Ordering number : EN8726

SANYO Semiconductors
DATA SHEET

P-Channel Silicon MOSFET

EMH2302 — General-Purpose Switching Device Applications

Features

- The EMH2302 incorporates a P-channel MOSFET that feature low ON-resistance and ultrahigh-speed switching, thereby enabling high-density mounting.
- 4V drive.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	P-channel	Unit
Drain-to-Source Voltage	V_{DSS}		-30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		-2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	-8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²X0.8mm) 1unit	1.0	W
Total Dissipation	P_T	Mounted on a ceramic board (900mm²X0.8mm)	1.2	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	-30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, 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=-1A	1.3	2.2		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=-1A, V_{GS}=-10V		115	150	mΩ
	R_{DS}(on)2	I_D=-0.5A, V_{GS}=-4V		215	310	mΩ
Input Capacitance	Ciss	V_{DS}=-10V, f=1MHz		285		pF
Output Capacitance	Coss	V_{DS}=-10V, f=1MHz		65		pF
Reverse Transfer Capacitance	Crss	V_{DS}=-10V, f=1MHz		52		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		8.4		ns
Rise Time	t_r	See specified Test Circuit.		15.5		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		29		ns
Fall Time	t_f	See specified Test Circuit.		25.5		ns

Marking : MB

Continued on next page.

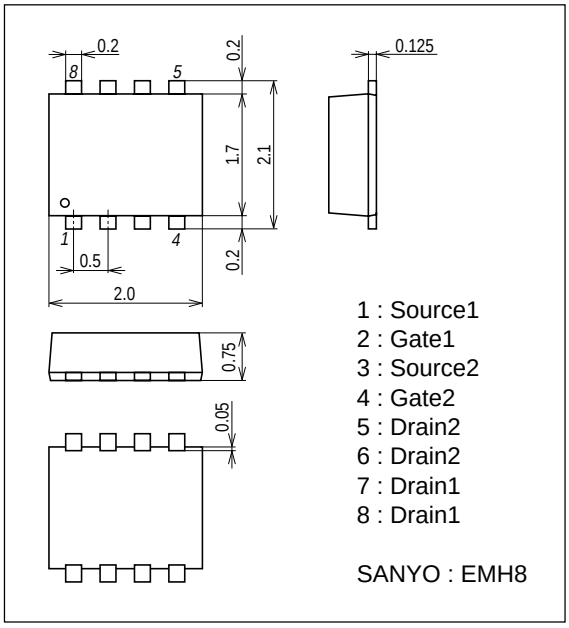
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		6.7		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		1.1		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_D=–2A		1.05		nC
Diode Forward Voltage	V_{SD}	I_S=–2A, V_{GS}=0V		–0.85	–1.2	V

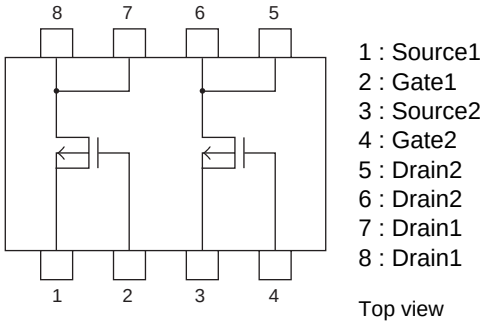
Package Dimensions

unit : mm (typ)

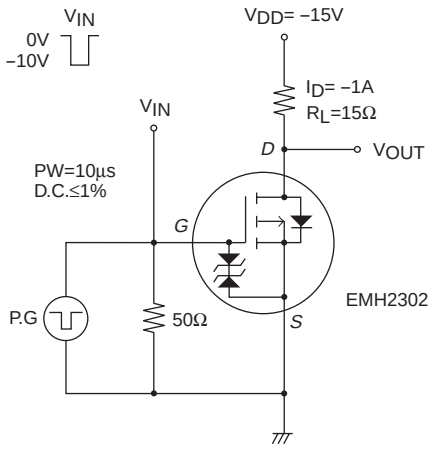
7045-002

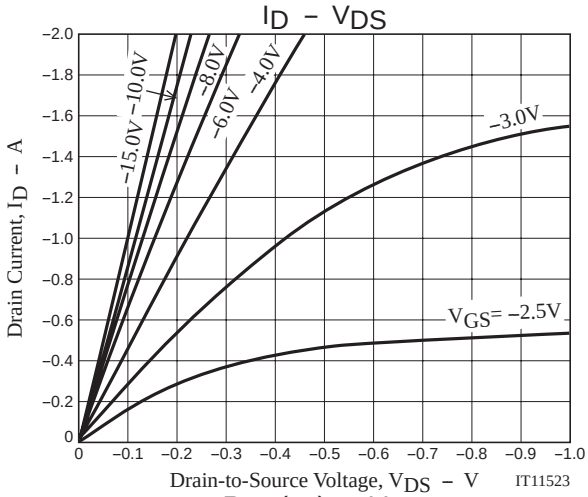


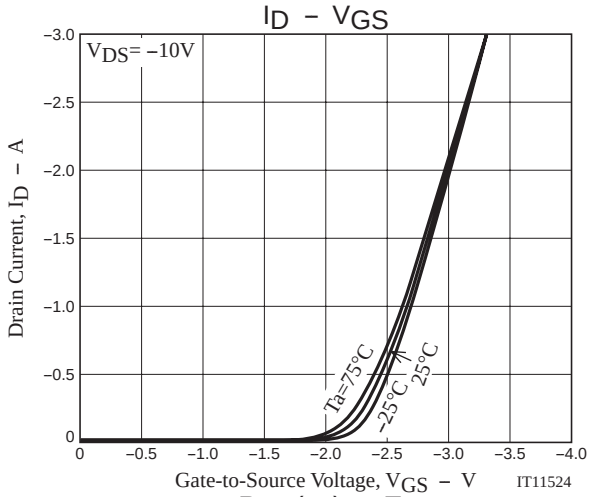
Electrical Connection

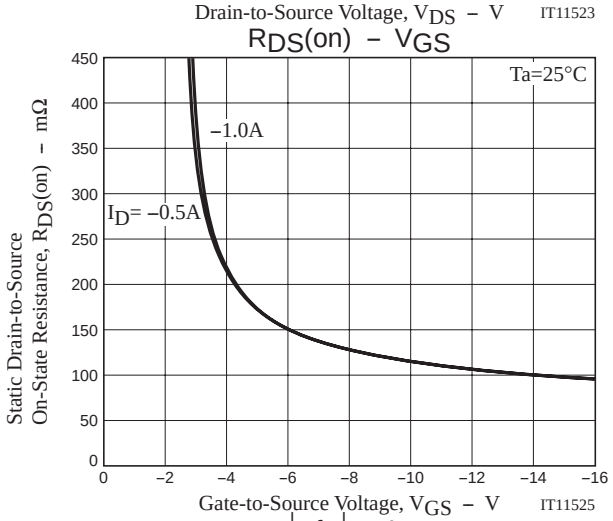


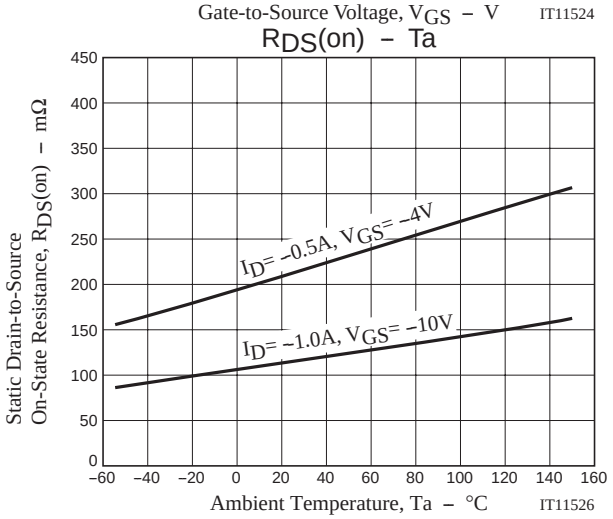
Switching Time Test Circuit

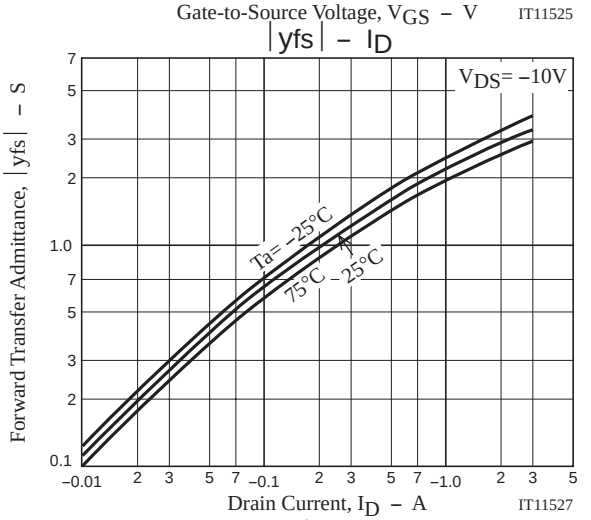


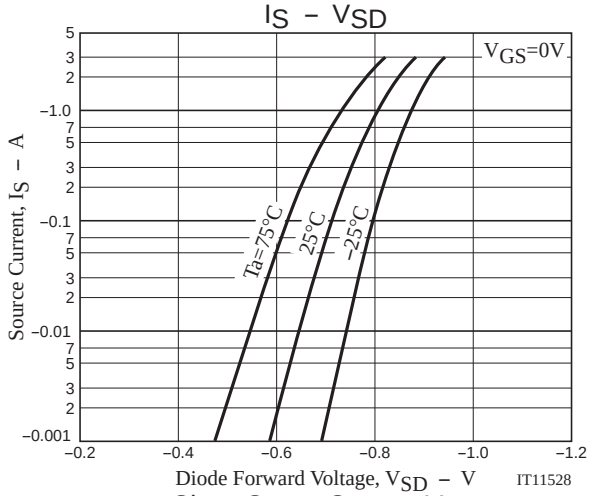

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT11523
–15.0V
–10.0V
–8.0V
–6.0V
–4.0V
–3.0V
VGS= –2.5V

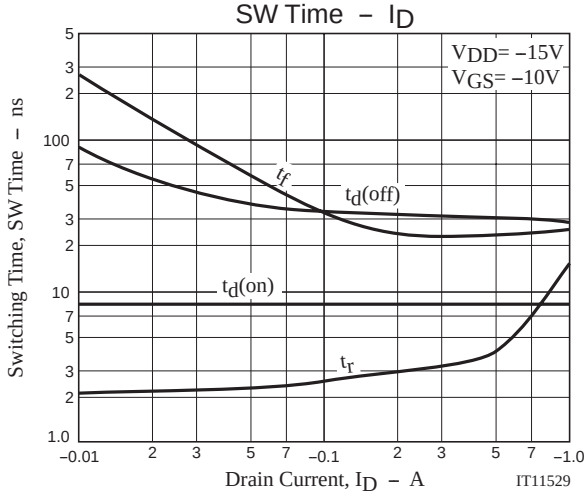

ID – VGS
VDS= –10V
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT11524
Ta=75°C
25°C
–25°C

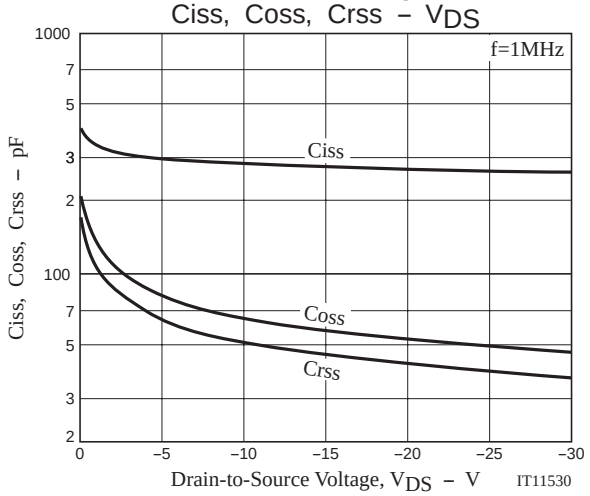

RDS(on) – VGS
Ta=25°C
–1.0A
ID= –0.5A
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT11525

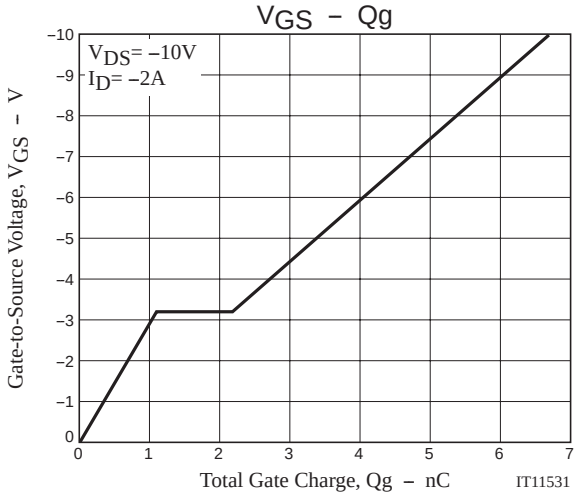

RDS(on) – Ta
ID= –0.5A, VGS= –4V
ID= –1.0A, VGS= –10V
Static Drain-to-Source
On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT11526

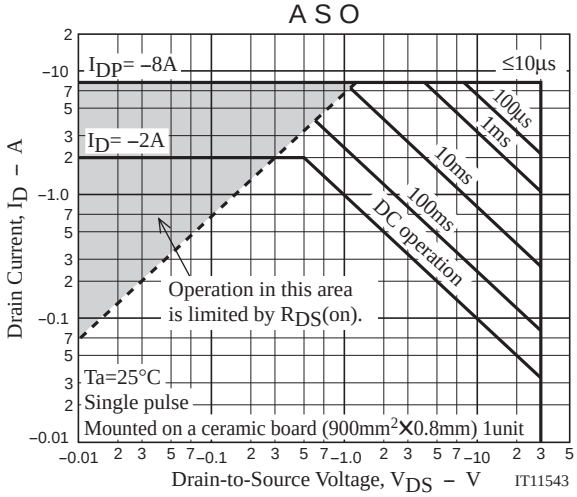

| yfs | – ID
VDS= –10V
Ta= –25°C
75°C
–25°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT11527

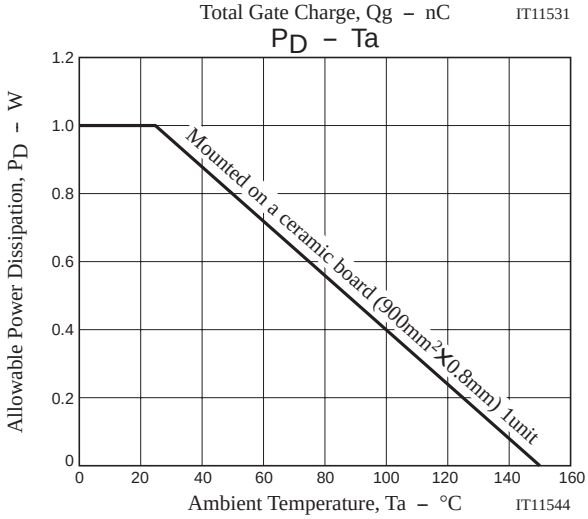

IS – VSD
VGS=0V
Ta=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT11528


SW Time – ID
VDD= –15V
VGS= –10V
tf
td(off)
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT11529


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT11530







Note on usage : Since the EMH2302 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.