



SANYO Semiconductors

DATA SHEET

N-Channel Silicon MOSFET

ECH8612 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Best suited for load switches.
- 1.8V drive.
- Composite type, facilitating high-density mounting.

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}		±8	V
Drain Current (DC)	I _D		7	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	T _{ch}		150	°C
Storage Temperature	T _{stg}		-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	20			V
Zero-Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±6.4V, V _{DS} =0V			±10	μA
Cutoff Voltage	V _{GS(off)}	V _{DS} =10V, I _D =1mA	0.4		1.2	V
Forward Transfer Admittance	y _{fs}	V _{DS} =10V, I _D =3.5A	6.6	11		S
Static Drain-to-Source On-State Resistance	R _{DS(on)1}	I _D =3A, V _{GS} =4.5V		18	24	mΩ
	R _{DS(on)2}	I _D =1.5A, V _{GS} =2.5V		25	36	mΩ
	R _{DS(on)3}	I _D =0.5A, V _{GS} =1.8V		35	52	mΩ
Input Capacitance	C _{iss}	V _{DS} =10V, f=1MHz		920		pF
Output Capacitance	C _{oss}	V _{DS} =10V, f=1MHz		150		pF
Reverse Transfer Capacitance	C _{rss}	V _{DS} =10V, f=1MHz		120		pF

Marking : FE

Continued on next page.

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ECH8612

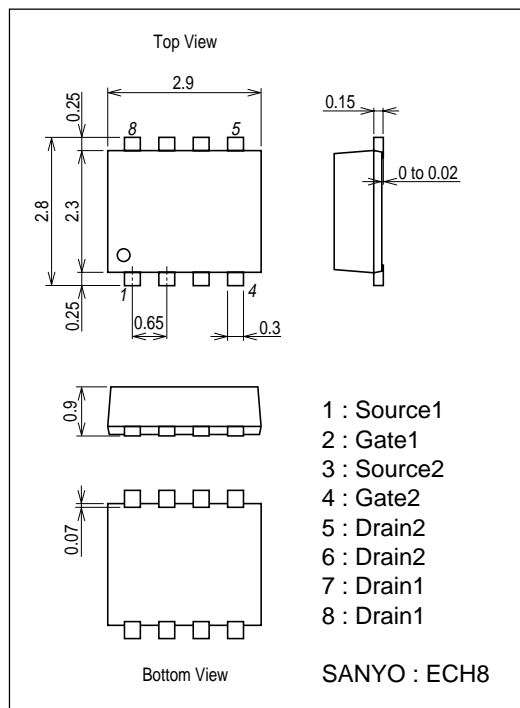
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		14		ns
Rise Time	t_r	See specified Test Circuit.		170		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		100		ns
Fall Time	t_f	See specified Test Circuit.		98		ns
Total Gate Charge	Q_g	$V_{DS}=10V, V_{GS}=4.5V, I_D=7A$		12		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=10V, V_{GS}=4.5V, I_D=7A$		1.3		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS}=10V, V_{GS}=4.5V, I_D=7A$		3.7		nC
Diode Forward Voltage	V_{SD}	$I_S=7A, V_{GS}=0V$		0.83	1.2	V

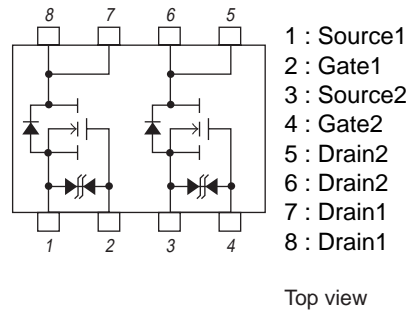
Package Dimensions

unit : mm

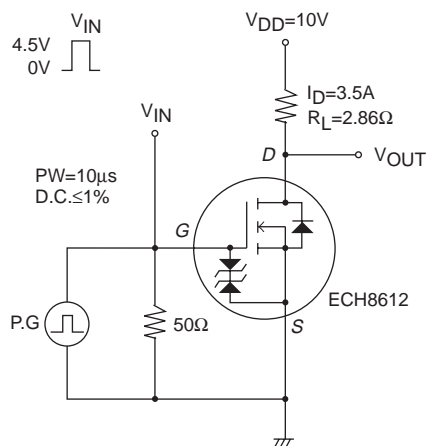
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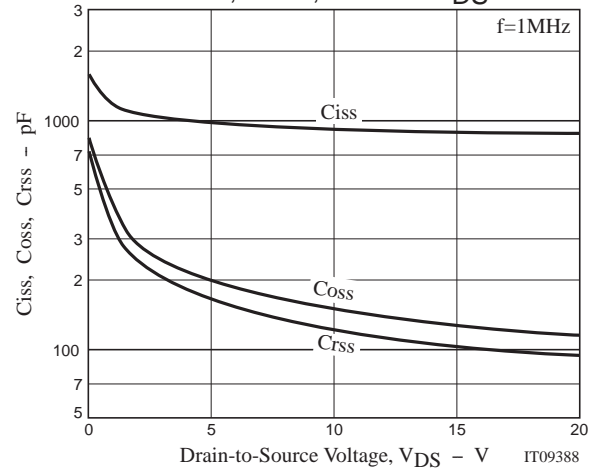
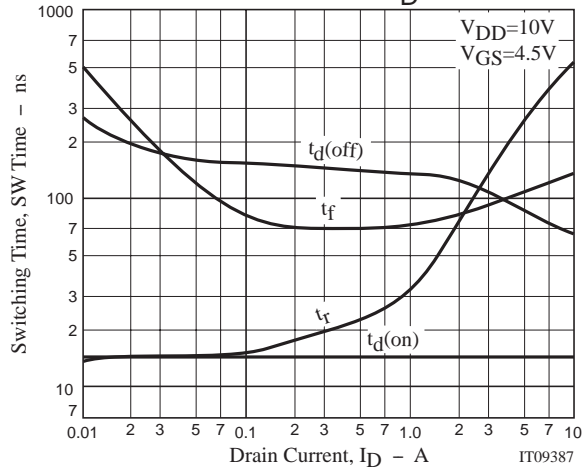
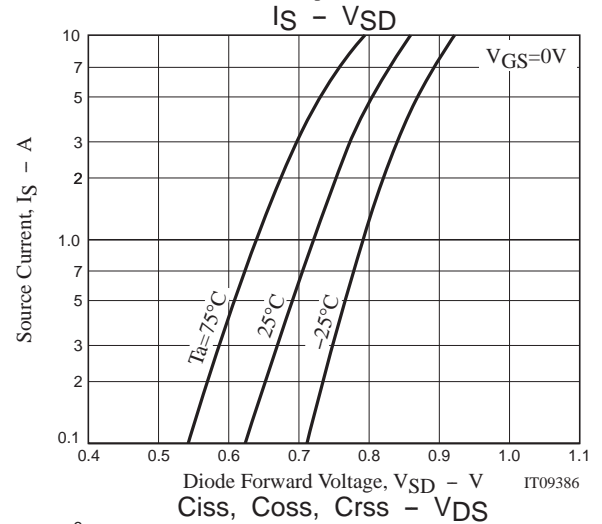
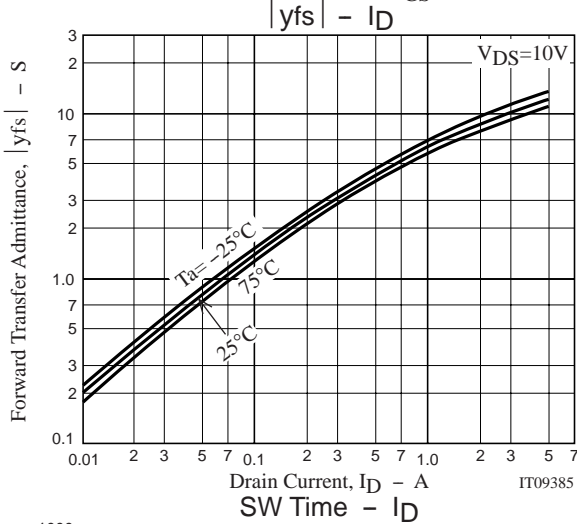
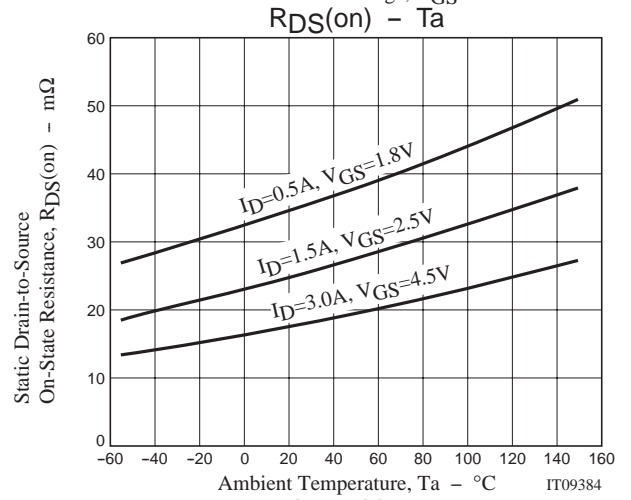
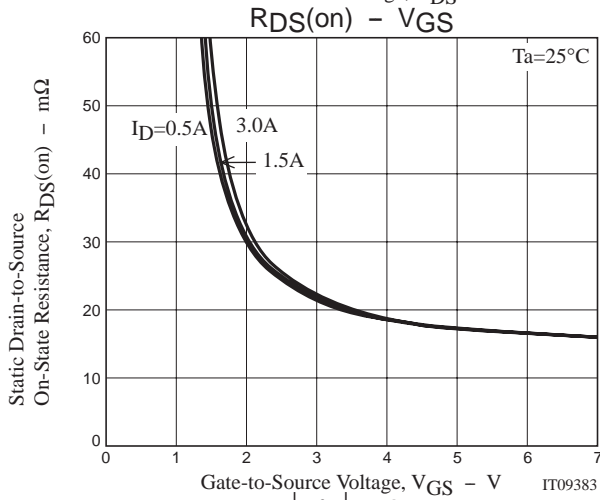
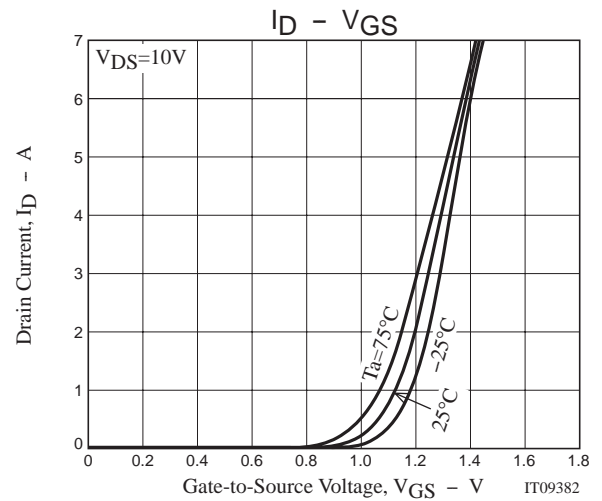
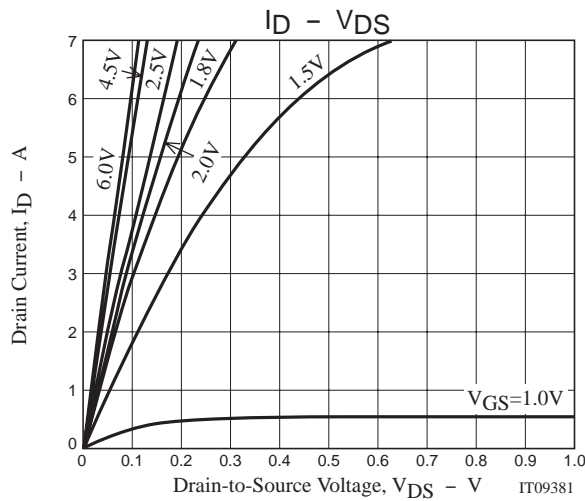


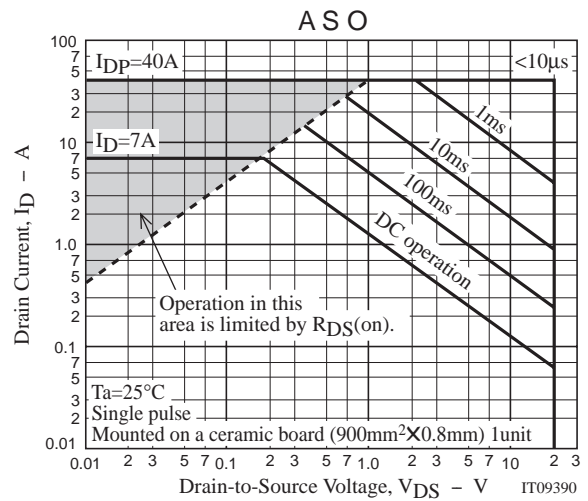
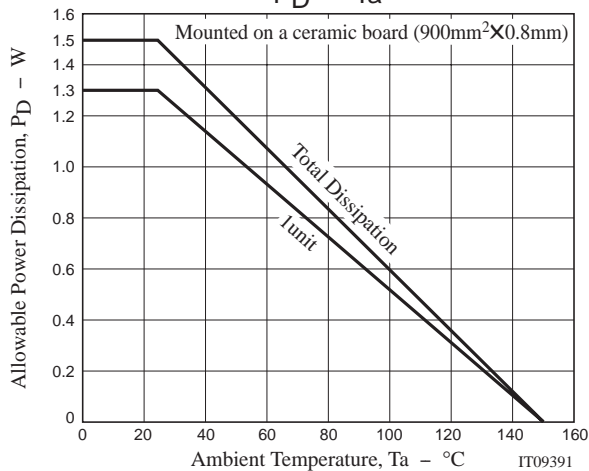
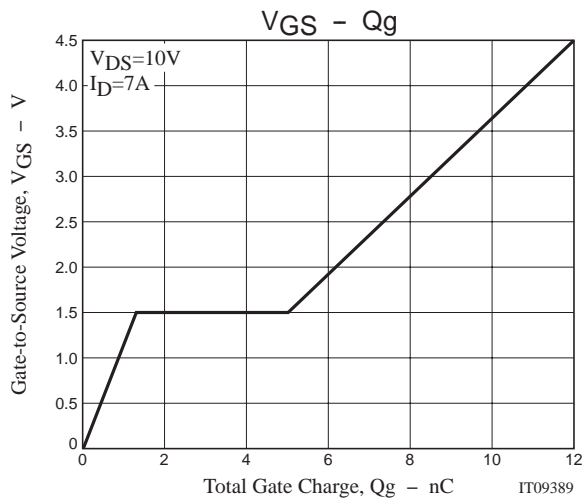
Electrical Connection



Switching Time Test Circuit







Note on usage : Since the ECH8612 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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