Ordering number : ENN7405

P-Channel Silicon MOSFET

ECH8605

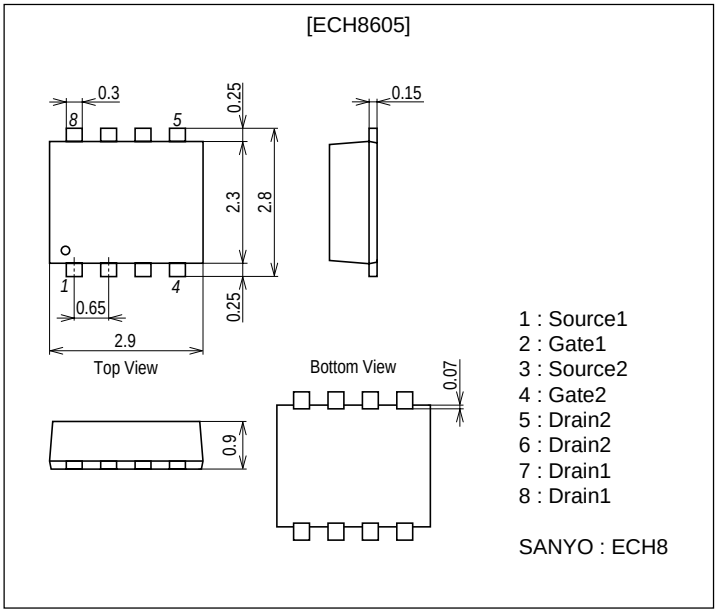
Ultrahigh-Speed Switching Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit : mm
2206A



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		-4	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	-40	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)1unit	1.3	W
Total Dissipation	P_T	Mounted on a ceramic board (900mm²×0.8mm)	1.5	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

Marking : JD

Continued on next page.

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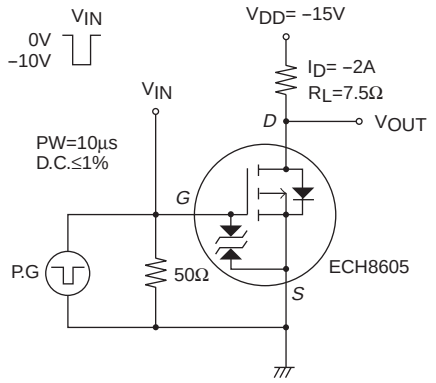
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

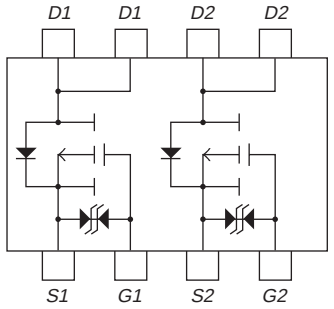
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−2A	3.3	5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−2A, V_{GS}=−10V		50	67	mΩ
	R_{DS}(on)2	I_D=−1A, V_{GS}=−4V		87	120	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		550		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		120		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		90		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		13		ns
Rise Time	t_r	See specified Test Circuit.		110		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		65		ns
Fall Time	t_f	See specified Test Circuit.		75		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		14		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		2.2		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		2.5		nC
Diode Forward Voltage	V_{SD}	I_S=−4A, V_{GS}=0		−0.88	−1.2	V

Switching Time Test Circuit

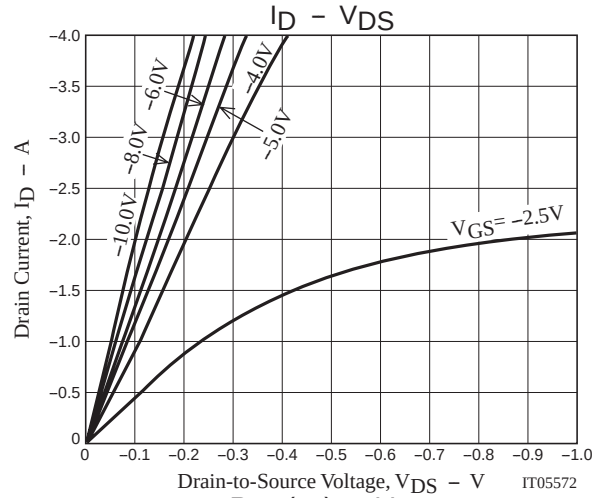


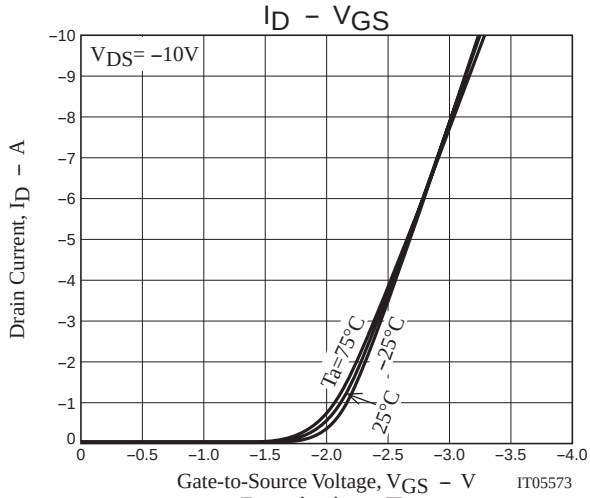
Electrical Connection

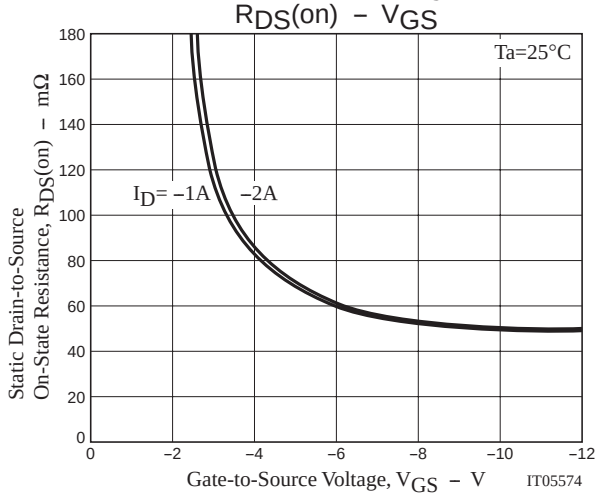


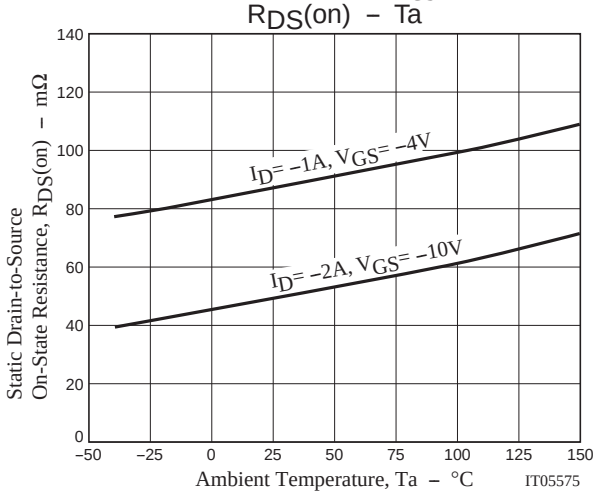
1 : Source1
2 : Gate1
3 : Source2
4 : Gate2
5 : Drain2
6 : Drain2
7 : Drain1
8 : Drain1

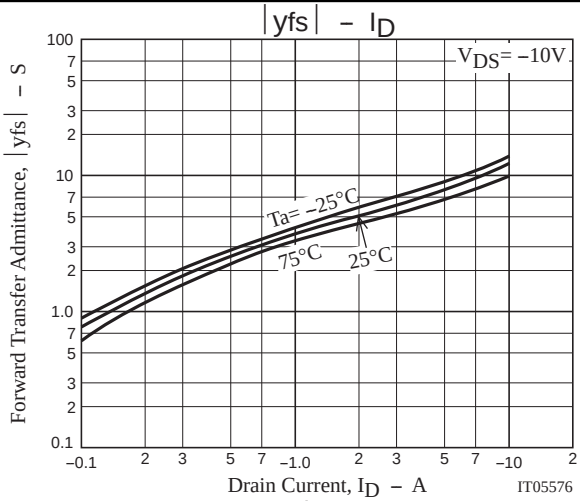
(Top view)

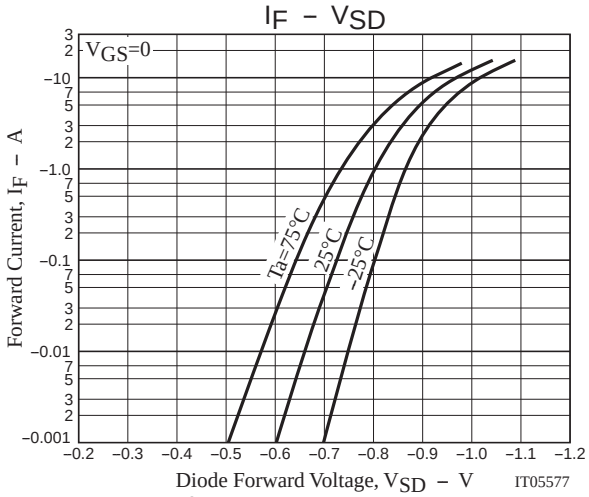


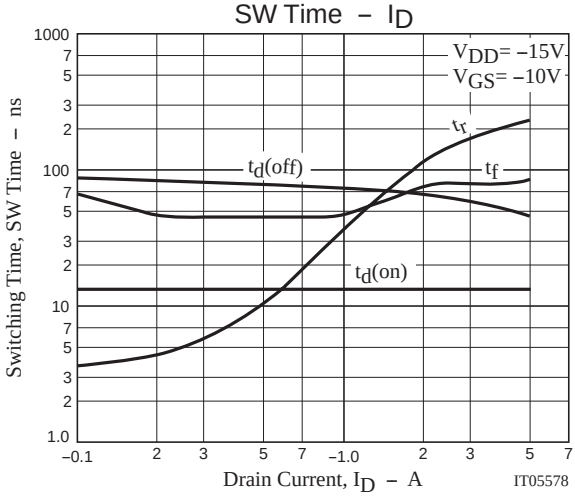


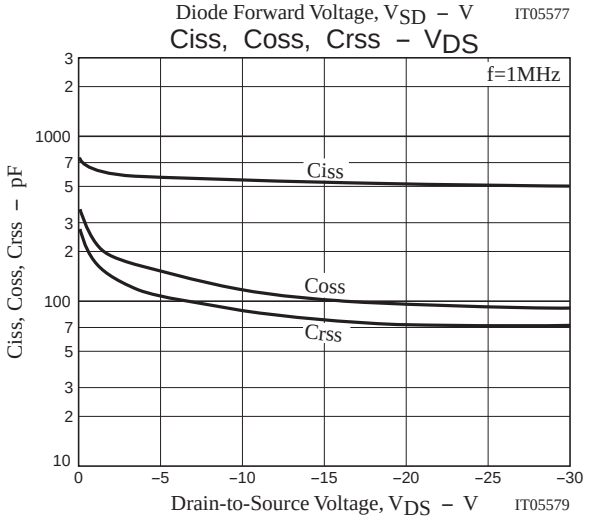


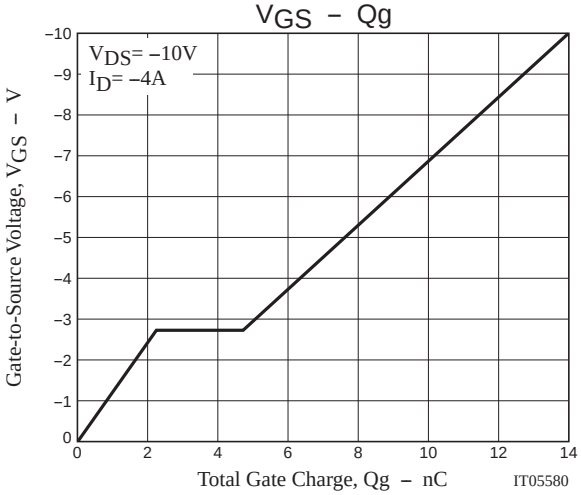


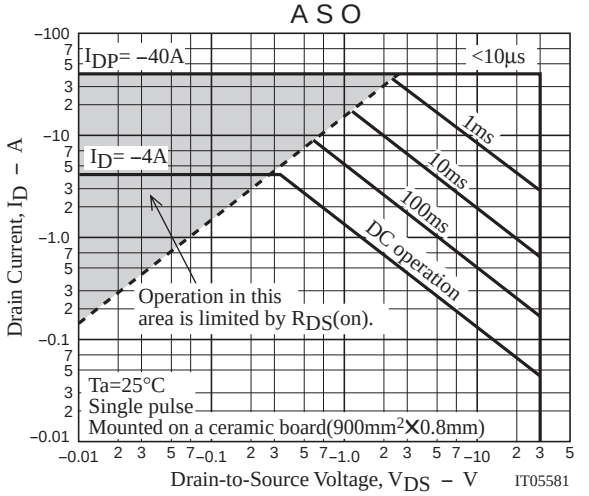

|yfs| – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT05576

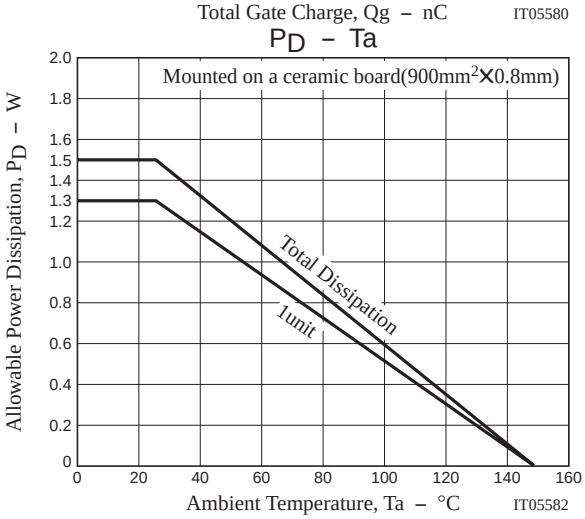

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT05577


SW Time – ID
VDD= –15V
VGS= –10V
tr
td(off)
tf
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT05578


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT05579


VGS – Qg
VDS= –10V
ID= –4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT05580


ASO
IDP= –40A
<10μs
1ms
10ms
100ms
DC operation
ID= –4A
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board(900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT05581


PD – Ta
Mounted on a ceramic board(900mm2×0.8mm)
Total Dissipation
1unit
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT05582