Ordering number : ENN7218

P-Channel Silicon MOSFET

ECH8603

Ultrahigh-Speed Switching Applications

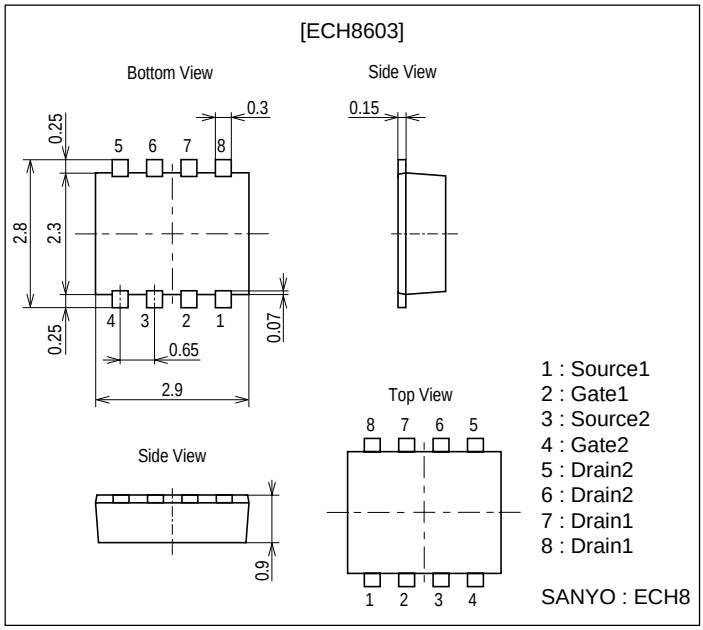
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 2.5V drive.

Package Dimensions

unit : mm

2206



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	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	−20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−20V, V_{GS}=0			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0			±10	μA

Marking : JC

Continued on next page.

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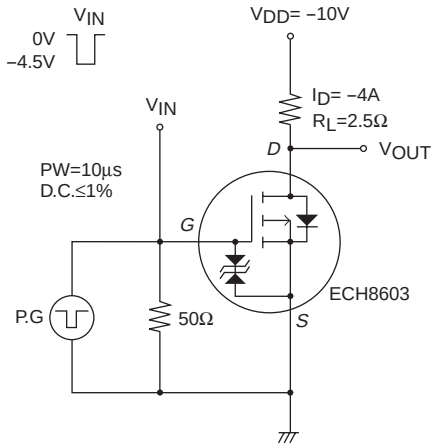
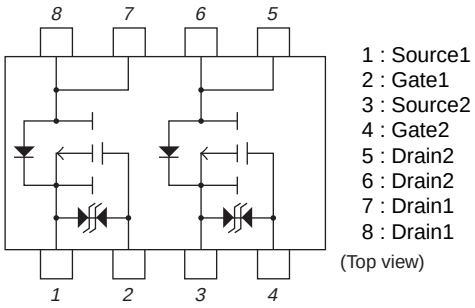
Continued from preceding page.

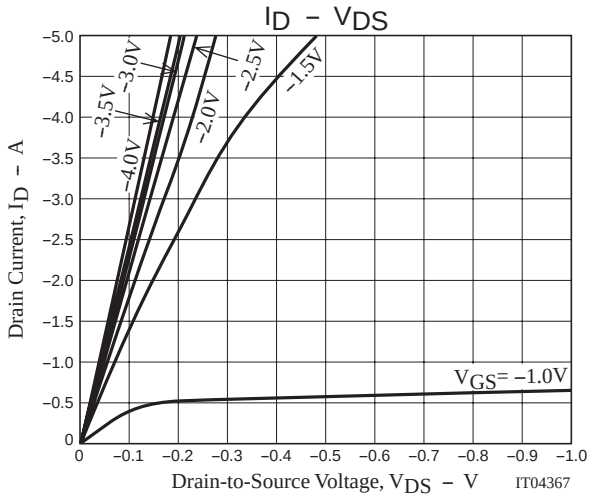
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−0.4		−1.3	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−2A	4.9	7		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−2A, V_{GS}=−4.5V		37	54	mΩ
	R_{DS}(on)2	I_D=−1A, V_{GS}=−2.5V		58	87	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		800		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		210		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		160		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		17		ns
Rise Time	t_r	See specified Test Circuit.		197		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		88		ns
Fall Time	t_f	See specified Test Circuit.		128		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		21		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		1.4		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_D=−4A		3.2		nC
Diode Forward Voltage	V_{SD}	I_S=−4A, V_{GS}=0		−0.82	−1.2	V

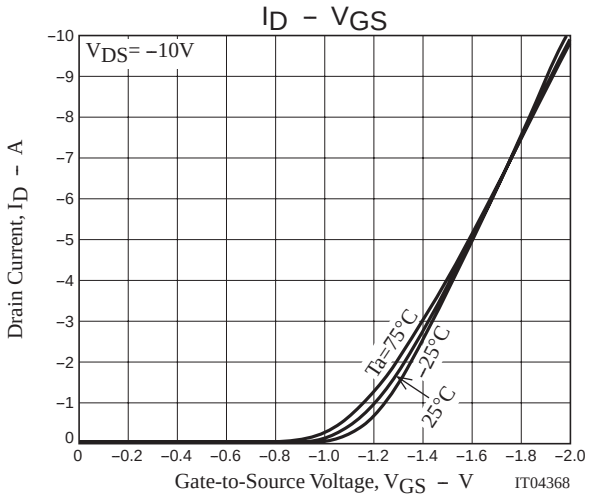
Switching Time Test Circuit

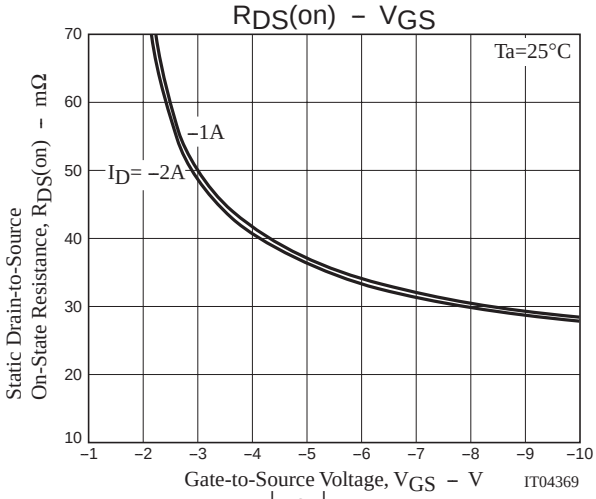


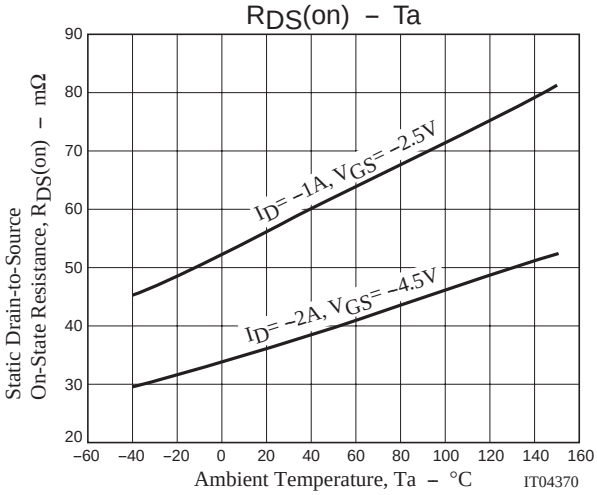
Electrical Connection

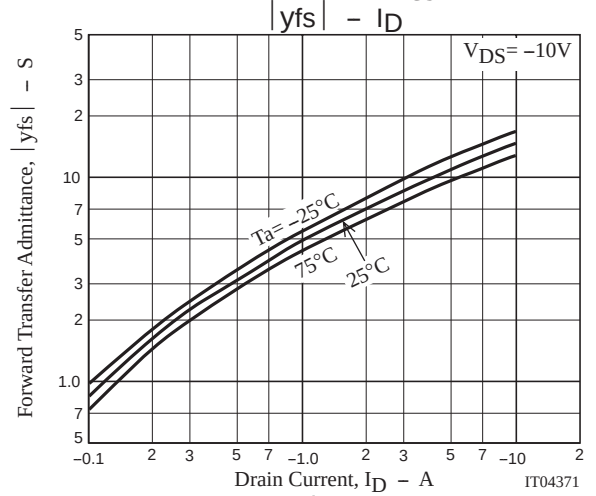


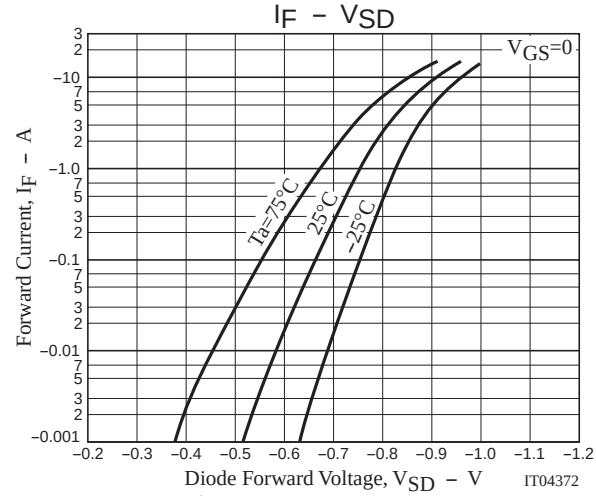


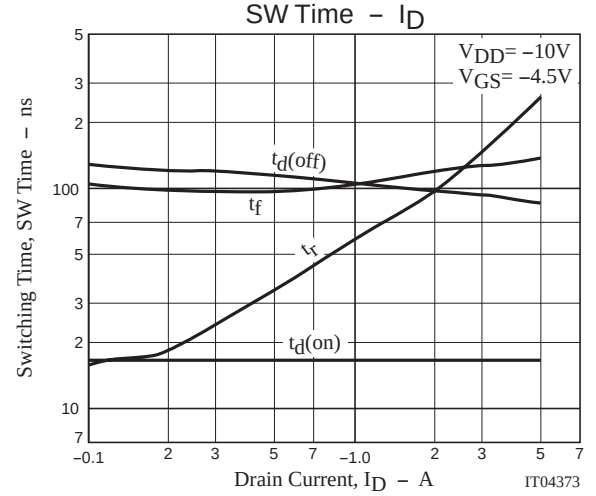


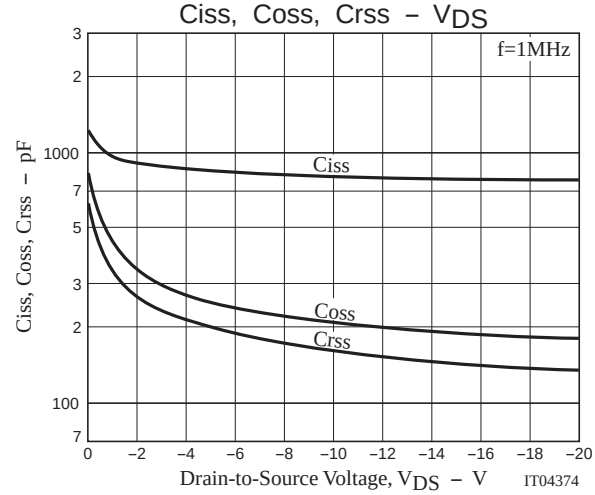

RDS(on) – VGS
Ta=25°C
–1A
ID= –2A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT04369

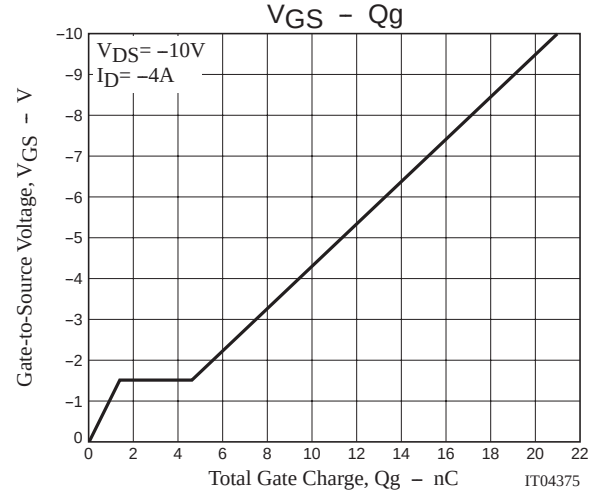

RDS(on) – Ta
ID= –1A, VGS= –2.5V
ID= –2A, VGS= –4.5V
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT04370

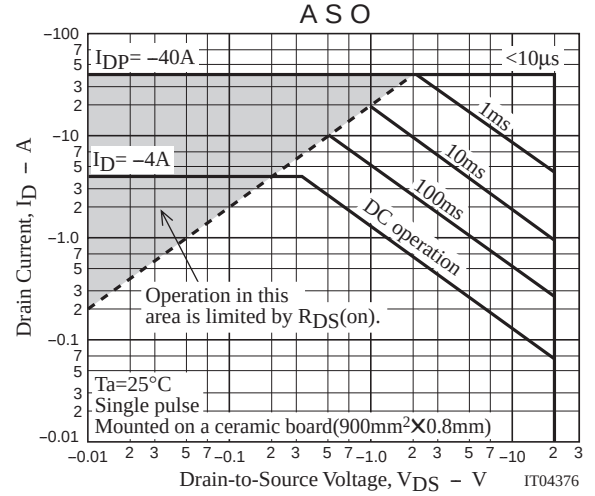

|yfs| – ID
VDS= –10V
Ta= –25°C
75°C
25°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT04371


IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT04372


SW Time – ID
VDD= –10V
VGS= –4.5V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT04373


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT04374


VGS – Qg
VDS= –10V
ID= –4A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT04375


A S O
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
IT04376