Ordering number : ENN7752

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

FTD8002 — General-Purpose Switching Device Applications

Features

- Ultralow ON-resistance.
- 2.5V drive.
- Mount height 1.1mm.
- Best suited for switching of lithium-ion battery with drain common.

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}		±12	V
Drain Current (DC)	I_D		8	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm²×0.8mm)1unit	1.4	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm²×0.8mm)	1.45	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}= ±8V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=10V, I_D=1mA	0.5		1.3	V
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=8A	11	19		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=8A, V_{GS}=4.5V	7	13	17	mΩ
	R_{DS}(on)2	I_D=6A, V_{GS}=4V	7.5	14	19	mΩ
	R_{DS}(on)3	I_D=4A, V_{GS}=3.1V	8.5	15	22	mΩ
	R_{DS}(on)4	I_D=4A, V_{GS}=2.5V	9.5	17	24	mΩ

Marking : D8002

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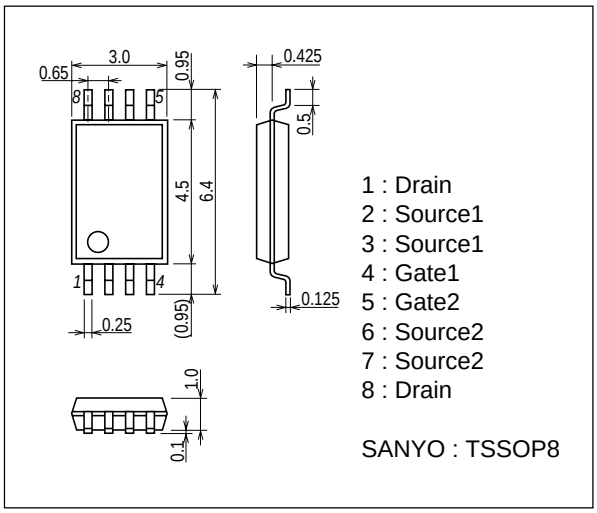
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		2610		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		310		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		300		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit.		30		ns
Rise Time	t_{r}	See specified Test Circuit.		195		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit.		220		ns
Fall Time	t_{f}	See specified Test Circuit.		185		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4V, I_{D}=8A		26		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=4V, I_{D}=8A		3.5		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=4V, I_{D}=8A		8.0		nC
Diode Forward Voltage	V_{SD}	I_{S}=8A, V_{GS}=0		0.82	1.2	V

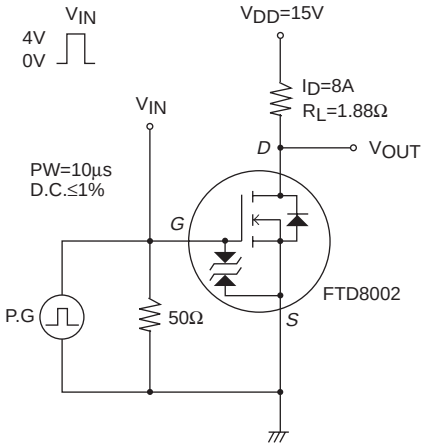
Package Dimensions

unit : mm

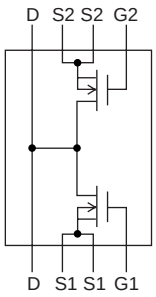
2231

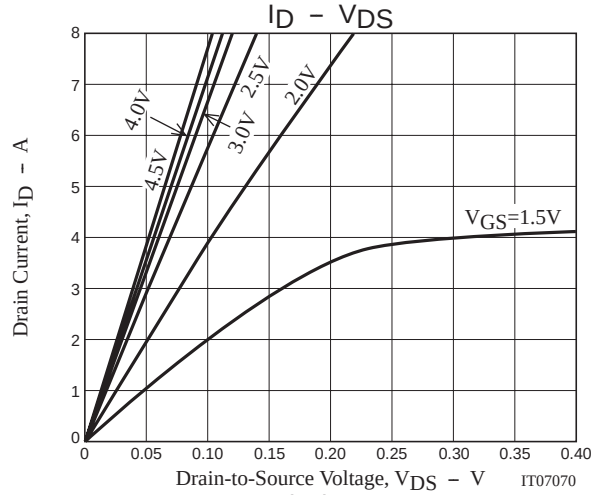


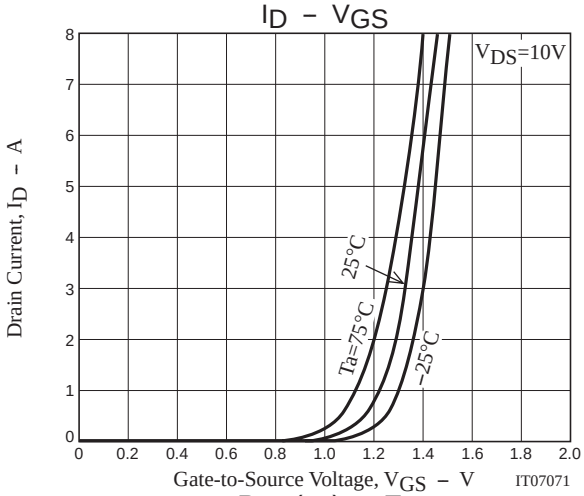
Switching Time Test Circuit

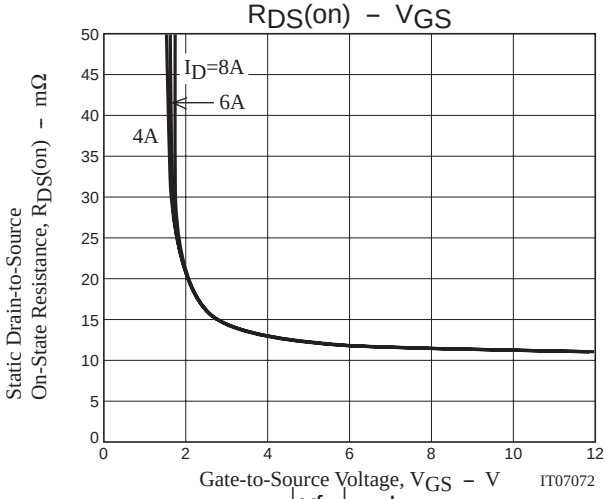


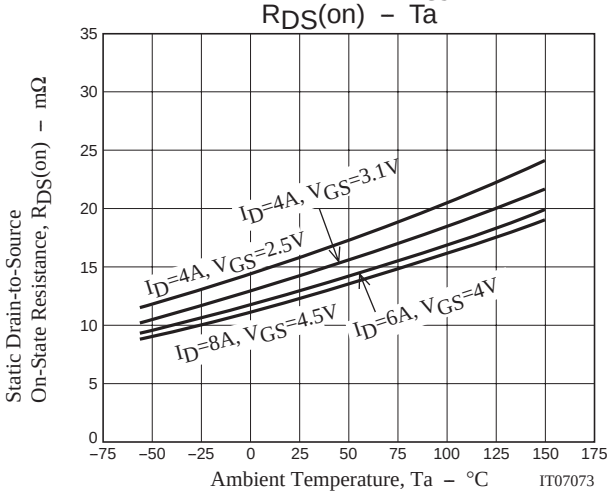
Electrical Connection

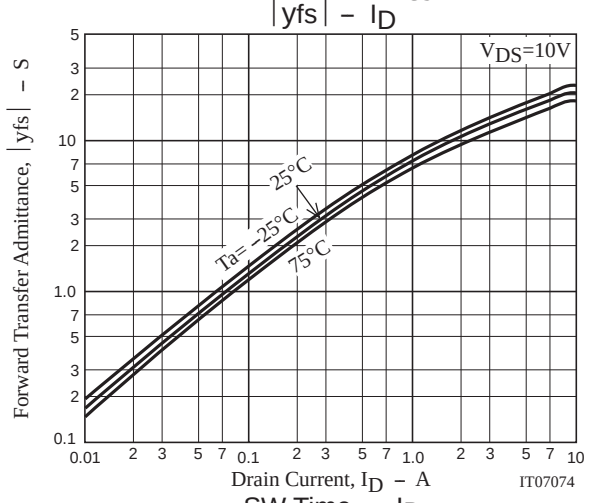


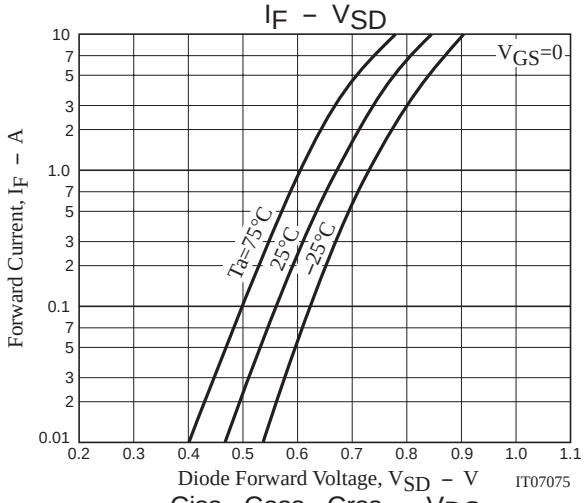

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT07070
4.0V
4.5V
3.0V
2.5V
2.0V
VGS=1.5V

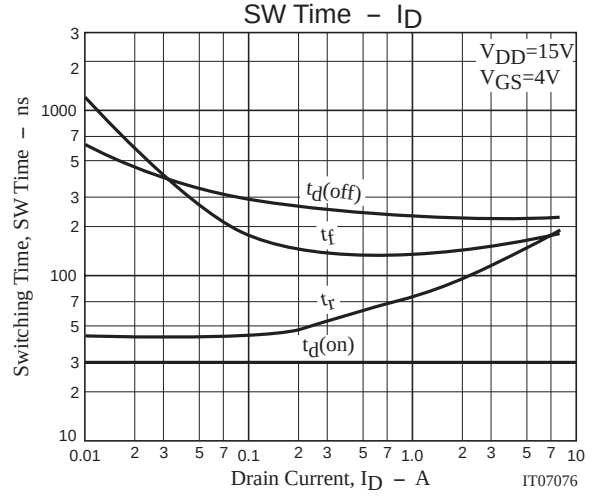

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT07071
VDS=10V
25°C
Ta=75°C
–25°C

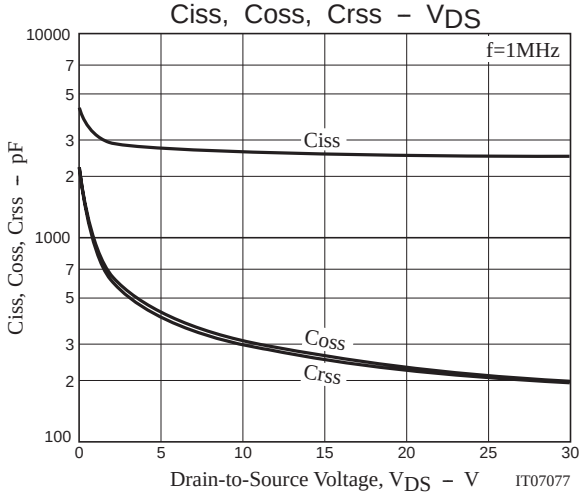

RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT07072
ID=8A
6A
4A

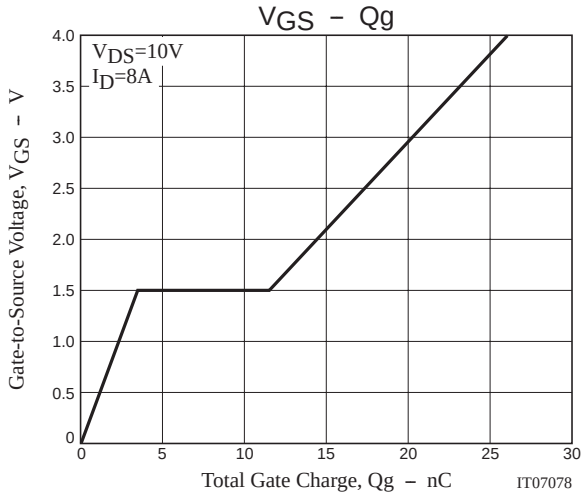

RDS(on) – Ta
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT07073
ID=4A, VGS=3.1V
ID=4A, VGS=2.5V
ID=8A, VGS=4.5V
ID=6A, VGS=4V

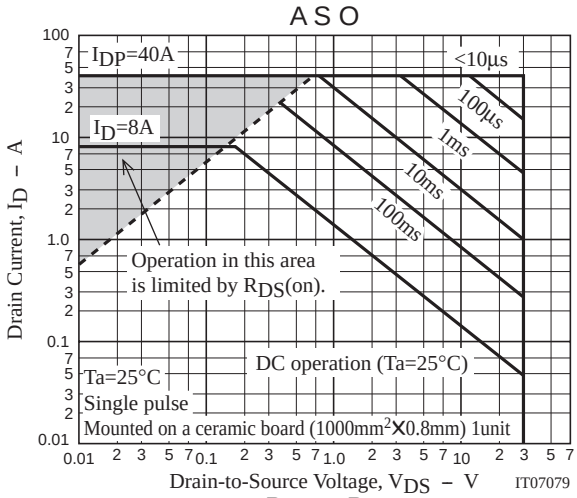

|yfs| – ID
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07074
VDS=10V
25°C
Ta=–25°C
75°C

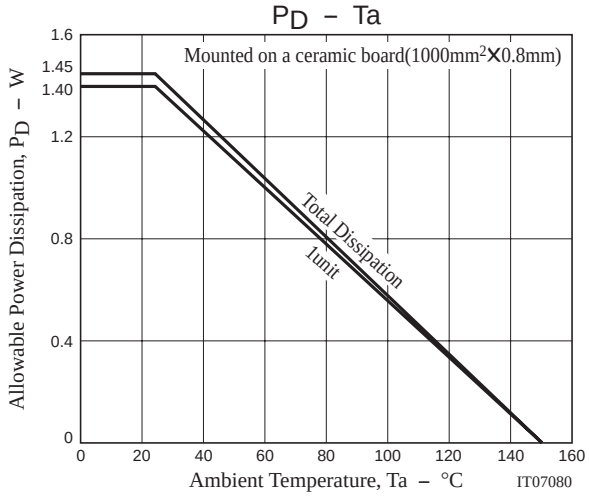

IF – VSD
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07075
VGS=0
Ta=75°C
25°C
–25°C

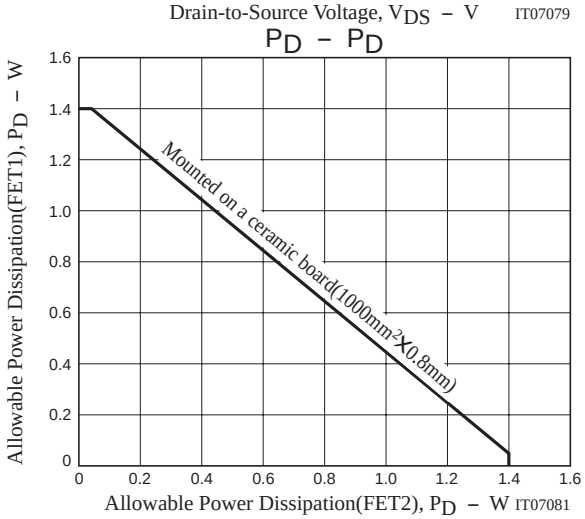

SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
IT07076
VDD=15V
VGS=4V
td(off)
tf
tr
td(on)


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07077
f=1MHz
Ciss
Coss
Crss









Note on usage : Since the FTD8002 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.