



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## EMH1405 — N-Channel Silicon MOSFET General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)} = 14\text{m}\Omega$  (typ)
- 4V drive
- Halogen free compliance
- Protection diode in

### Specifications

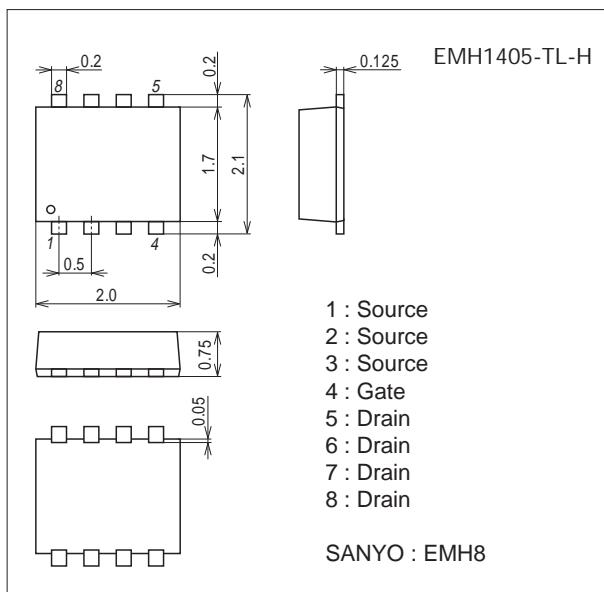
Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		8.5	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	34	A
Allowable Power Dissipation	PD	When mounted on ceramic substrate (1200mm <sup>2</sup> x 0.8mm)	1.5	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +150	°C

### Package Dimensions

unit : mm (typ.)

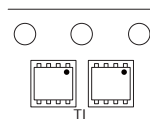
7045-001



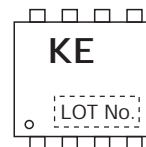
### Product & Package Information

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

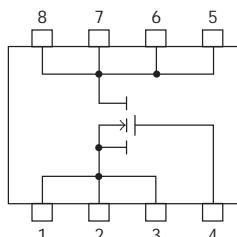
### Taping Type : TL



### Marking



### Electrical Connection

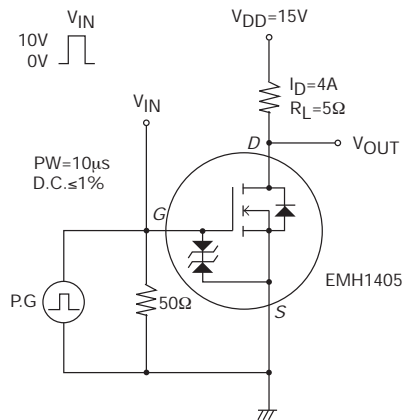


# EMH1405

## Electrical Characteristics at Ta=25°C

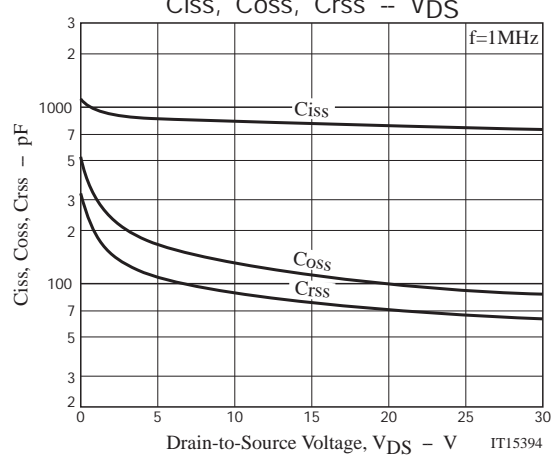
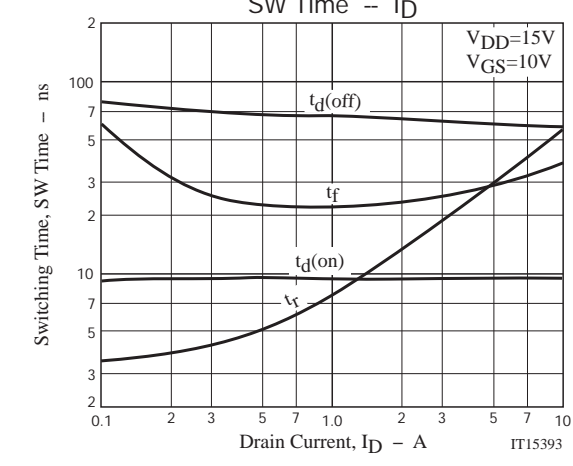
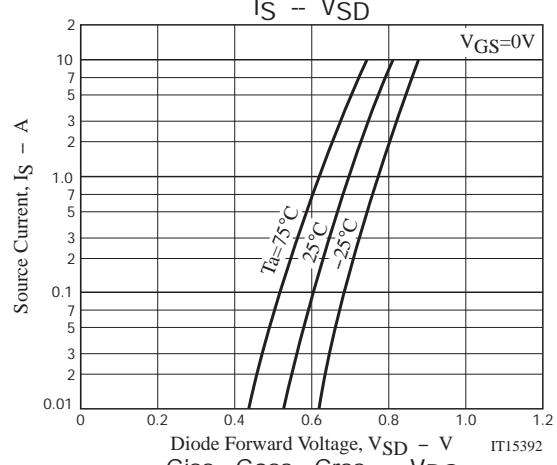
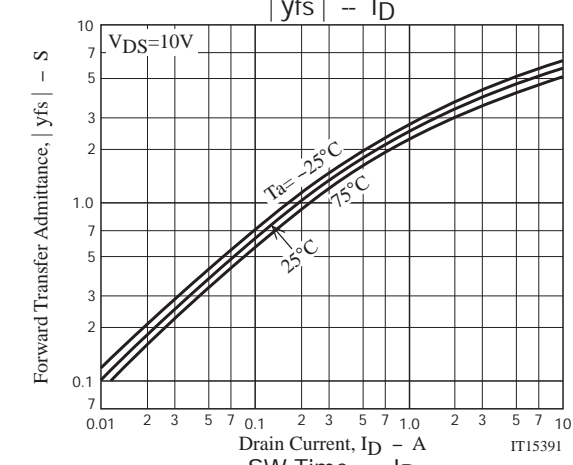
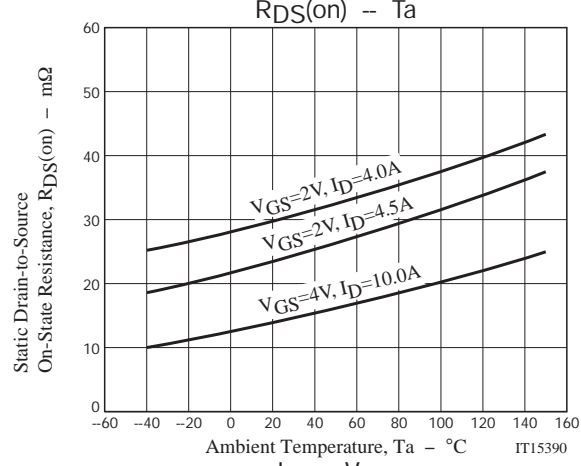
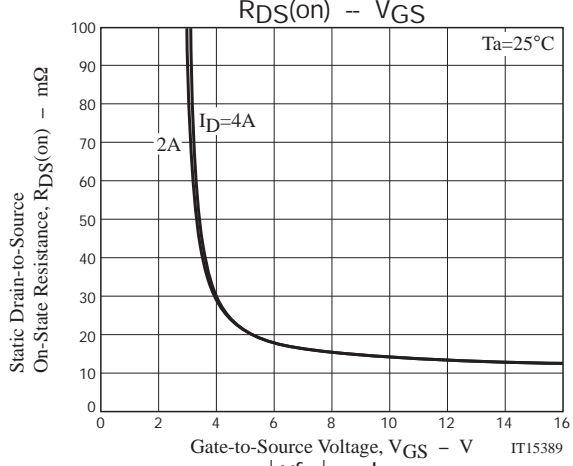
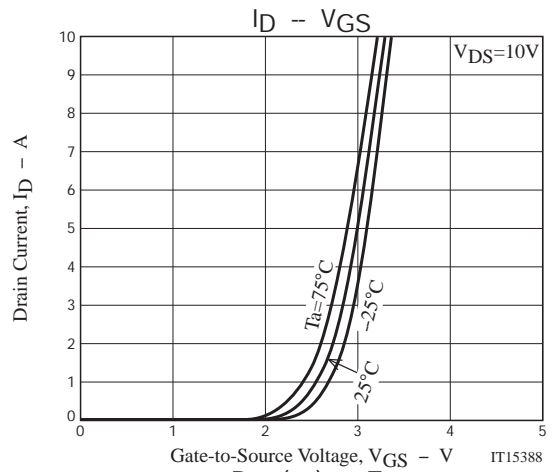
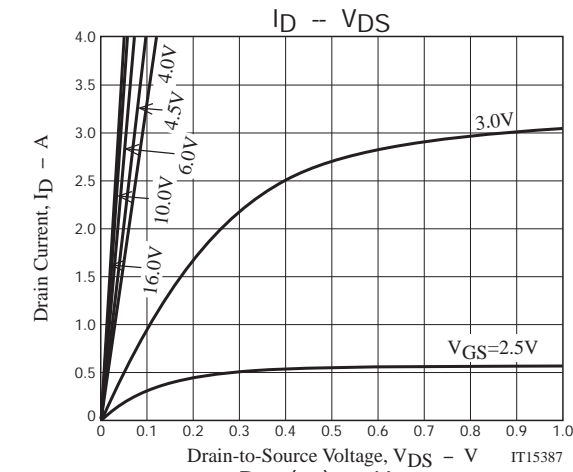
Parameter	Symbol	Conditions	Ratings			Unit
			min.	typ.	max.	
Drain-to-Source Breakdown Voltage	V(BR)DSS	ID=1mA, VGS=0V	30			V
Zero-Gate Voltage Drain Current	IDSS	VDS=30V, VGS=0V			1	μA
Gate-to-Source Leakage Current	IGSS	VGS=±16V, VDS=0V			±10	μA
Cutoff Voltage	VGS(off)	VDS=10V, ID=1mA	1.2		2.6	V
Forward Transfer Admittance	yfs	VDS=10V, ID=4A		4.4		S
Static Drain-to-Source On-State Resistance	RDS(on)1	ID=4A, VGS=10V		14	19	mΩ
	RDS(on)2	ID=2A, VGS=4.5V		24	34	mΩ
	RDS(on)3	ID=2A, VGS=4V		30	42	mΩ
Input Capacitance	Ciss	VDS=10V, f=1MHz		820		pF
Output Capacitance	Coss			130		pF
Reverse Transfer Capacitance	Crss			90		pF
Turn-ON Delay Time	t <sub>d(on)</sub>		See specified Test Circuit.		9.5	
Rise Time	t <sub>r</sub>			25		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>			63		ns
Fall Time	t <sub>f</sub>			28		ns
Total Gate Charge	Qg	VDS=15V, VGS=10V, ID=8.5A			15	
Gate-to-Source Charge	Qgs			2.6		nC
Gate-to-Drain "Miller" Charge	Qgd			2.7		nC
Diode Forward Voltage	VSD	IS=8.5A, VGS=0V		0.8	1.2	V

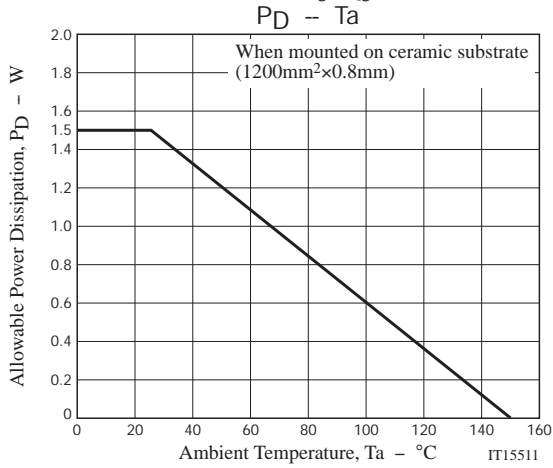
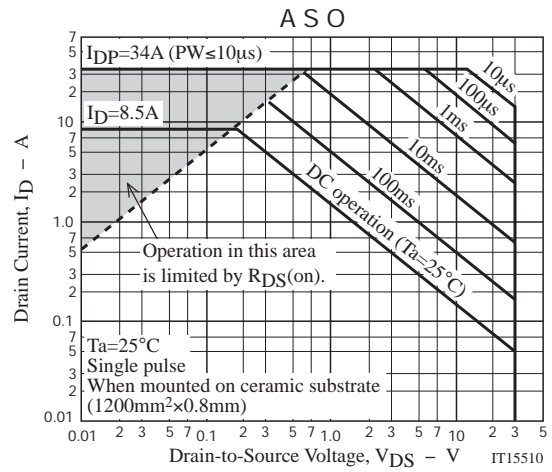
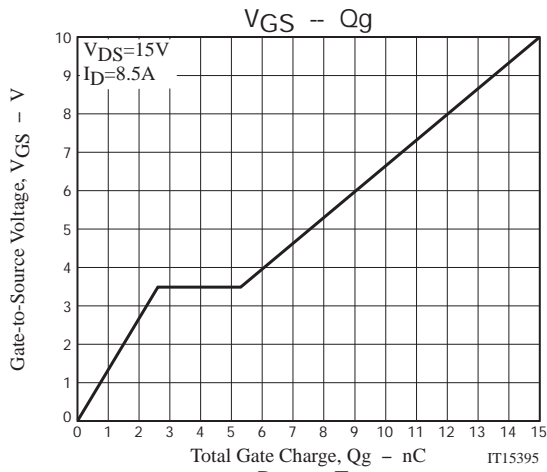
## Switching Time Test Circuit



## Ordering Information

Device	Package	Shipping	memo
EMH1405-TL-H	EMH8	3,000pcs./reel	Pb Free and Halogen Free



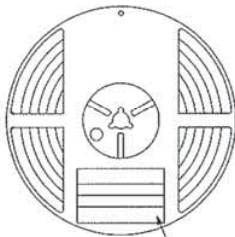


Embossed Taping Specification  
EMH1405-TL-H

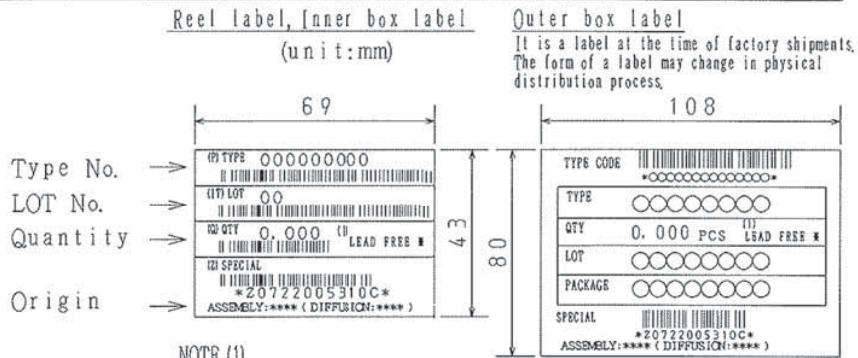
1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
EMH8	MCP4	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



Reel label

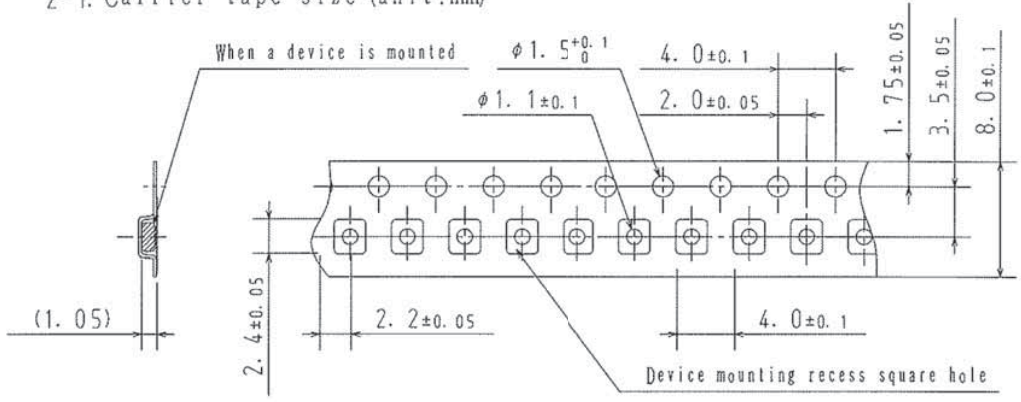


NOTE (1)  
The LEAD FREE \* description shows that the surface treatment of the terminal is lead free.

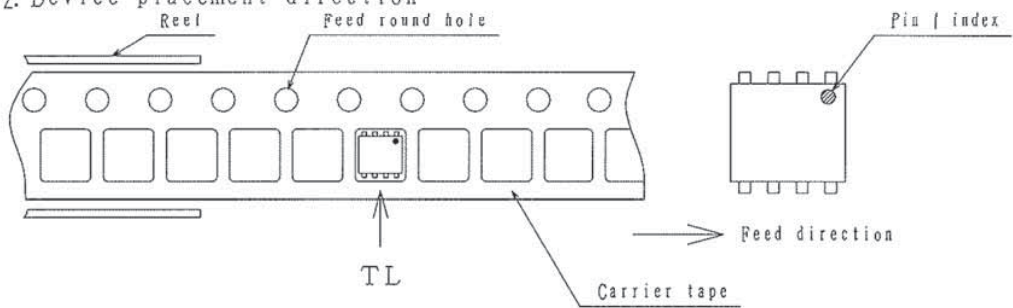
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



2-2. Device placement direction

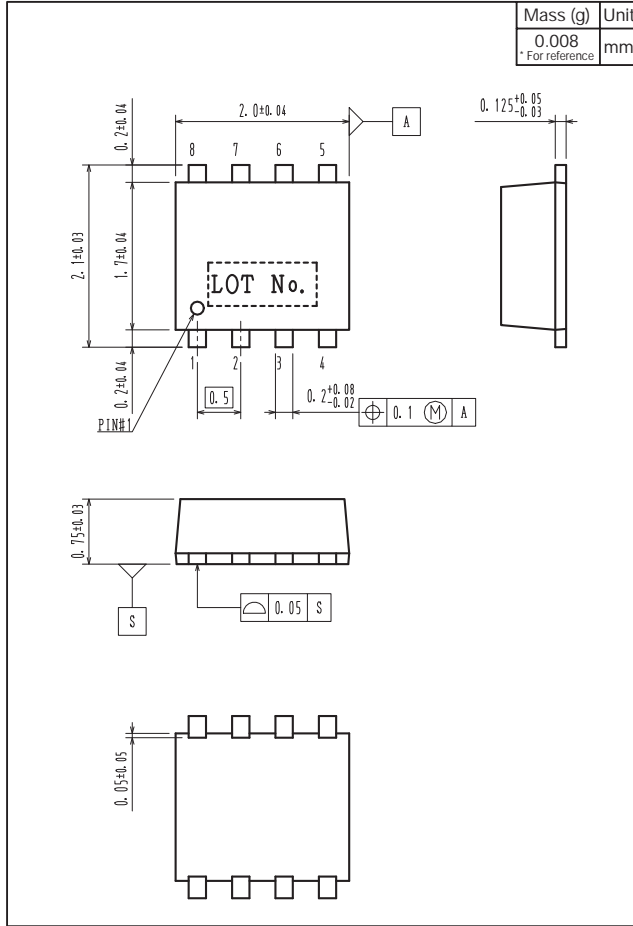


Those with pin | index on the feed hole side.....TL

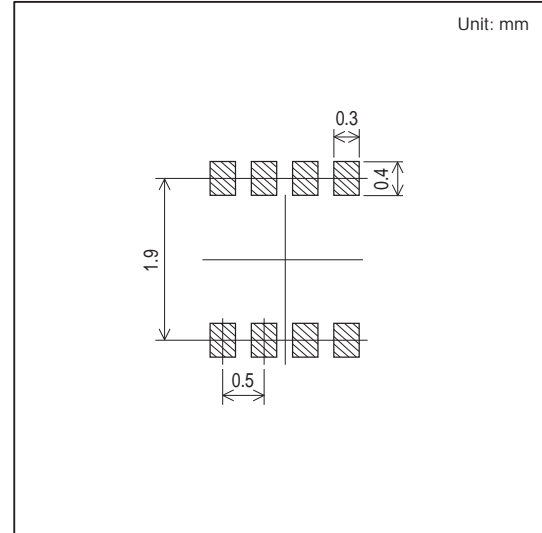
# EMH1405

## Outline Drawing

EMH1405-TL-H



## Land Pattern Example



Note on usage : Since the EMH1405 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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