Ordering number : ENN6865

N-Channel Silicon MOSFET

FSS234

DC / DC Converter Applications

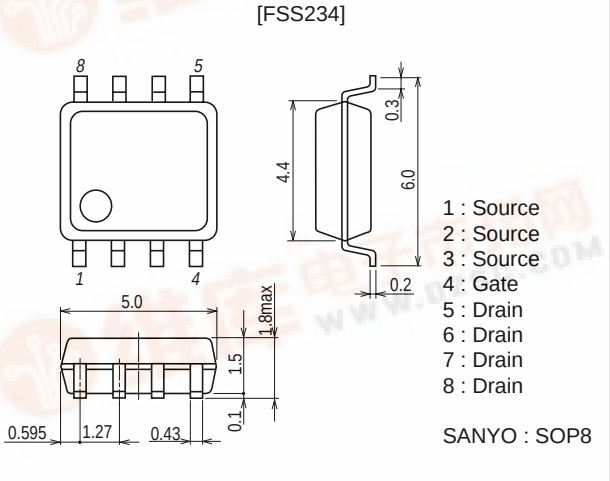
Features

- Low ON-resistance.
- 4.0V drive.
- Ultrahigh-speed switching.

Package Dimensions

unit : mm

2116



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		12	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	52	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1200mm²×0.8mm)	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
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	1.0		2.4	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=12A	12.6	18		S

Marking : S234

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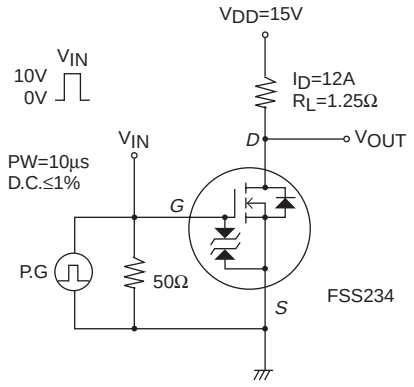
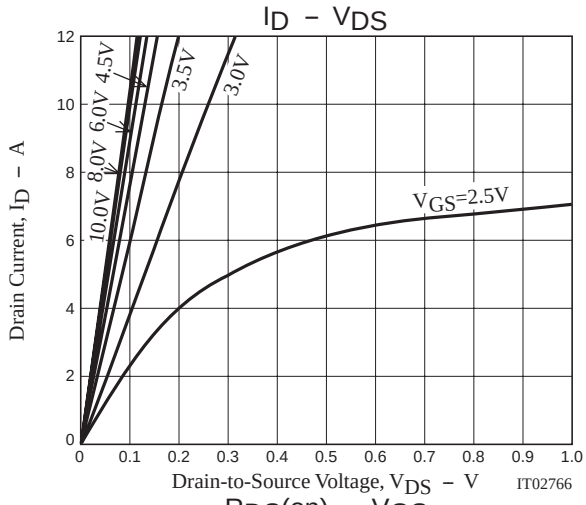
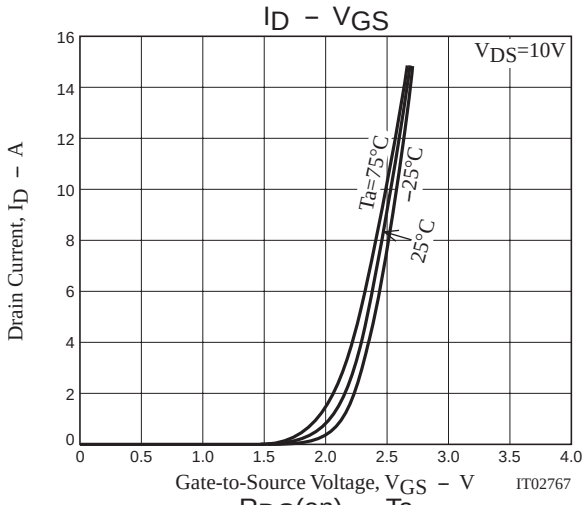
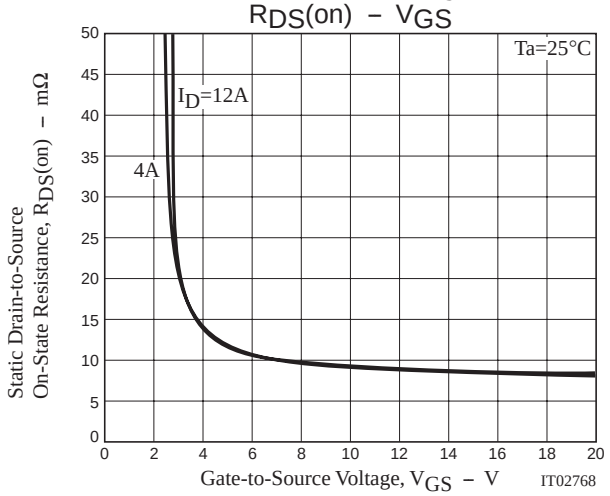
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=12A, V_{GS}=10V		9.5	13	mΩ
	$R_{DS}(on)2$	I_D=4A, V_{GS}=4.5V		13	19	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		1450		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		420		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		210		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit		14		ns
Rise Time	t_r	See specified Test Circuit		280		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit		110		ns
Fall Time	t_f	See specified Test Circuit		100		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=12A		28		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=12A		4.6		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=12A		5		nC
Diode Forward Voltage	V_{SD}	I_S=12A, V_{GS}=0		0.81	1.2	V

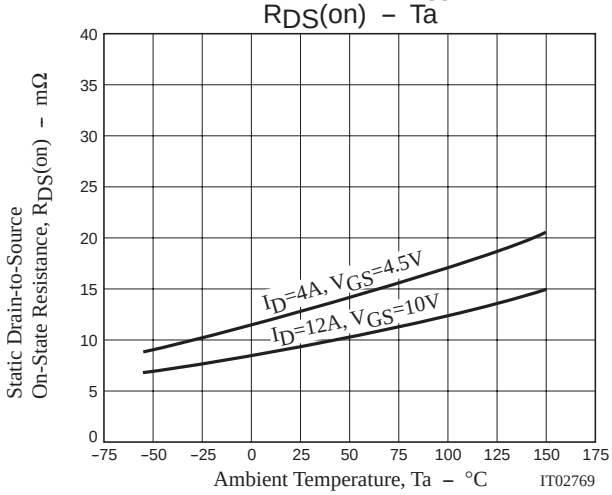
Switching Time Test Circuit

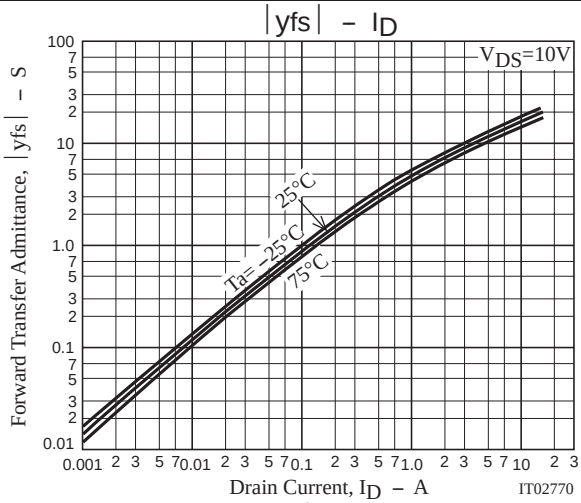


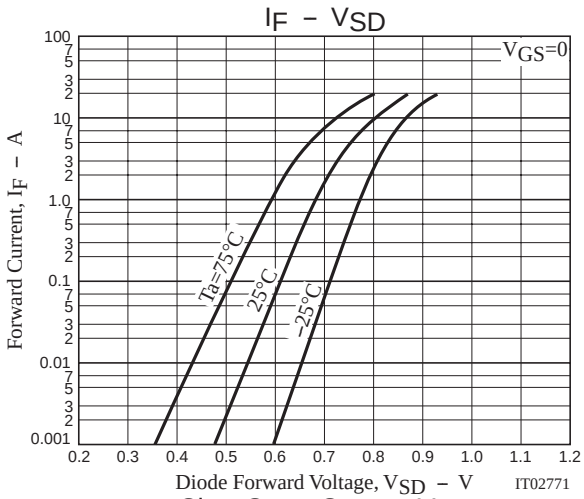


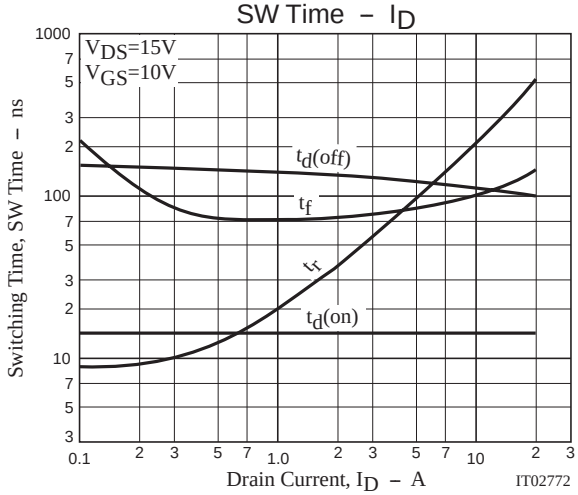


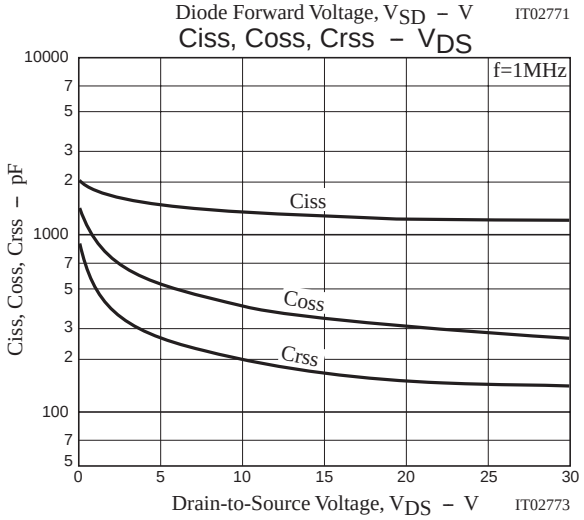


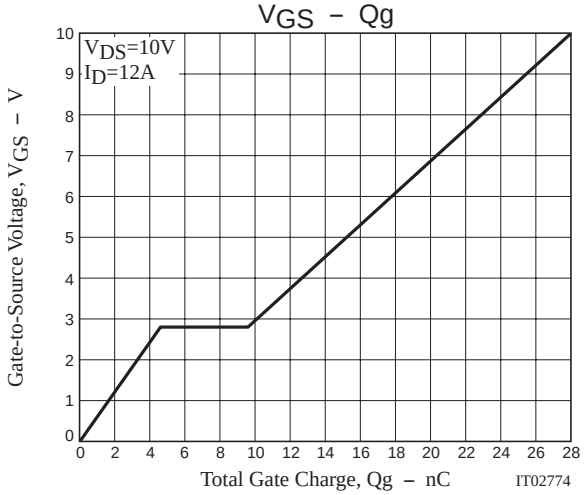


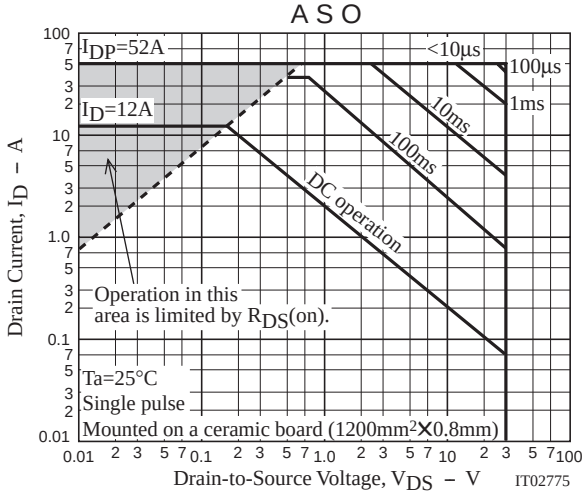

|yfs| – ID
VDS=10V
25°C
Ta=–25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02770

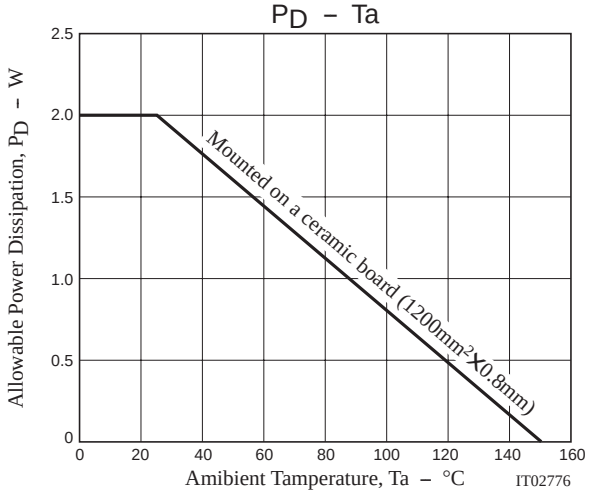

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT02771


SW Time – ID
VDS=15V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT02772


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02773


VGS – Qg
VDS=10V
ID=12A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT02774


A S O
IDP=52A
ID=12A
<10µs
100µs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (1200mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT02775


PD – Ta
Mounted on a ceramic board (1200mm2×0.8mm)
Allowable Power Dissipation, PD – W
Amibient Tamperature, Ta – °C
IT02776