Ordering number : ENA0074

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

FW216 — General-Purpose Switching Device Applications

Features

- Motor drive applications.
- 4.5V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		35	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 (2000mm²X0.8mm) 1unit, PW≤10s	1.6	W
Allowable Power Dissipation	P_T	Mounted on a ceramic board (2000mm²X0.8mm), PW≤10s	2.2	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}=0V	35			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=35V, 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	1.5		2.5	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=3.5A	2.4	4		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=3.5A, V_{GS}=10V		70	90	mΩ
	R_{DS}(on)2	I_D=2A, V_{GS}=4.5V		140	196	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		260		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		65		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		40		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		9		ns
Rise Time	t_r	See specified Test Circuit.		8		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		19		ns
Fall Time	t_f	See specified Test Circuit.		8		ns

Marking : W216

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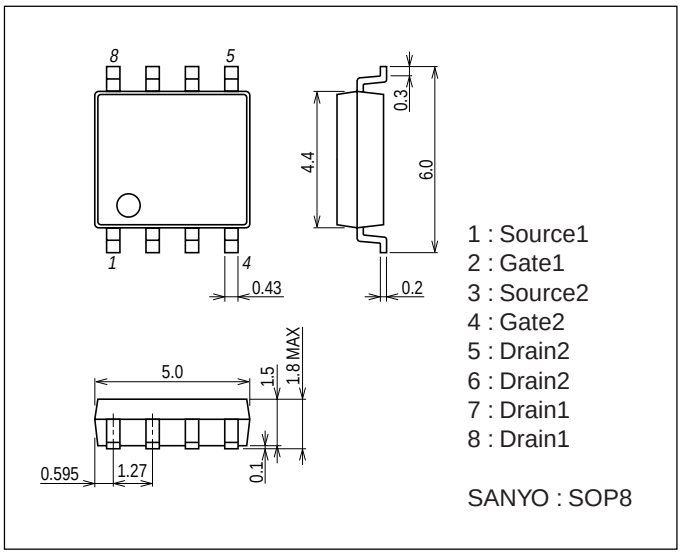
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		6		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		1.2		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=3.5A		1.0		nC
Diode Forward Voltage	V_{SD}	I_S=3.5A, V_{GS}=0V		0.88	1.2	V

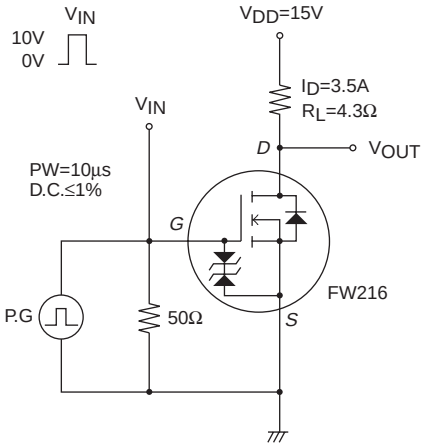
Package Dimensions

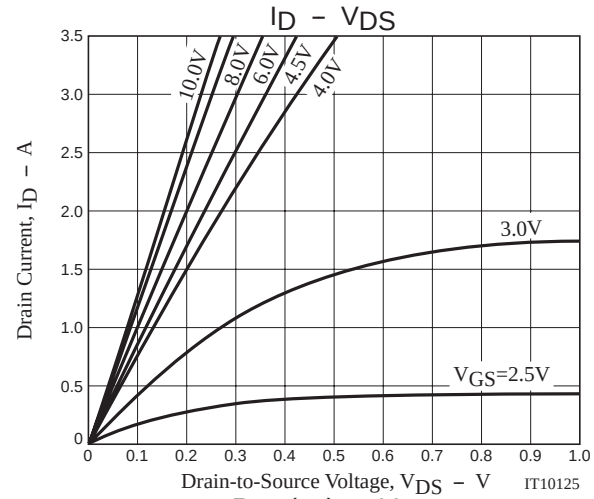
unit : mm

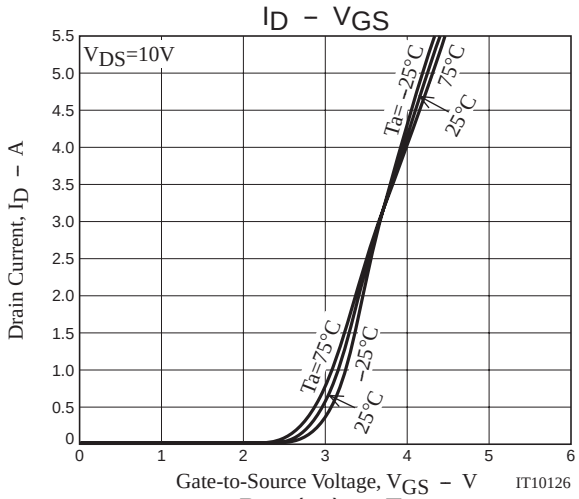
7005-003

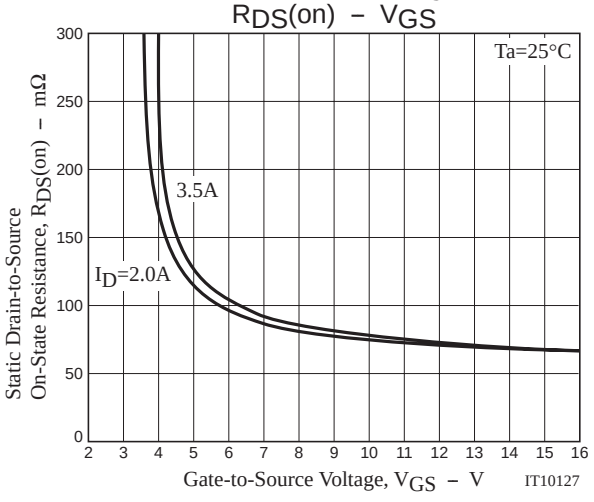


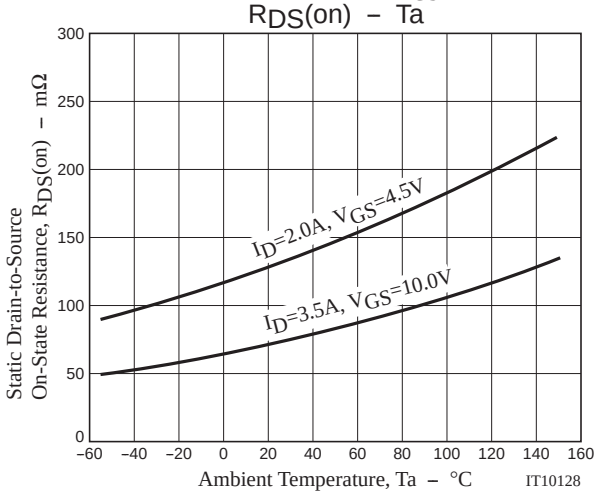
Switching Time Test Circuit

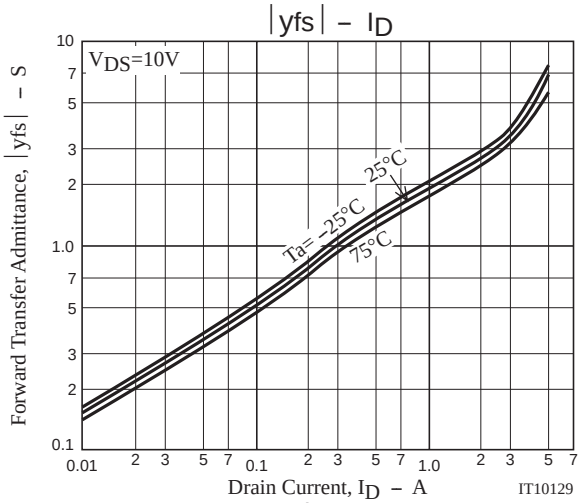


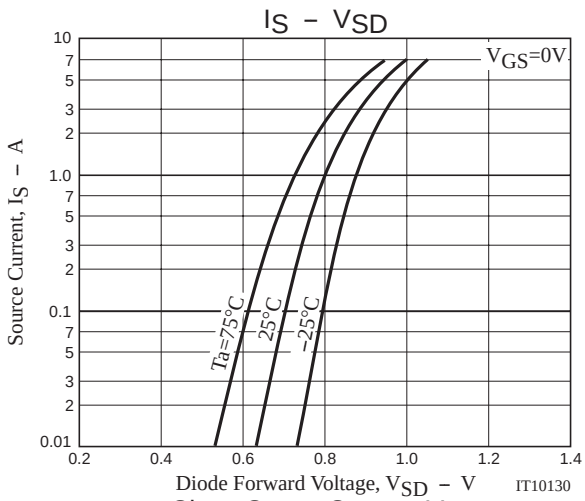


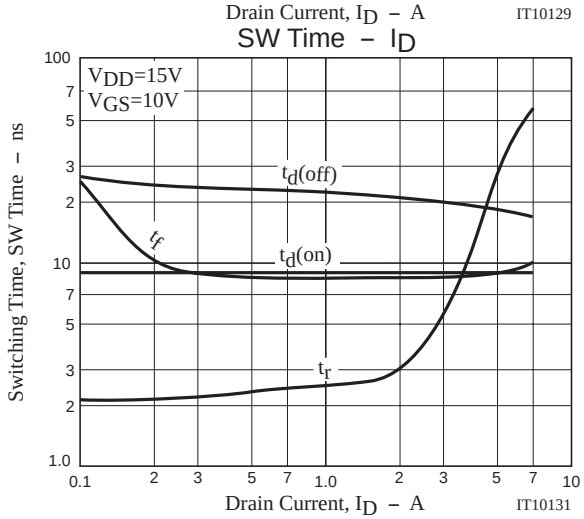


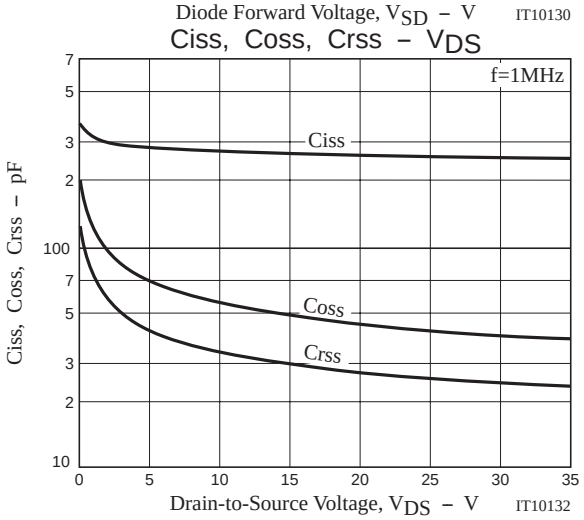


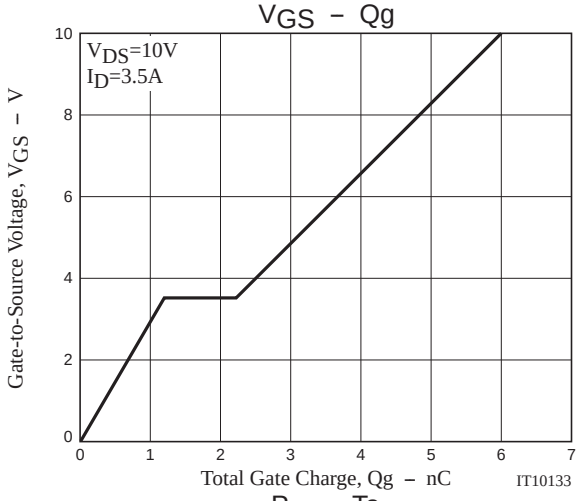


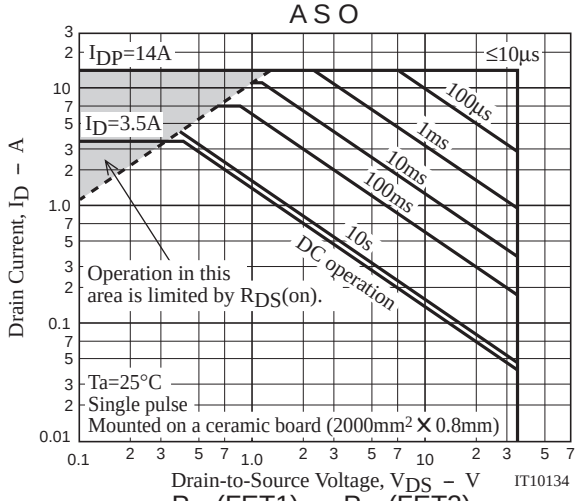

|yfs| – ID
VDS=10V
Ta=–25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT10129

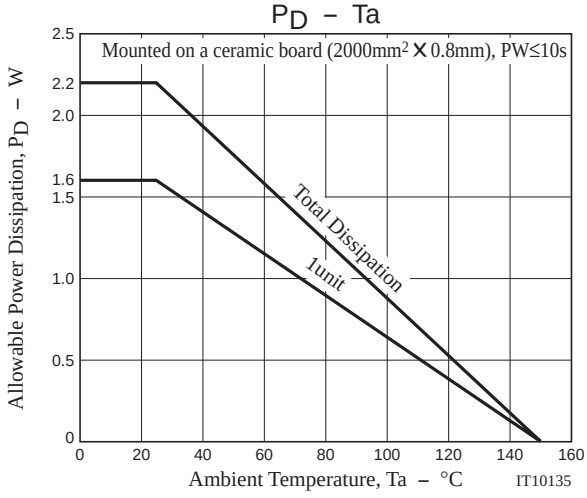

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT10130

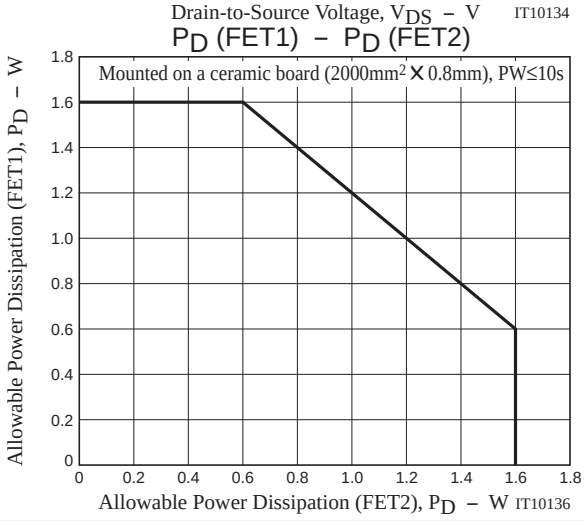

SW Time – ID
VDD=15V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT10131


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT10132


VGS – Qg
VDS=10V
ID=3.5A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT10133


ASO
IDP=14A
≤10µs
ID=3.5A
100µs
1ms
10ms
100ms
10s
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (2000mm2 ✕ 0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT10134


PD – Ta
Mounted on a ceramic board (2000mm2 ✕ 0.8mm), PW≤10s
Total Dissipation
1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT10135


PD (FET1) – PD (FET2)
Mounted on a ceramic board (2000mm2 ✕ 0.8mm), PW≤10s
Allowable Power Dissipation (FET1), PD – W
Allowable Power Dissipation (FET2), PD – W
IT10136

Note on usage : Since the FW216 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.