Ordering number : ENN7406

N-Channel Silicon MOSFET

ECH8606

Ultrahigh-Speed Switching Applications

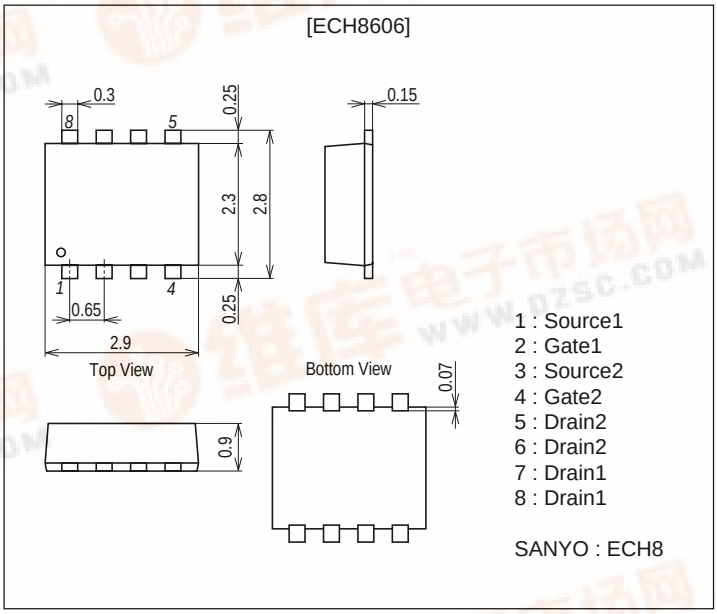
Features

- 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		6	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	40	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²X0.8mm)1unit	1.3	W
Total Dissipation	P_T	Mounted on a ceramic board (900mm²X0.8mm)	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 : KF

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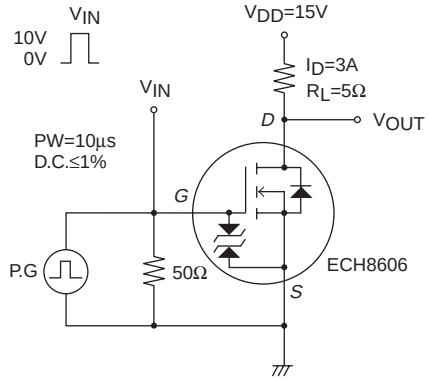
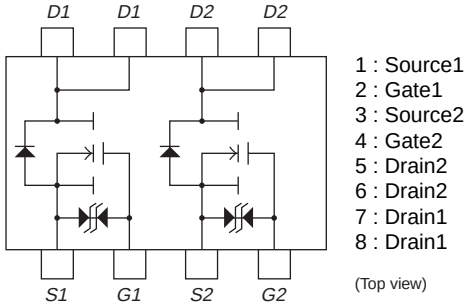
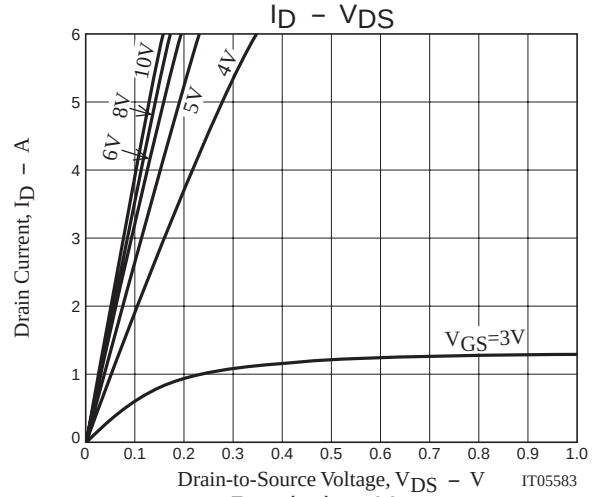
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	|yfs|	V_{DS}=10V, I_D=3A	3.3	5		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=2A, V_{GS}=10V		25	34	mΩ
	R_{DS}(on)2	I_D=1A, V_{GS}=4V		52	75	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		510		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		105		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		70		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		15		ns
Rise Time	t_r	See specified Test Circuit.		74		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		43		ns
Fall Time	t_f	See specified Test Circuit.		37		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=6A		11		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=6A		1.9		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=6A		2.9		nC
Diode Forward Voltage	V_{SD}	I_S=6A, V_{GS}=0		0.85	1.2	V

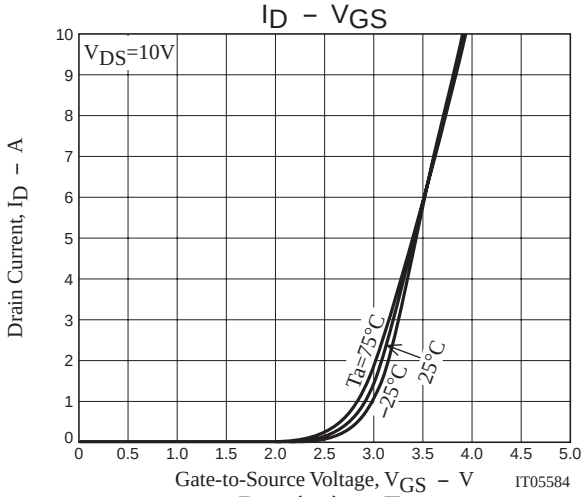
Switching Time Test Circuit

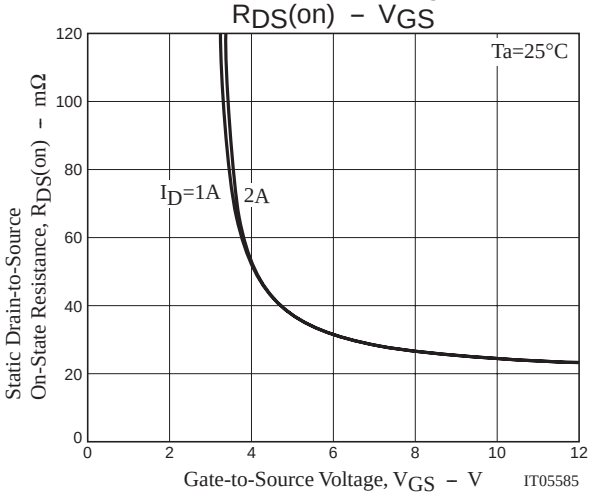


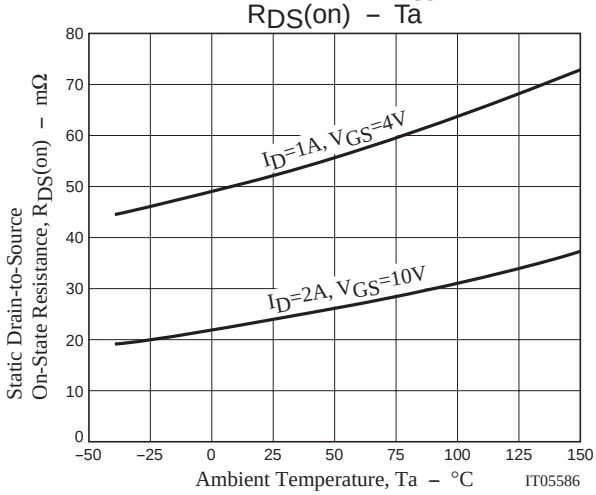
Electrical Connection

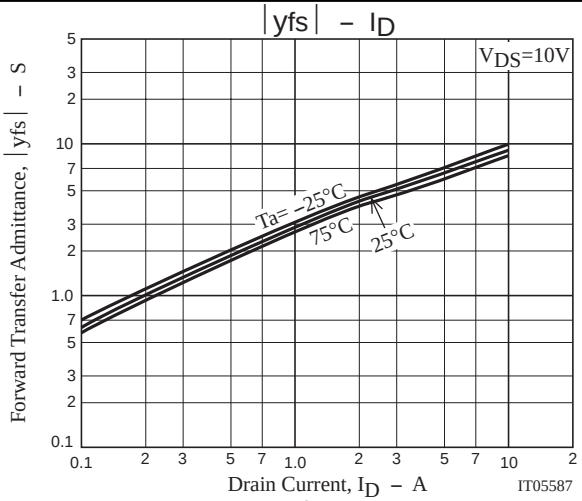


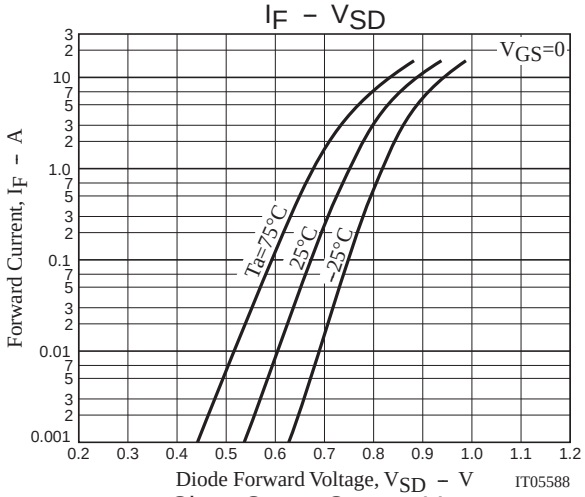


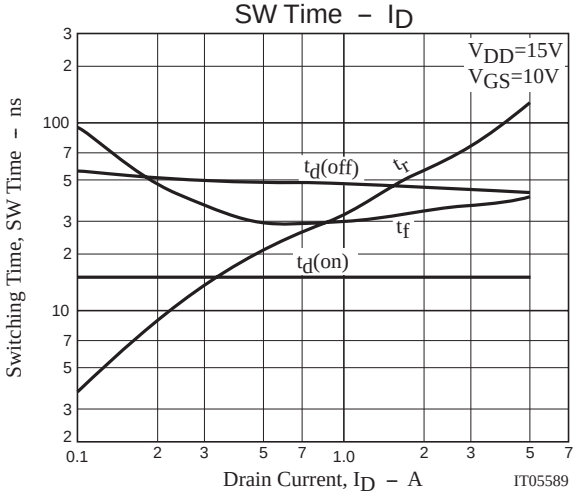


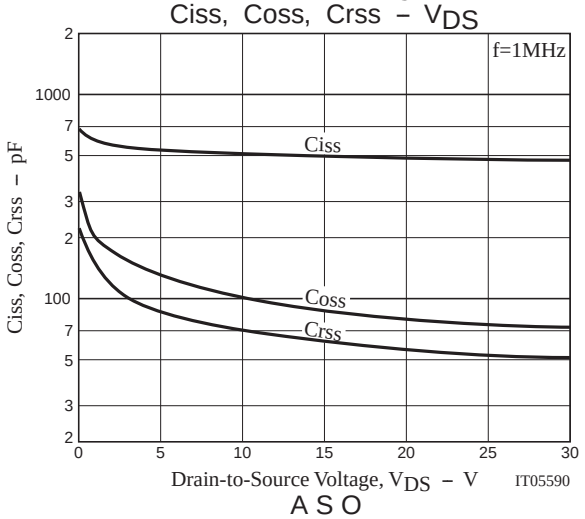


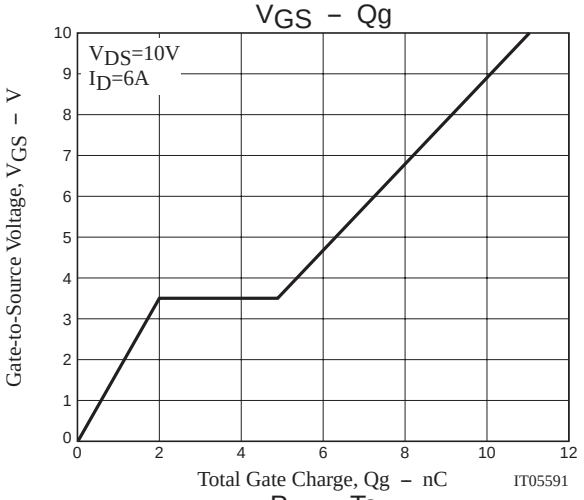


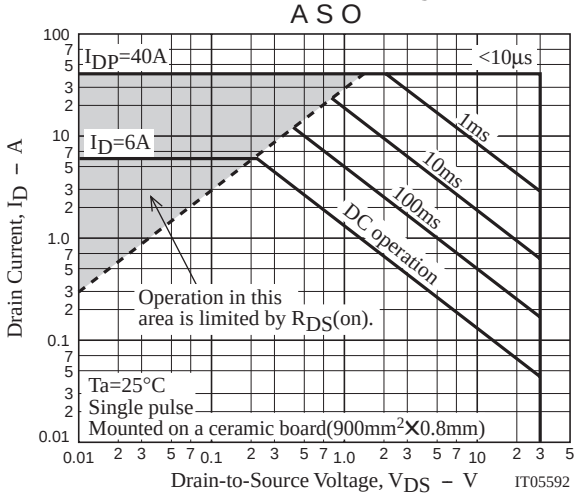

|yfs| – ID
VDS=10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT05587

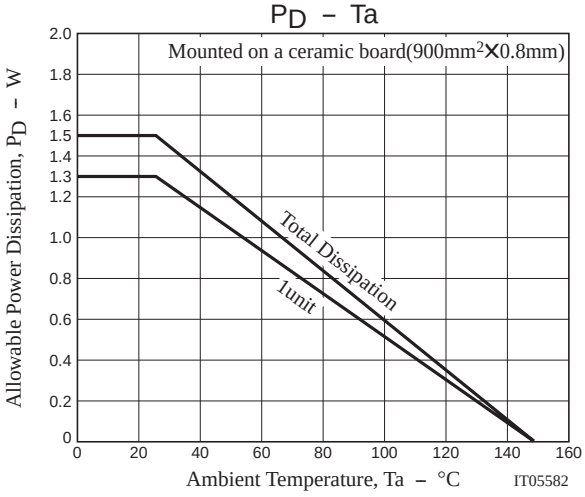

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT05588


SW Time – ID
VDD=15V
VGS=10V
td(off)
tr
tf
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT05589


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT05590


VGS – Qg
VDS=10V
ID=6A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT05591


ASO
IDP=40A
<10μs
ID=6A
1ms
10ms
100ms
DC operation
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
IT05592


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