

## EMH2409 — N-Channel Silicon MOSFET

### General-Purpose Switching Device Applications

#### Features

- The EMH2409 incorporates a N-channel MOSFET that feature low ON-resistance and ultrahigh-speed switching, thereby enabling high-density mounting
- 4V drive
- Halogen free compliance

#### Specifications

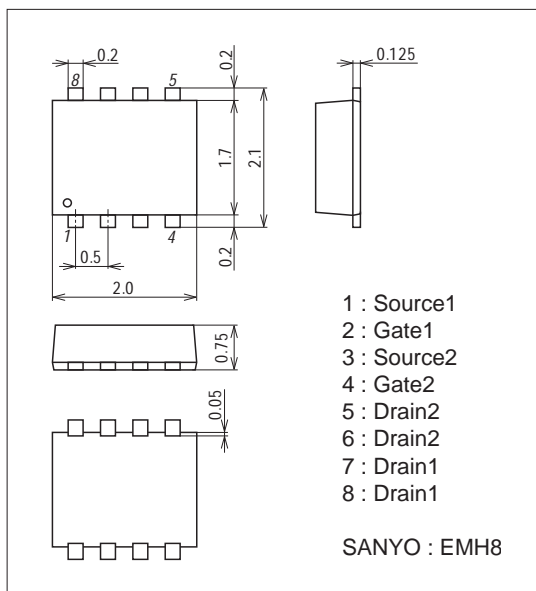
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		4	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycles≤1%	16	A
Allowable Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit	1.0	W
Total Dissipation	P <sub>T</sub>	When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)	1.2	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Package Dimensions

unit : mm (typ)

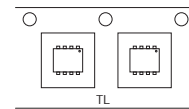
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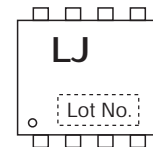
#### Product & Package Information

- Package : EMH8
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

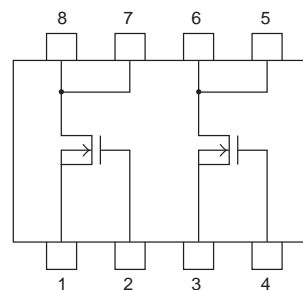
Packing Type : TL



Marking



#### Electrical Connection

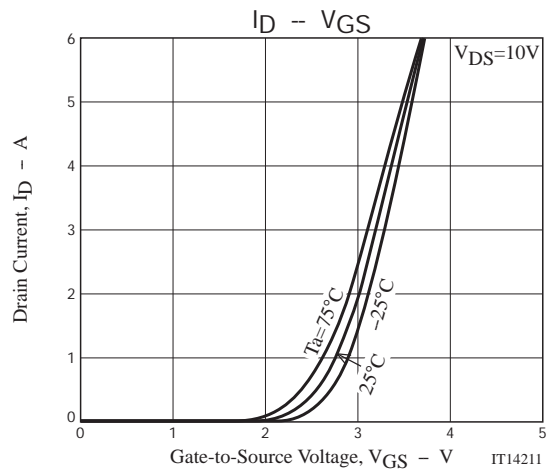
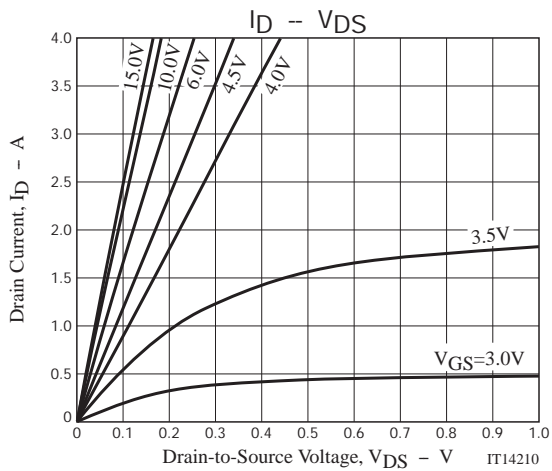
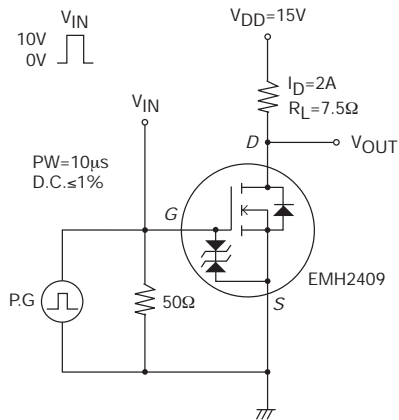


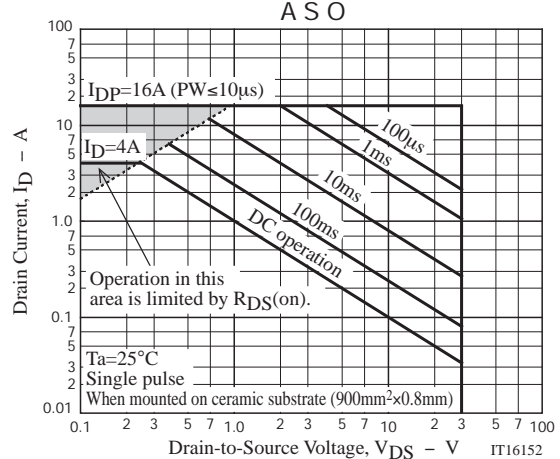
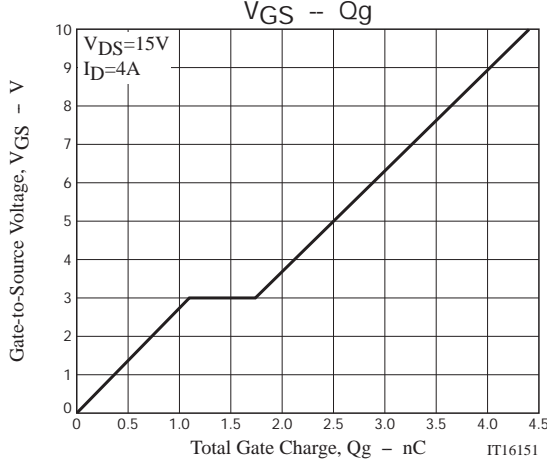
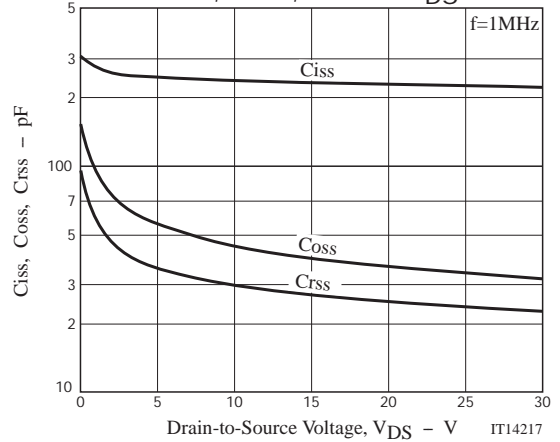
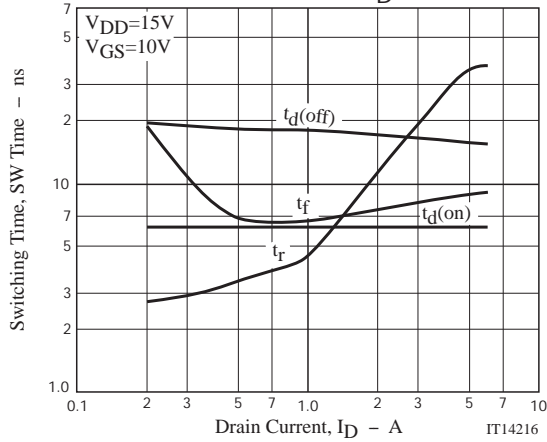
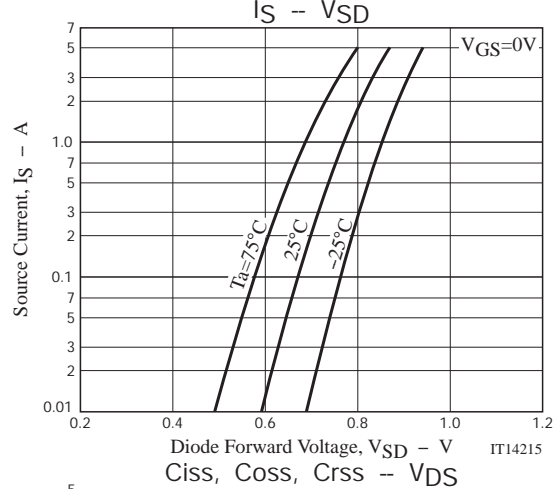
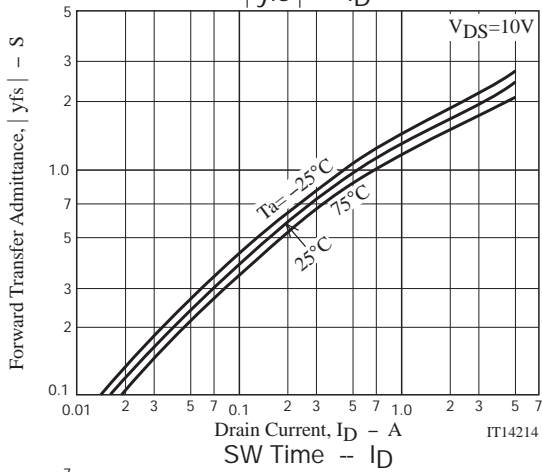
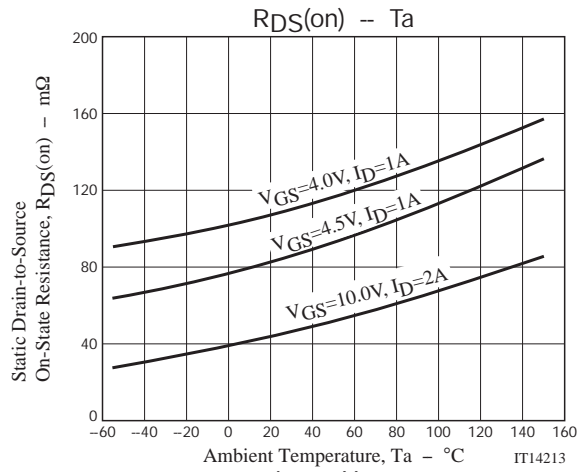
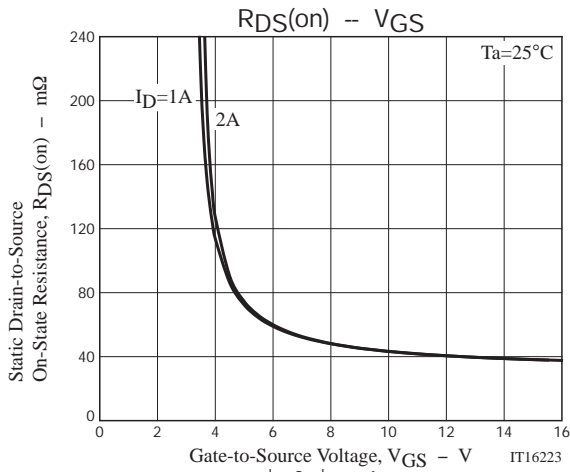
# EMH2409

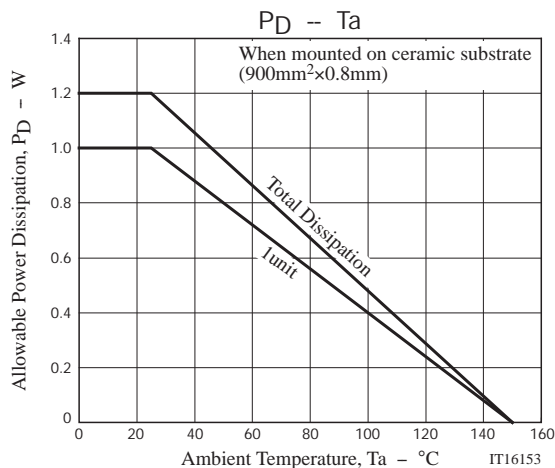
## Electrical Characteristics at $T_a=25^\circ\text{C}$

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} $	$V_{DS}=10\text{V}, I_D=2\text{A}$		1.66		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=2\text{A}, V_{GS}=10\text{V}$		45	59	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=1\text{A}, V_{GS}=4.5\text{V}$		85	119	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=1\text{A}, V_{GS}=4\text{V}$		110	155	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		240		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		45		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10\text{V}, f=1\text{MHz}$		30		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		6.2		ns
Rise Time	$t_r$	See specified Test Circuit.		11		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		17		ns
Fall Time	$t_f$	See specified Test Circuit.		7.5		ns
Total Gate Charge	$Q_g$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=4\text{A}$		4.4		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=4\text{A}$		1.1		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=15\text{V}, V_{GS}=10\text{V}, I_D=4\text{A}$		0.64		nC
Diode Forward Voltage	$V_{SD}$	$I_S=4\text{A}, V_{GS}=0\text{V}$		0.82	1.2	V

## Switching Time Test Circuit







Note on usage : Since the EMH2409 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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