



SANYO Semiconductors

## DATA SHEET

# EC4409C — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- 1.5V drive.
- Halogen Free compliance (UL94 HB).

### Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±10	V
Drain Current (DC)	I <sub>D</sub>		0.35	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	1.4	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on glass epoxy substrate (145mmX80mmX1.6mm)	0.15	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> =0V	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100μA	0.4		1.3	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =200mA	360	600		mS
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =200mA, V <sub>GS</sub> =4V		0.75	1.0	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =100mA, V <sub>GS</sub> =2.5V		0.9	1.3	Ω
	R <sub>DS(on)3</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =1.5V		1.8	3.6	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, f=1MHz		28		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =10V, f=1MHz		6.0		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =10V, f=1MHz		3.1		pF

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**SANYO Semiconductor Co., Ltd.**

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# EC4409C

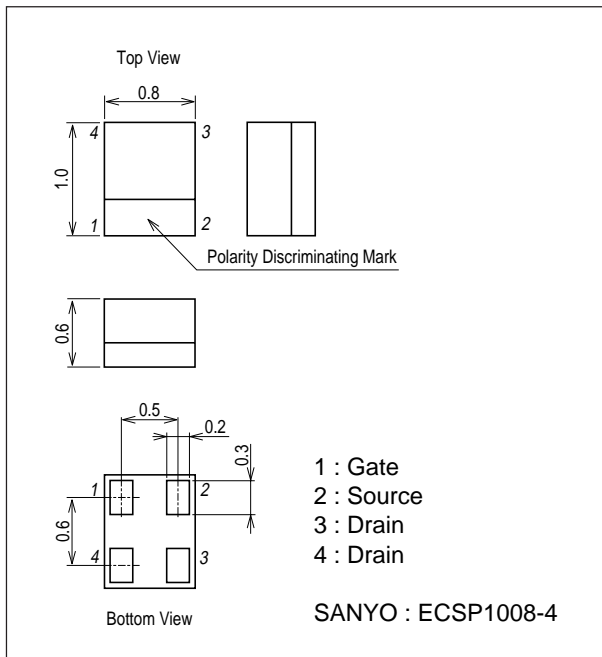
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		17.5		ns
Rise Time	$t_r$	See specified Test Circuit.		34.2		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		104		ns
Fall Time	$t_f$	See specified Test Circuit.		55.5		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=4V, I_D=350mA$		0.87		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=4V, I_D=350mA$		0.39		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=4V, I_D=350mA$		0.14		nC
Diode Forward Voltage	$V_{SD}$	$I_S=350mA, V_{GS}=0V$		0.86	1.2	V

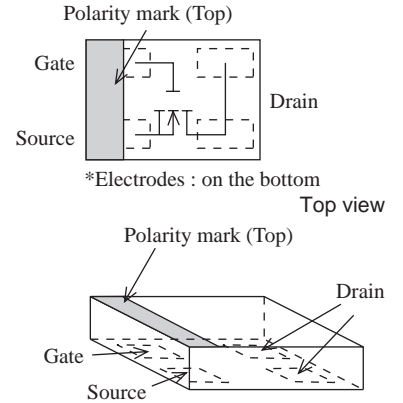
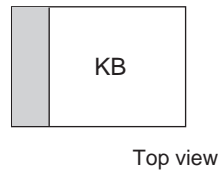
## Package Dimensions

unit : mm (typ)

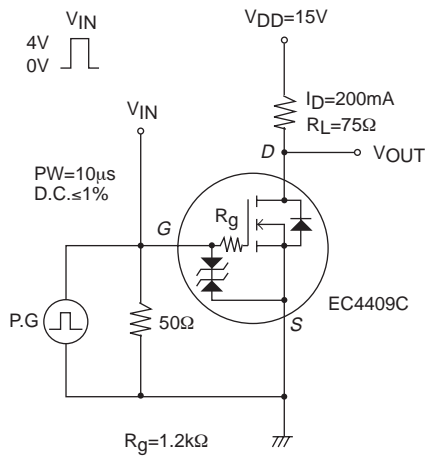
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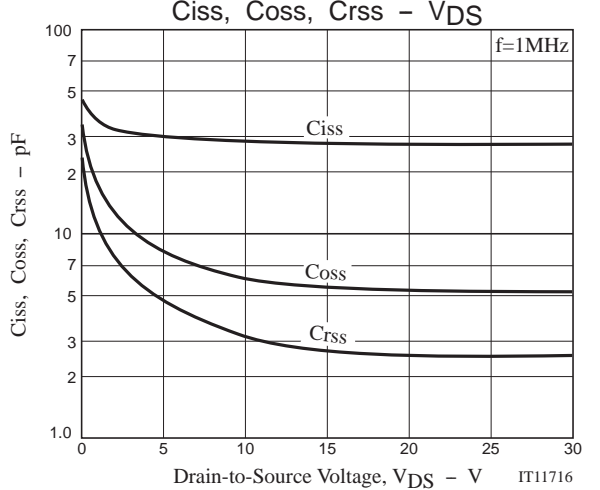
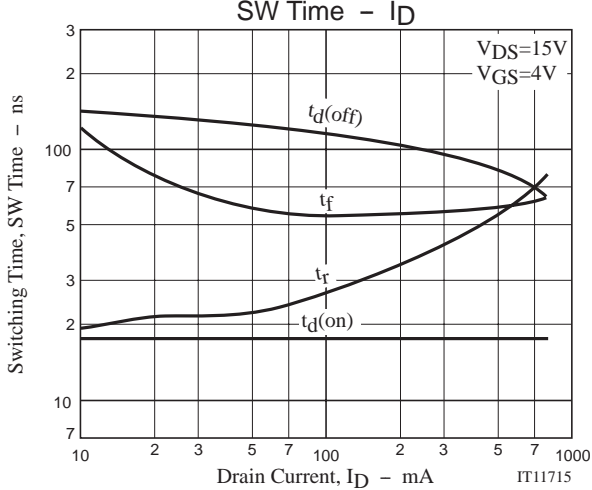
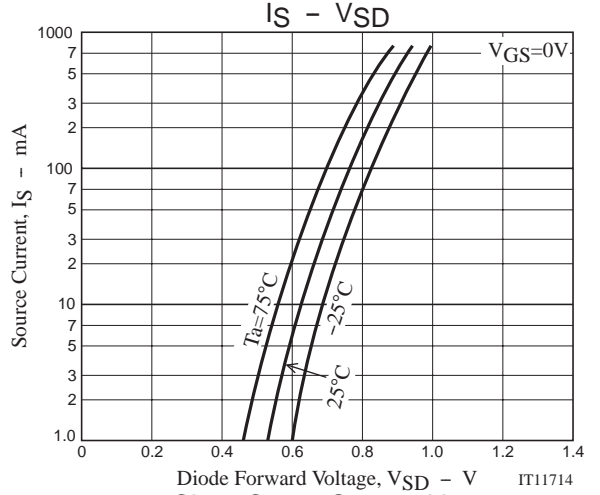
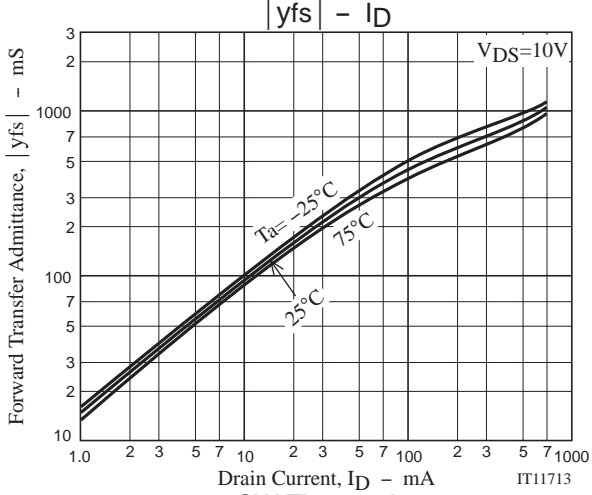
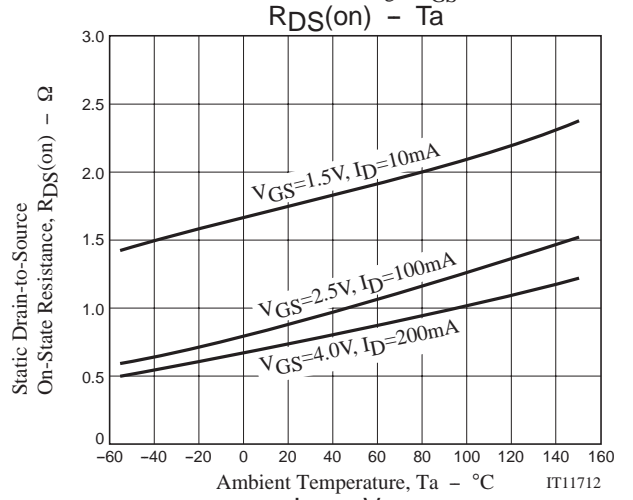
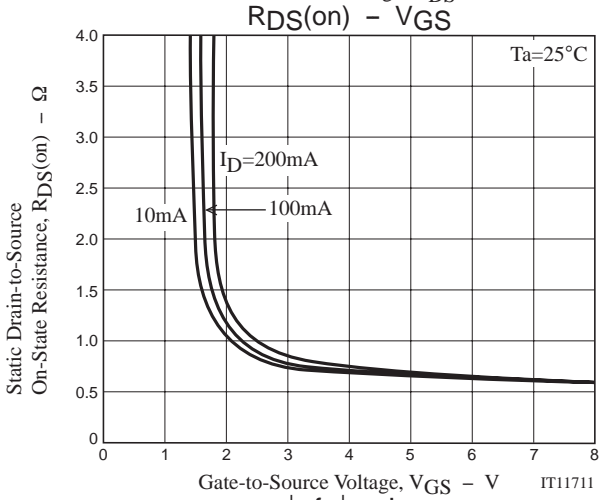
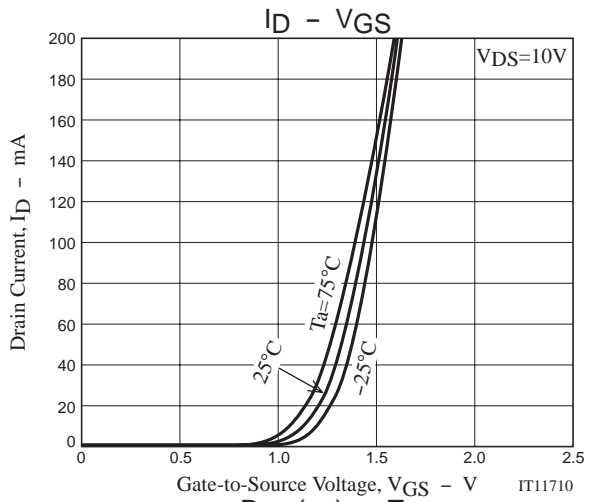
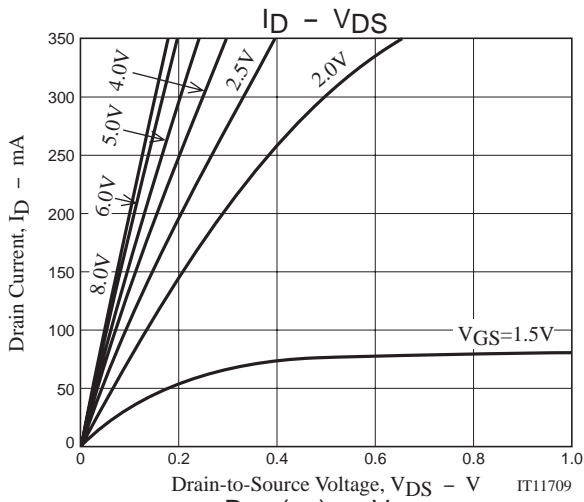
## Type No. Indication Electrical Connection



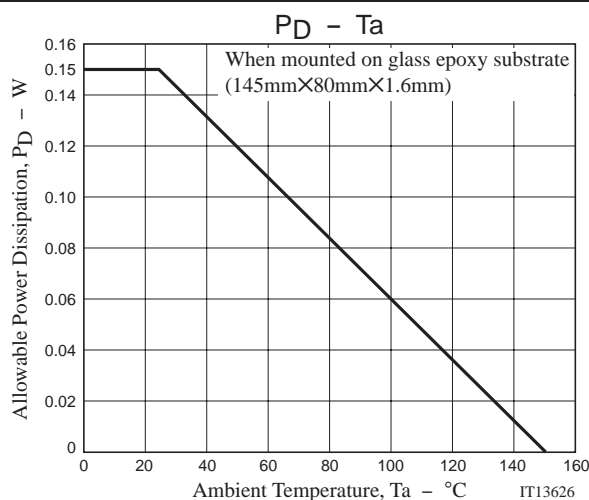
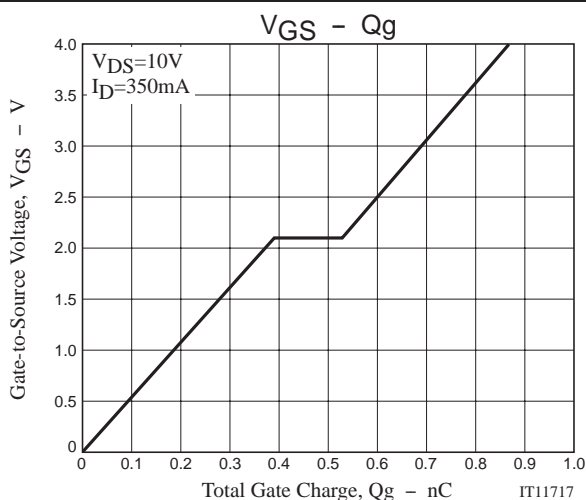
## Switching Time Test Circuit



# EC4409C



## EC4409C



Note on usage : Since the EC4409C is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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