Ordering number : ENN6939

N-Channel Silicon MOSFET

FW241

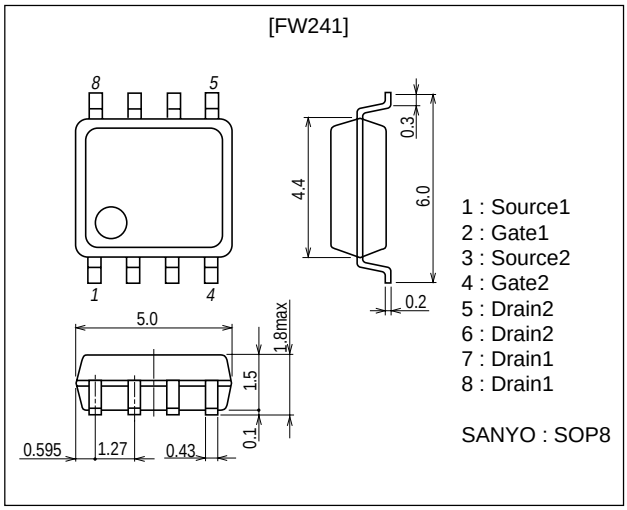
Ultrahigh-Speed Swiching Applications

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.

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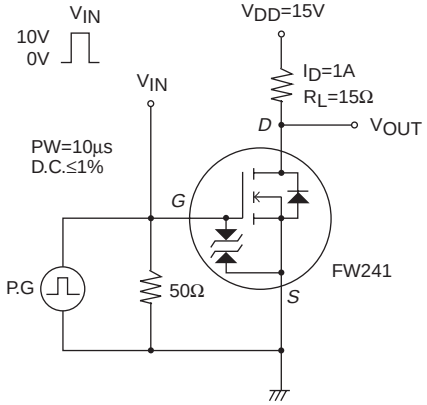
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

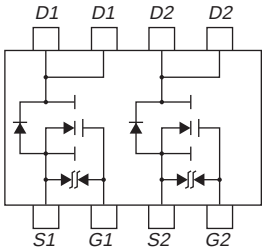
Continued from preceding page.

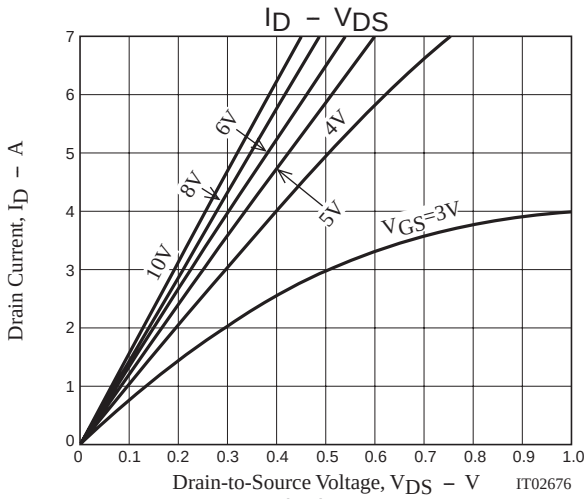
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=3.5A, V_{GS}=10V		64	84	mΩ
	$R_{DS}(on)2$	I_D=1.8A, V_{GS}=4.5V		105	150	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		180		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		42		pF
Reverse 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

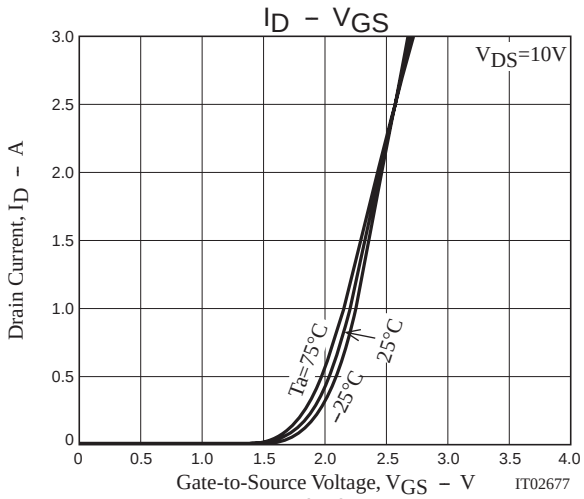
Switching Time Test Circuit

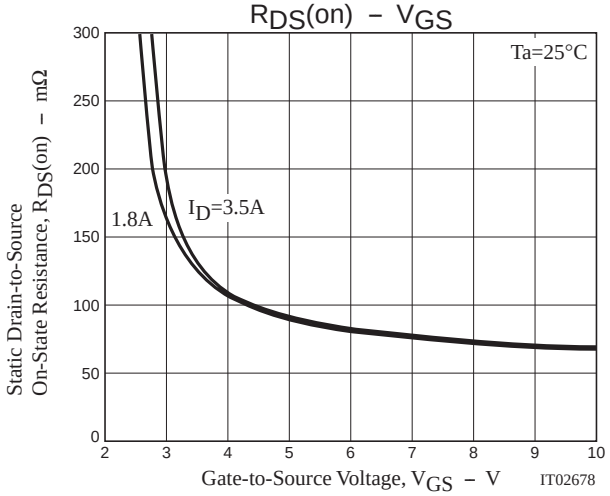


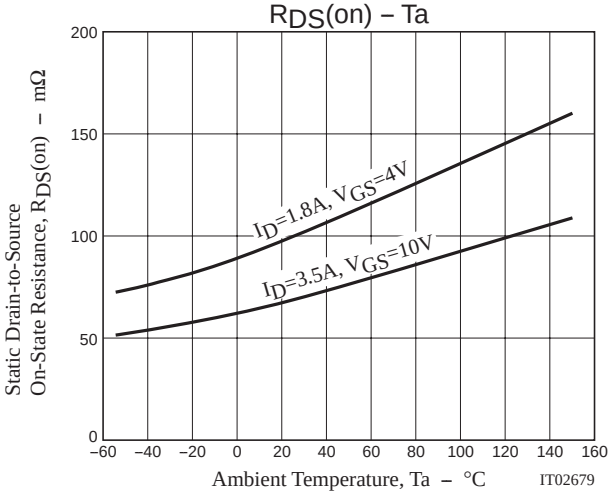
Electrical Connection

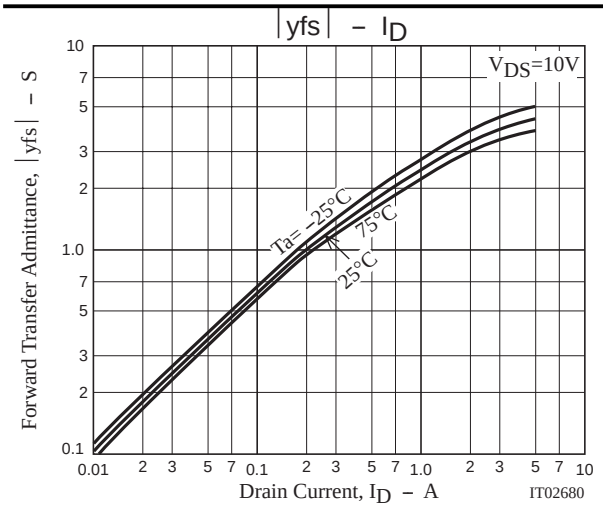


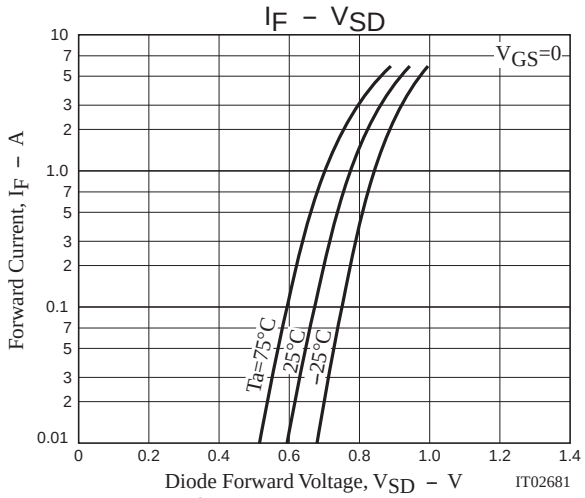


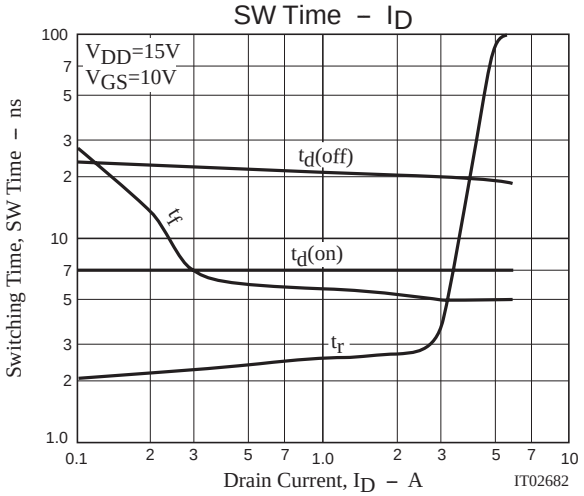


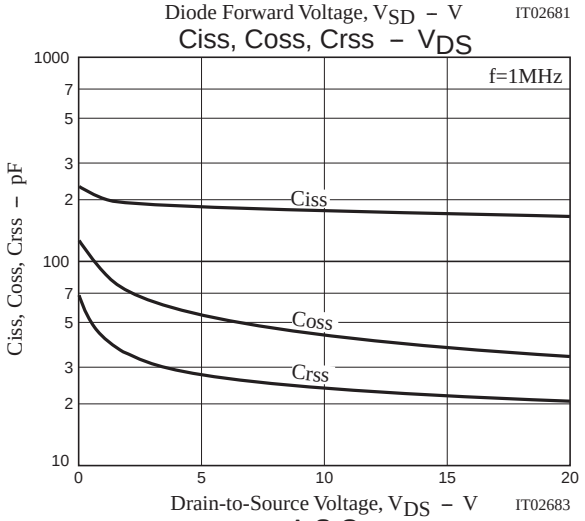


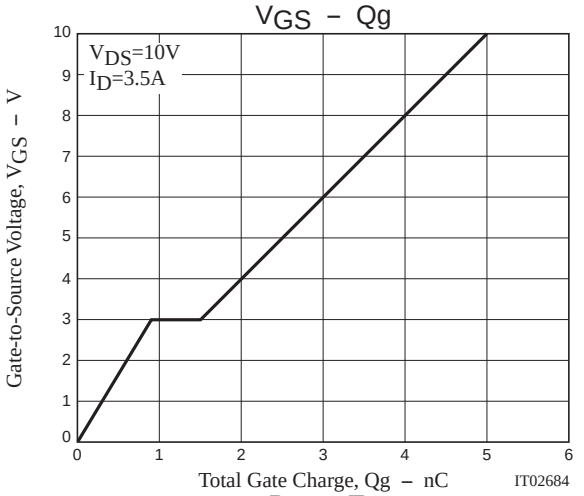


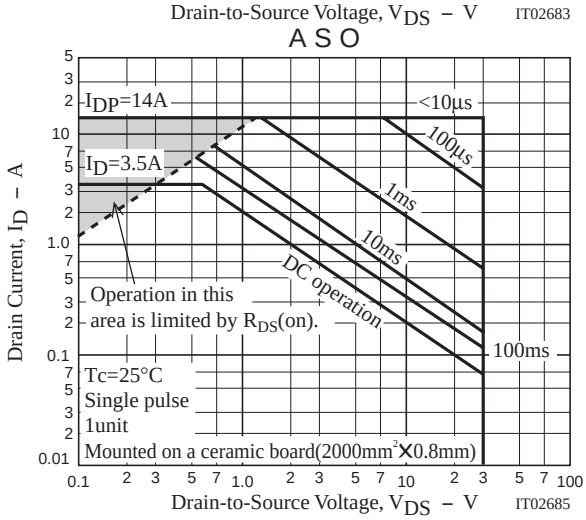

|yfs| – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02680

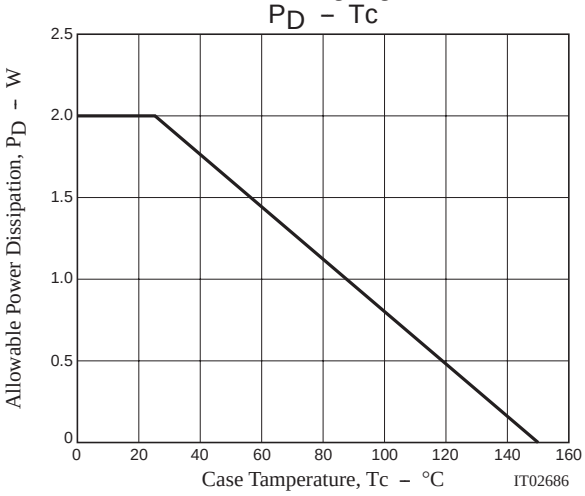

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT02681


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

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