



SANYO Semiconductors

## DATA SHEET

An ON Semiconductor Company

# ECH8410 — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- 4V drive.
- Halogen free compliance.

### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		30	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		12	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	60	A
Allowable Power Dissipation	$P_D$	When mounted on ceramic substrate (900mm <sup>2</sup> × 0.8mm)	1.6	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10\text{V}$ , $I_D=6\text{A}$		7.5		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=6\text{A}$ , $V_{GS}=10\text{V}$		7.5	10	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=3\text{A}$ , $V_{GS}=4.5\text{V}$		13	18.2	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=3\text{A}$ , $V_{GS}=4\text{V}$		15.5	22	$\text{m}\Omega$

Marking : KQ

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# ECH8410

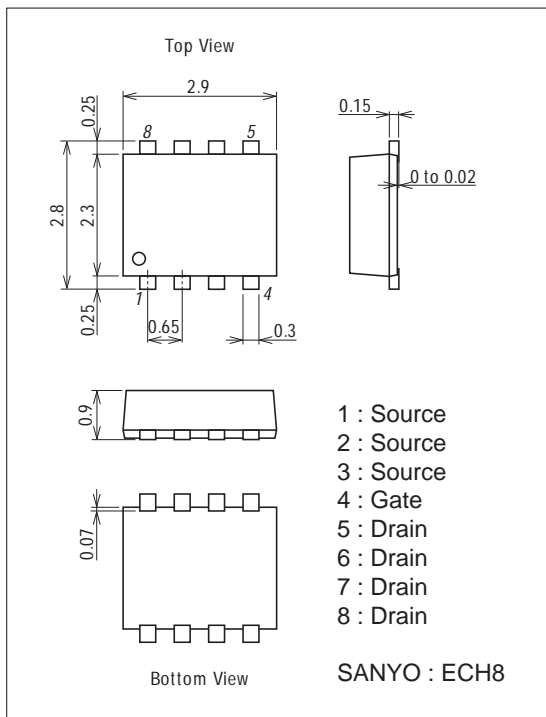
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=10V, f=1MHz$		1700		pF
Output Capacitance	Coss	$V_{DS}=10V, f=1MHz$		300		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=10V, f=1MHz$		200		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		17		ns
Rise Time	$t_r$	See specified Test Circuit.		50		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		110		ns
Fall Time	$t_f$	See specified Test Circuit.		72		ns
Total Gate Charge	Qg	$V_{DS}=15V, V_{GS}=10V, I_D=12A$		31		nC
Gate-to-Source Charge	Qgs	$V_{DS}=15V, V_{GS}=10V, I_D=12A$		5.5		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=15V, V_{GS}=10V, I_D=12A$		5.5		nC
Diode Forward Voltage	VSD	$I_S=12A, V_{GS}=0V$		0.8	1.2	V

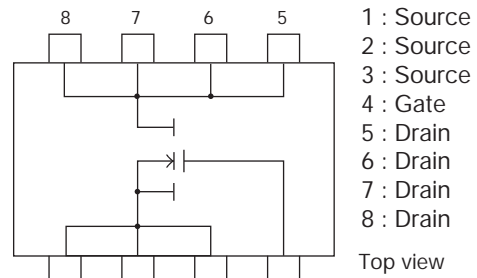
## Package Dimensions

unit : mm (typ)

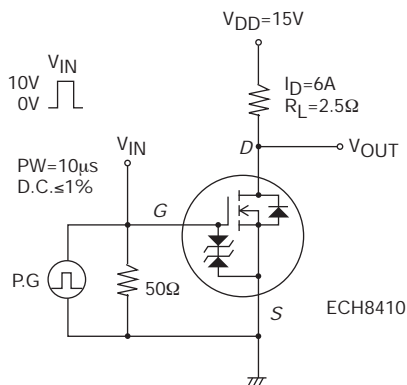
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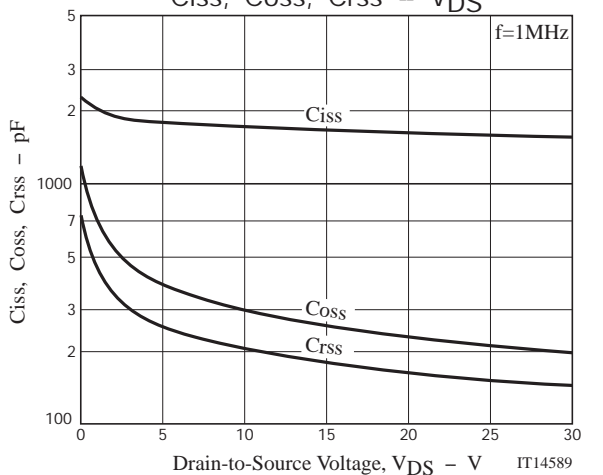
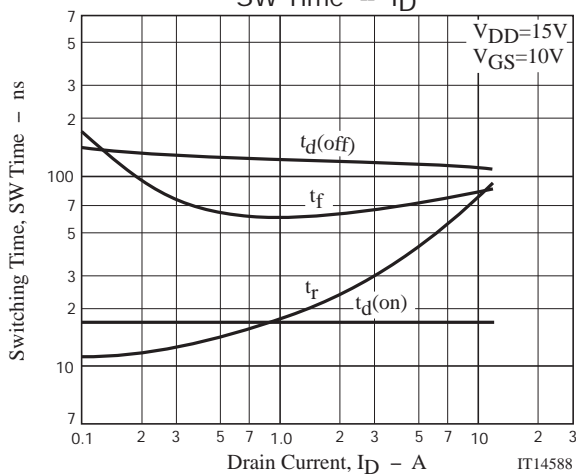
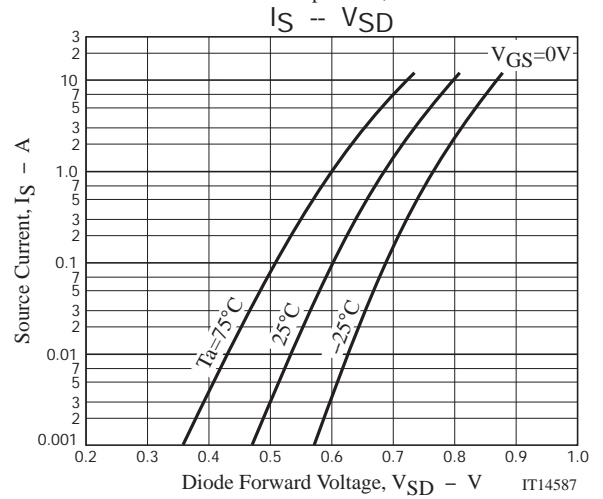
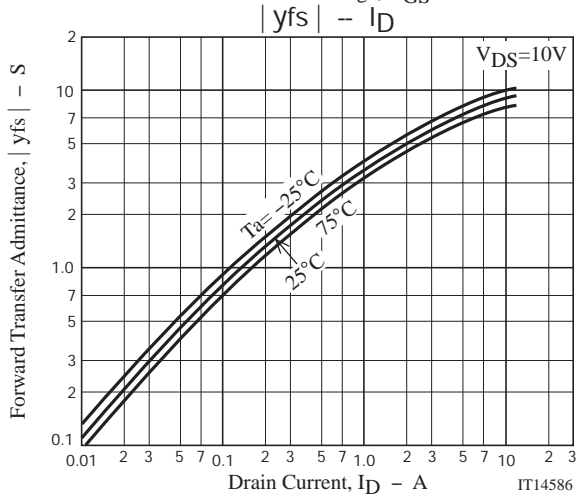
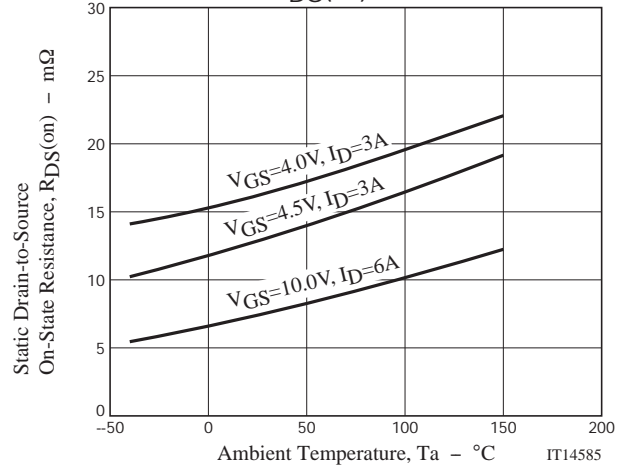
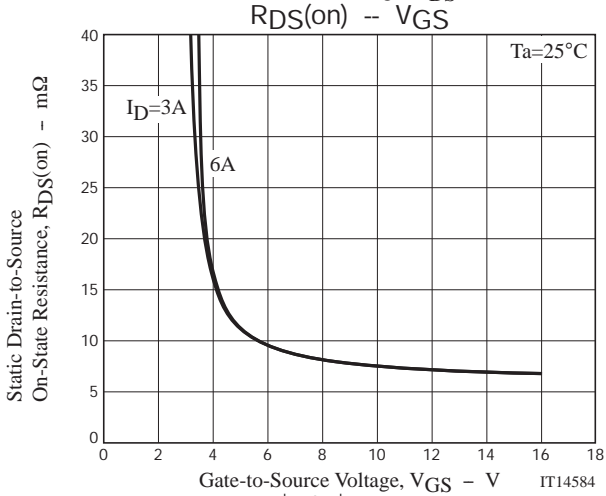
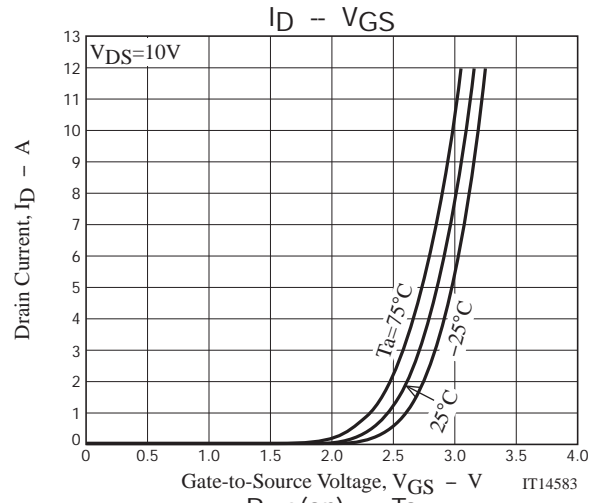
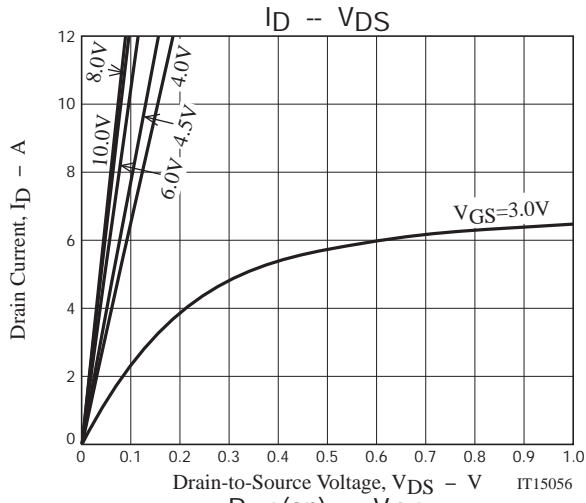


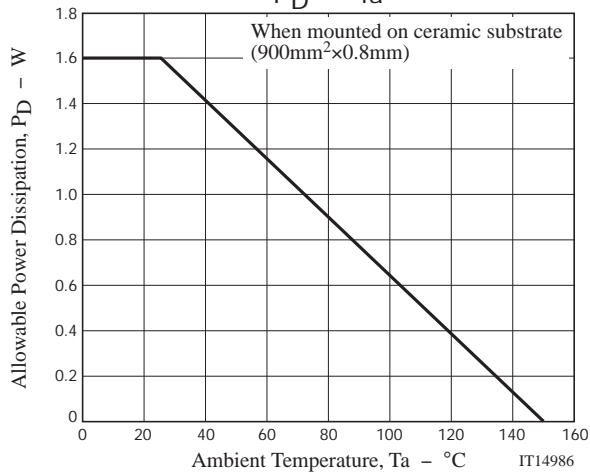
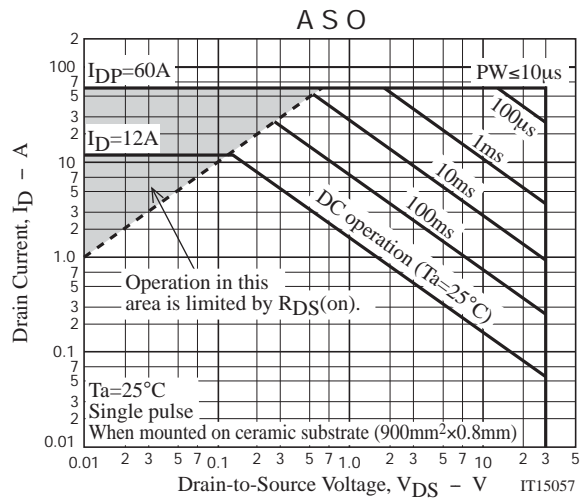
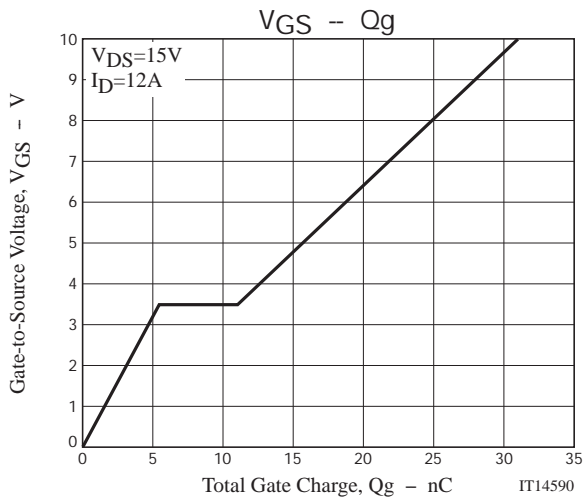
## Electrical Connection



## Switching Time Test Circuit







Note on usage : Since the ECH8410 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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