Ordering number : ENA0672

SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

FW248 — General-Purpose Switching Device Applications

Features

- Motor drive application.
- Low ON-resistance.
- 4V drive.
- High-density mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		45	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		6	A
Drain Current (PW≤10s)	I_D	Duty cycle≤1%	7	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	24	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1500mm²X0.8mm) 1unit, PW≤10s	1.8	W
Total Dissipation	P_T	Mounted on a ceramic board (1500mm²X0.8mm), 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	45			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=45V, 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	1.2		2.6	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=10V, I_D=5A	3.7	6.2		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=6A, V_{GS}=10V		26	34	mΩ
	$R_{DS}(on)2$	I_D=3A, V_{GS}=4V		42	59	mΩ

Marking : W248

Continued on next page.

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

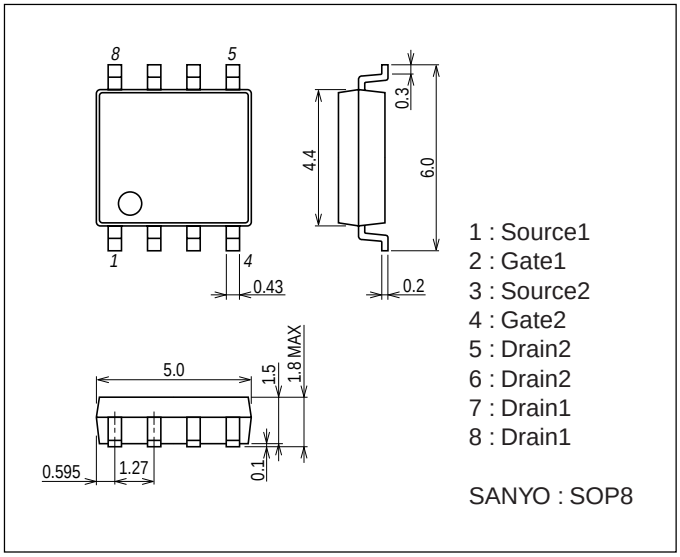
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1040		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		145		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		105		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		14		ns
Rise Time	t_{r}	See specified Test Circuit.		80		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		85		ns
Fall Time	t_{f}	See specified Test Circuit.		70		ns
Total Gate Charge	Qg	V_{DS}=24V, V_{GS}=10V, I_{D}=6A		23		nC
Gate-to-Source Charge	Qgs	V_{DS}=24V, V_{GS}=10V, I_{D}=6A		3.5		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=24V, V_{GS}=10V, I_{D}=6A		5.0		nC
Diode Forward Voltage	V_{SD}	I_{S}=6A, V_{GS}=0V		0.83	1.2	V

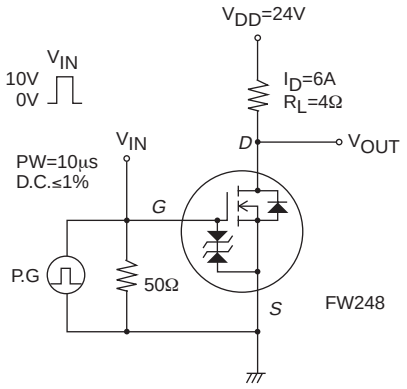
Package Dimensions

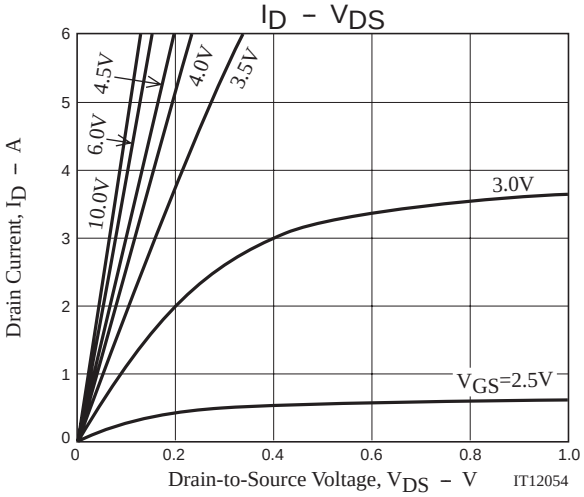
unit : mm (typ)

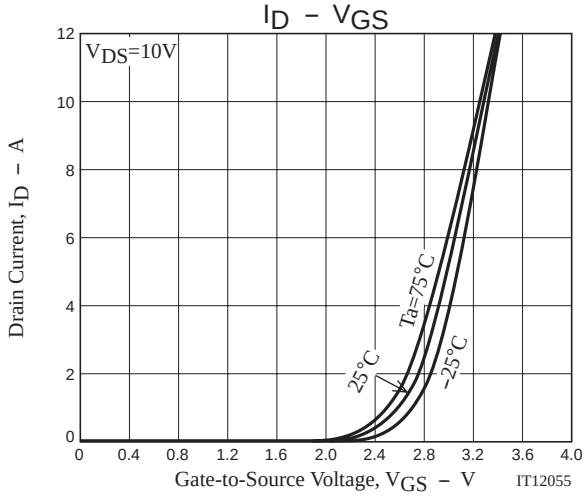
7005-003

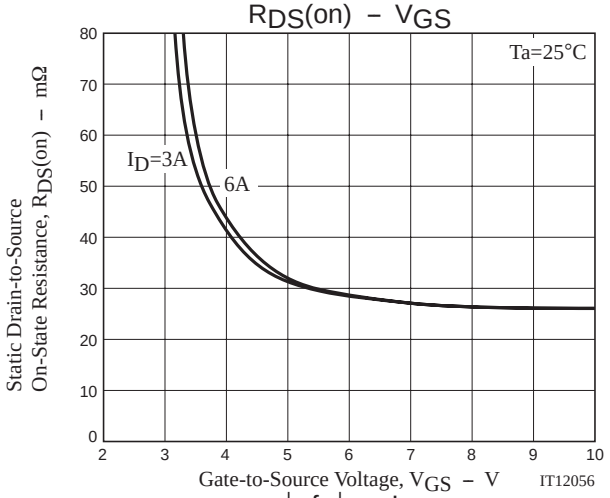


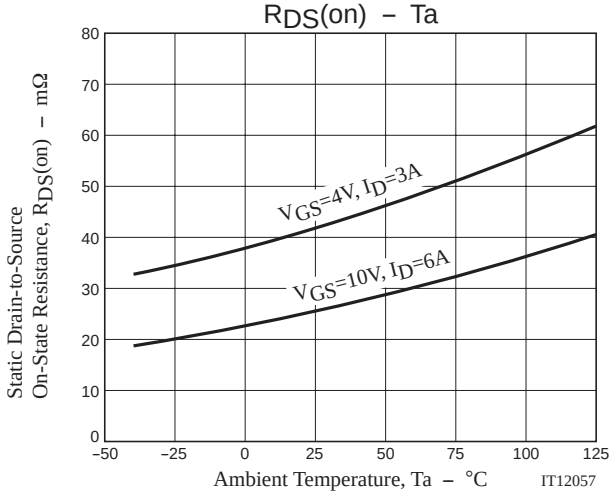
Switching Time Test Circuit

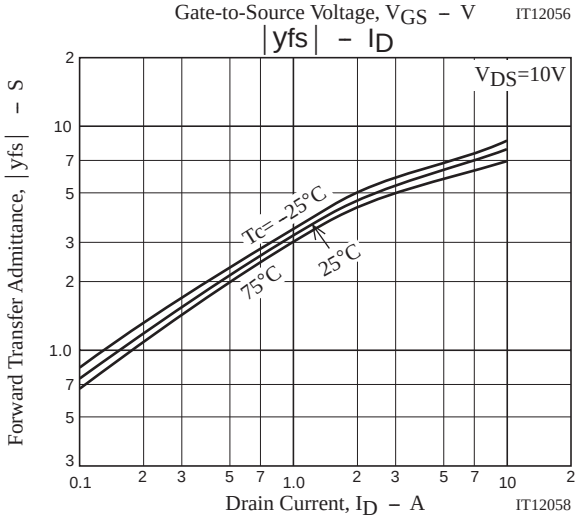


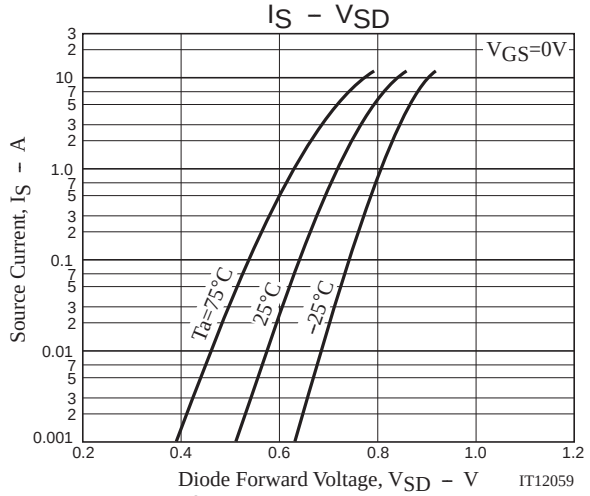


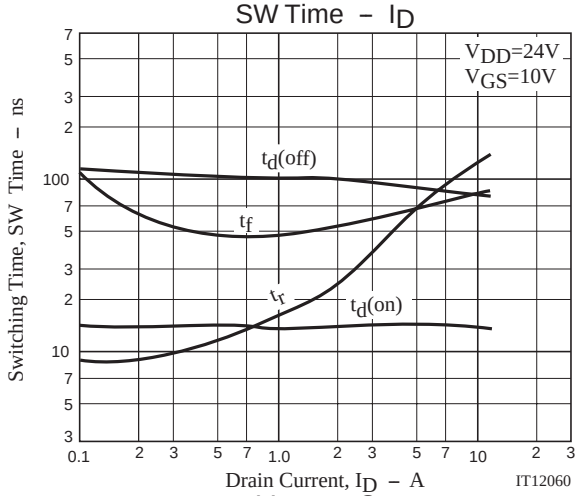


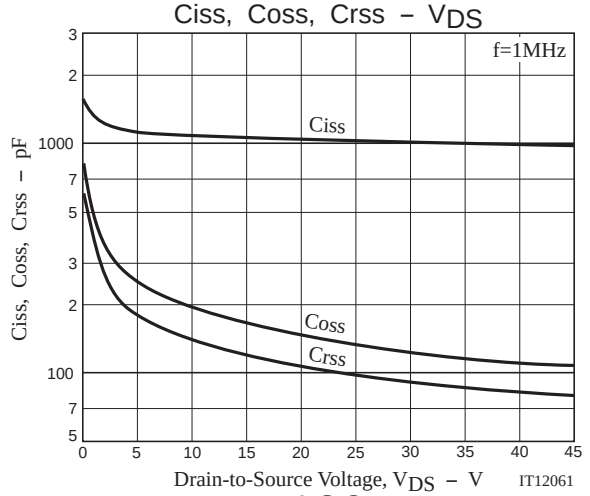

RDS(on) – VGS
Ta=25°C
ID=3A
6A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT12056

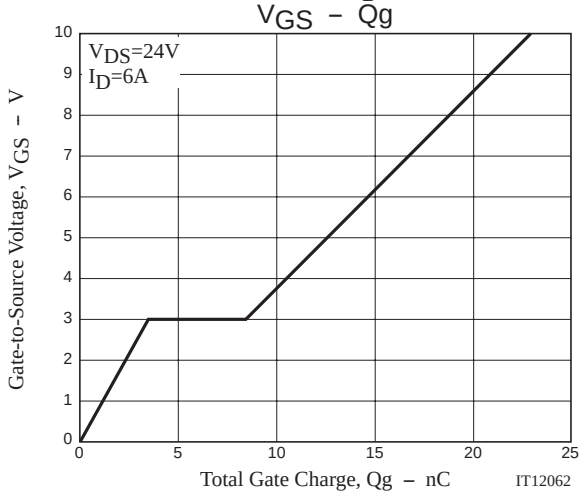

RDS(on) – Ta
VGS=4V, ID=3A
VGS=10V, ID=6A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT12057

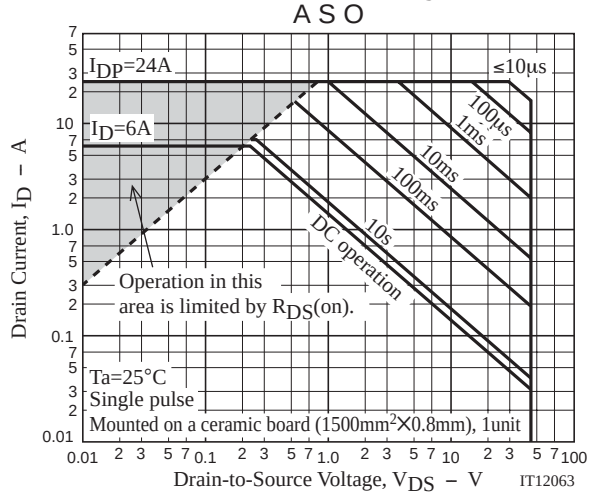

|yfs| – ID
VDS=10V
Tc=–25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT12058

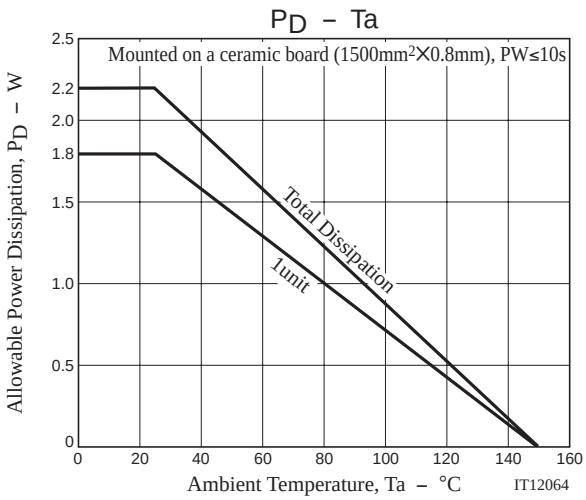

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT12059

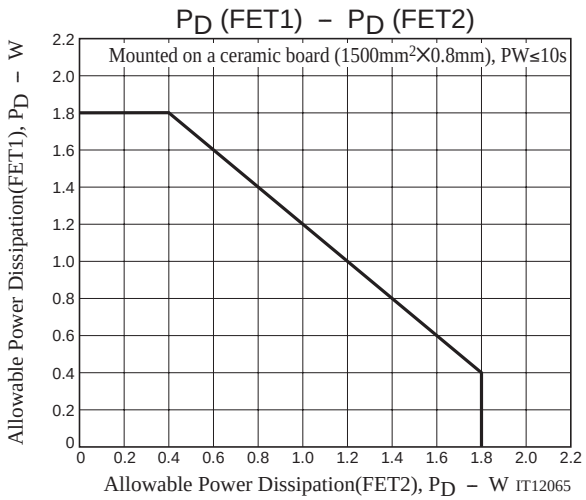

SW Time – ID
VDD=24V
VGS=10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT12060


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT12061


VGS – Qg
VDS=24V
ID=6A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT12062


A S O
IDP=24A
≤10μs
ID=6A
100μs
1ms
10ms
100ms
DC operation
10s
Operation in this area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board (1500mm²×0.8mm), 1unit
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT12063





Note on usage : Since the FW248 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of January, 2007. Specifications and information herein are subject to change without notice.