



# ECH8613

P-Channel Silicon MOSFET  
High-Speed Switching Applications

## Features

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

## Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		-12	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		-5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-40	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)1 unit	1.3	W
Total Dissipation	P <sub>T</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)	1.5	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0	-12			V
Zero-Gate Voltage Drain Current	I <sub>DSS1</sub>	V <sub>DSS</sub> =-4V, V <sub>GS</sub> =0			-1	μA
	I <sub>DSS2</sub>	V <sub>DSS</sub> =-12V, V <sub>GS</sub> =0			-10	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-6V, I <sub>D</sub> =-1mA	-0.4		-1.4	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-6V, I <sub>D</sub> =-2.5A	5.5	9.3		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-2A, V <sub>GS</sub> =-5V		26	33	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-1A, V <sub>GS</sub> =-4.5V		28	37	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-0.5A, V <sub>GS</sub> =-2.5V		43	60	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-6V, f=1MHz		1165		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-6V, f=1MHz		320		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =-6V, f=1MHz		265		pF

Marking : FF

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SANYO Electric Co.,Ltd. Semiconductor Company

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

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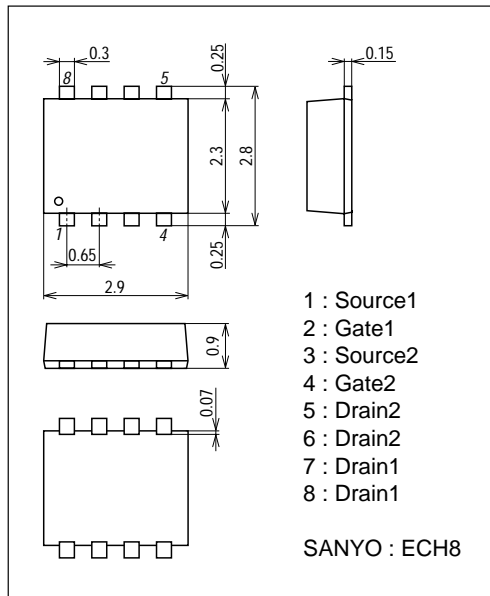
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		12		ns
Rise Time	$t_r$	See specified Test Circuit.		340		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		100		ns
Fall Time	$t_f$	See specified Test Circuit.		130		ns
Total Gate Charge	Qg	$V_{DS}=-6V, V_{GS}=-5V, I_D=-5A$		9.5		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-6V, V_{GS}=-5V, I_D=-5A$		2.1		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-6V, V_{GS}=-5V, I_D=-5A$		1.4		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-5A, V_{GS}=0$		0.83	-1.5	V

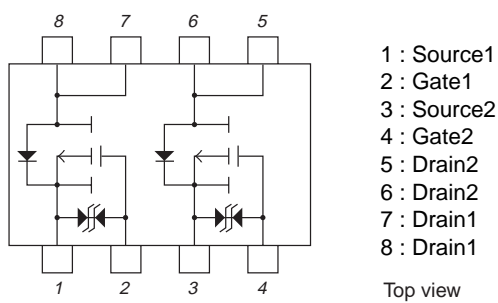
## Package Dimensions

unit : mm

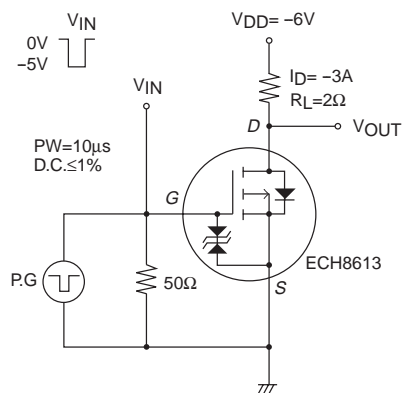
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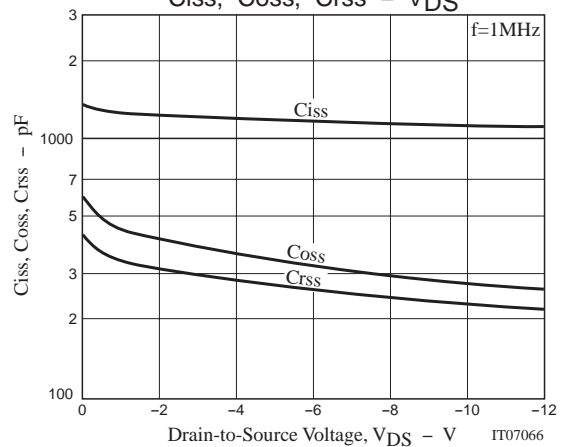
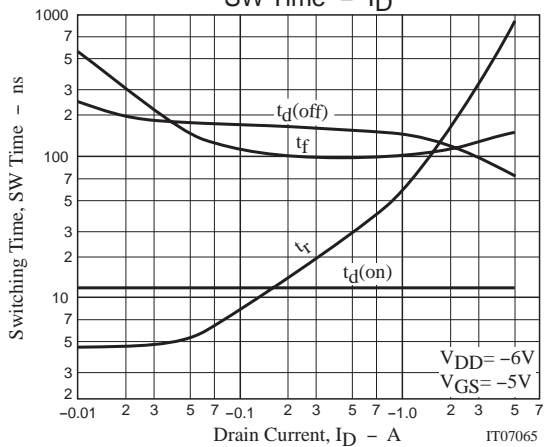
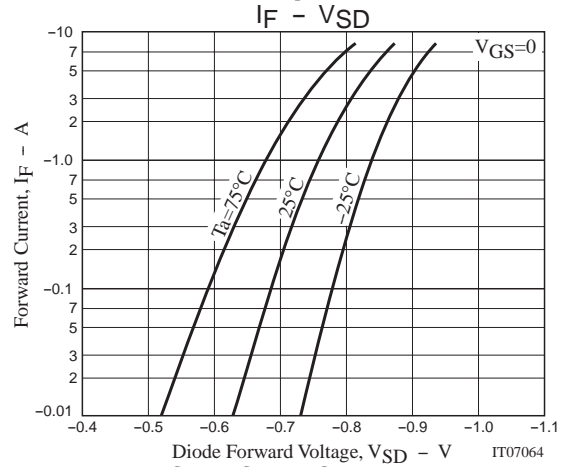
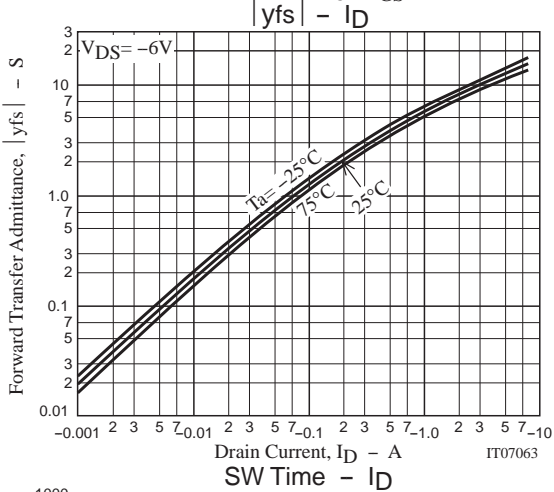
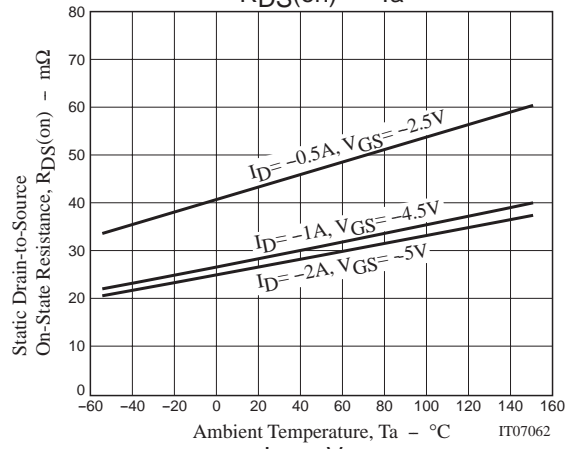
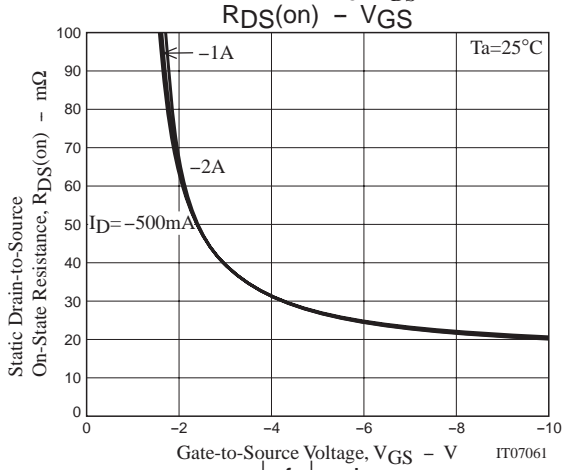
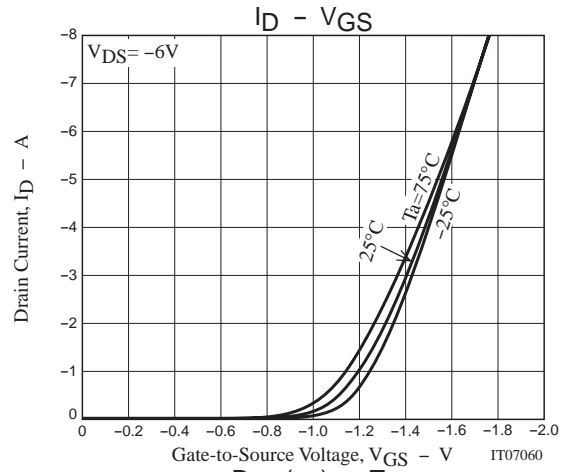
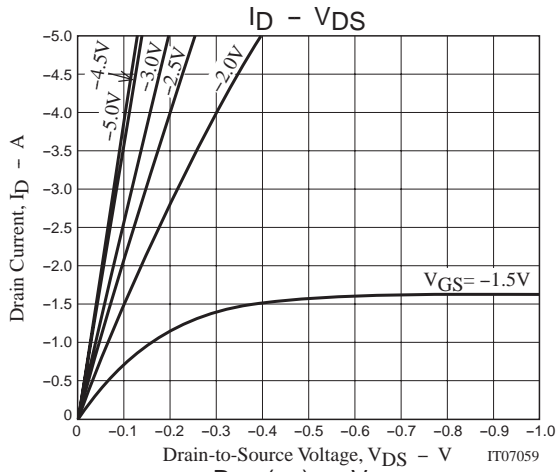


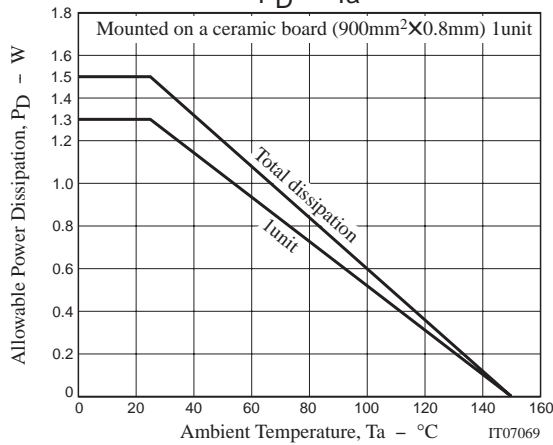
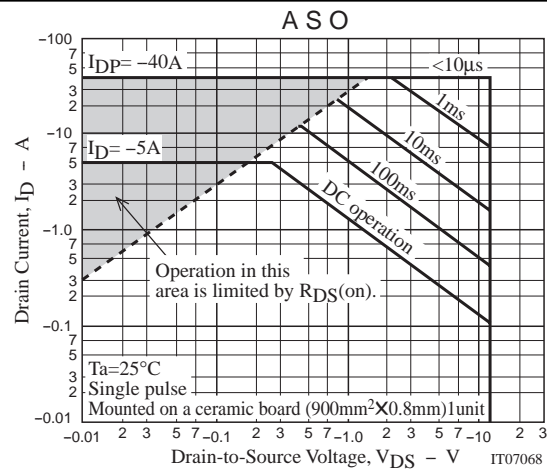
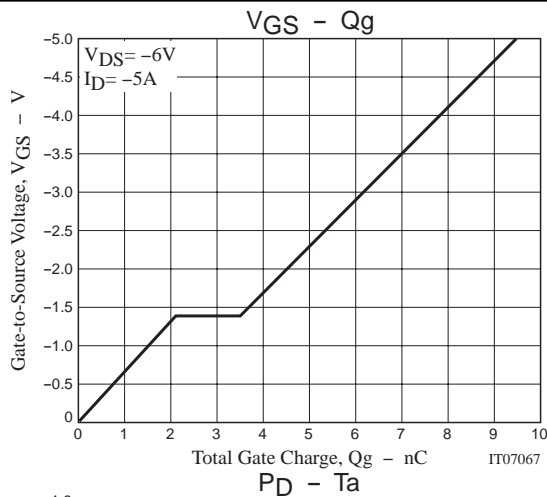
## Electrical Connection



## Switching Time Test Circuit







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