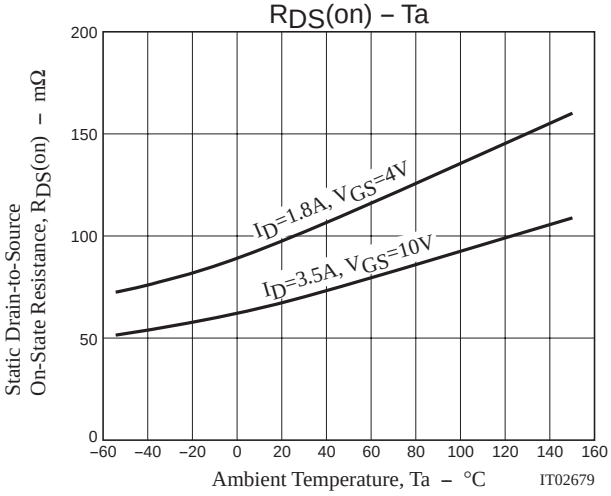
Electrical Connection

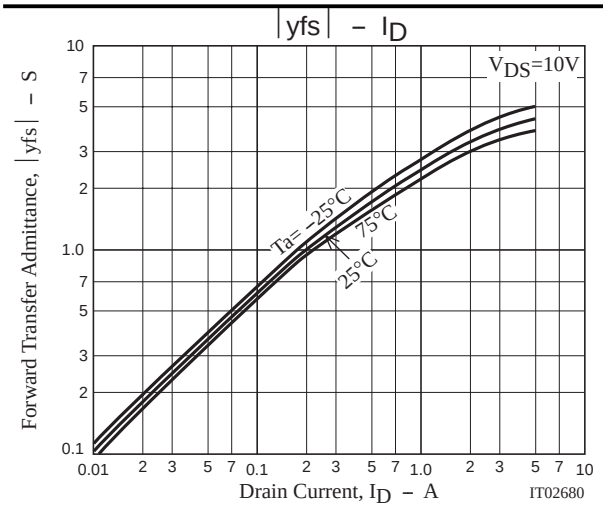


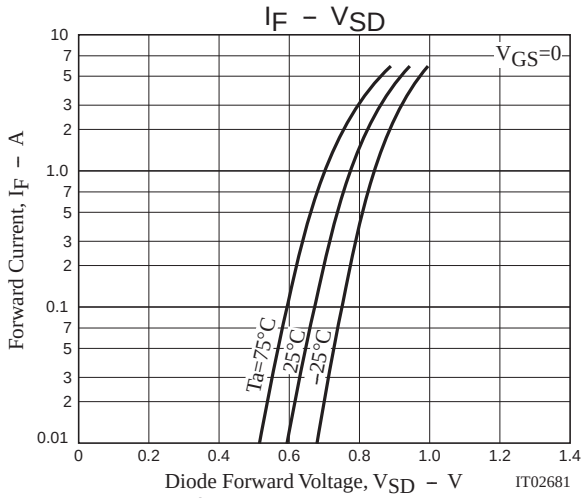


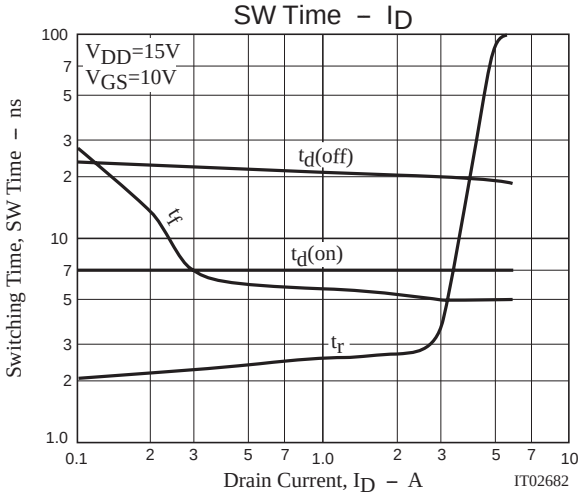


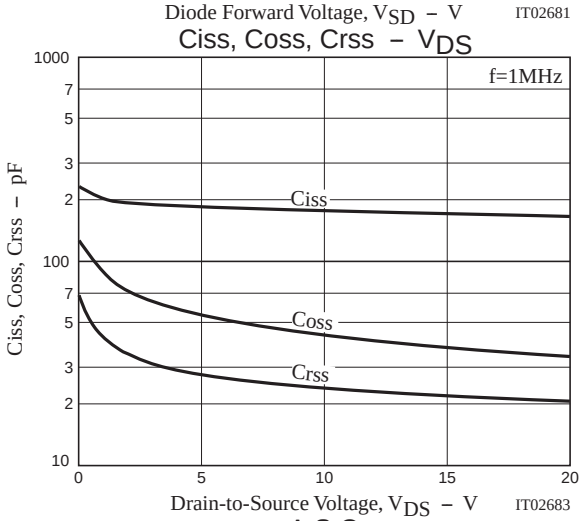


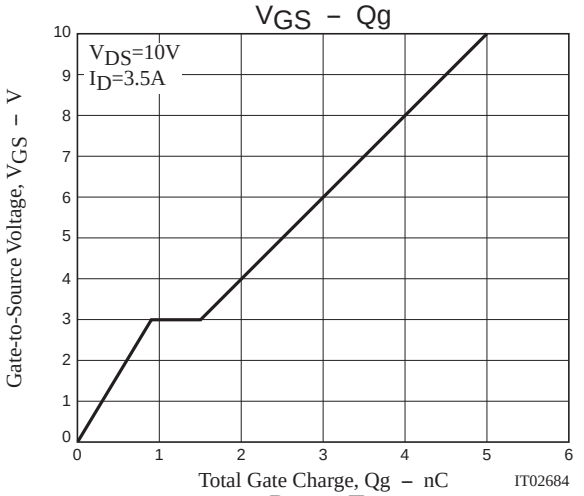


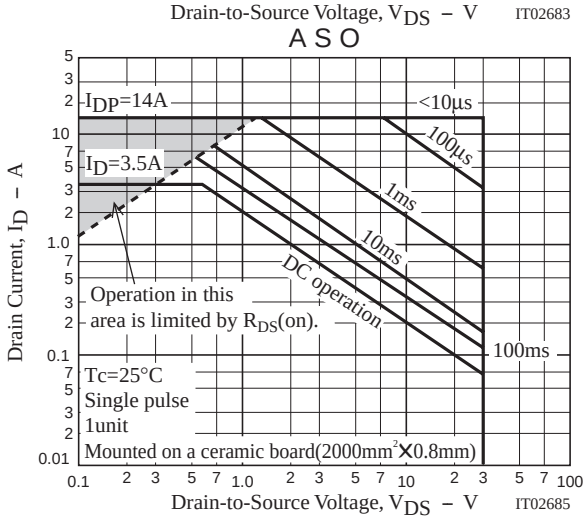

|yfs| – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02680

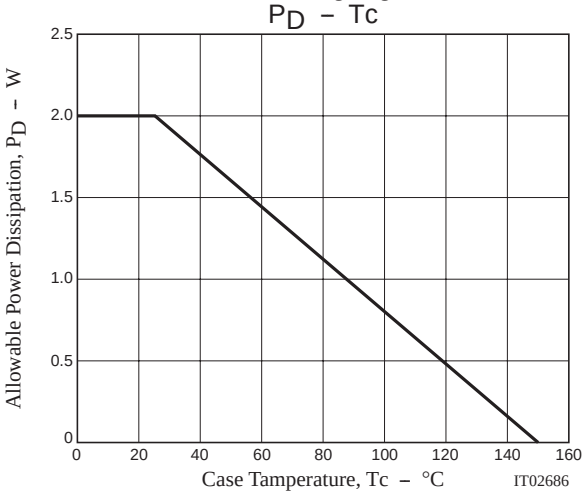

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT02681


SW Time – ID
VDD=15V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT02682


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02683


VGS – Qg
VDS=10V
ID=3.5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT02684


A S O
IDP=14A
ID=3.5A
<10μs
100μs
1ms
10ms
DC operation
100ms
Operation in this
area is limited by RDS(on).
Tc=25°C
Single pulse
1unit
Mounted on a ceramic board(2000mm²×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT02685


PD – Tc
Allowable Power Dissipation, PD – W
Case Tamperature, Tc – °C
IT02686

- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products(including technical data,services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of April, 2001. Specifications and information herein are subject to change without notice.