



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

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

Features

- ON-resistance $R_{DS(on)1}=14m\Omega$ (typ)
- 4V drive
- Halogen free compliance
- Protection diode in

Specifications

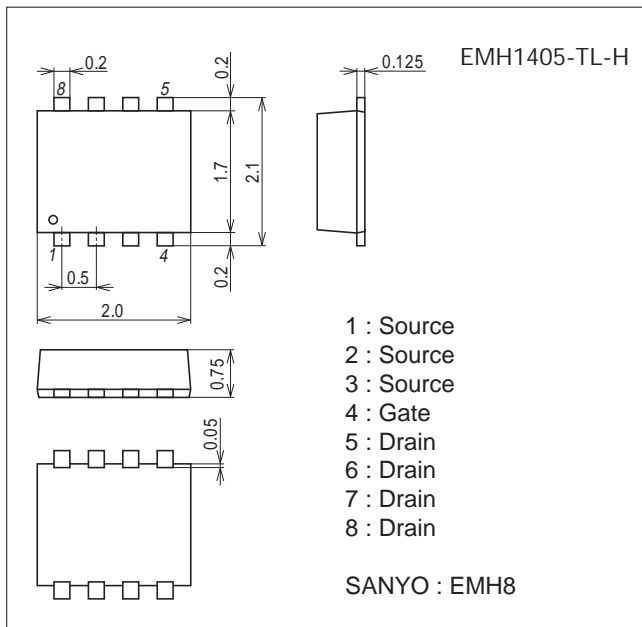
Absolute Maximum Ratings at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		± 20	V
Drain Current (DC)	I_D		8.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu s$, duty cycles $\leq 1\%$	34	A
Allowable Power Dissipation	P_D	When mounted on ceramic substrate (1200mm ² ×0.8mm)	1.5	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ.)

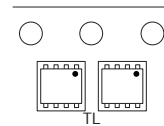
7045-001



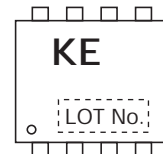
Product & Package Information

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

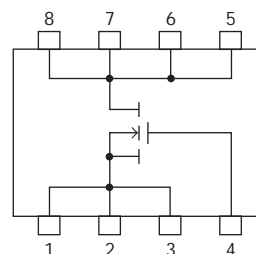
Taping Type : TL



Marking



Electrical Connection

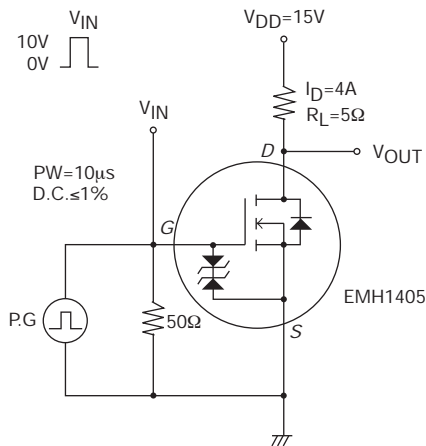


EMH1405

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

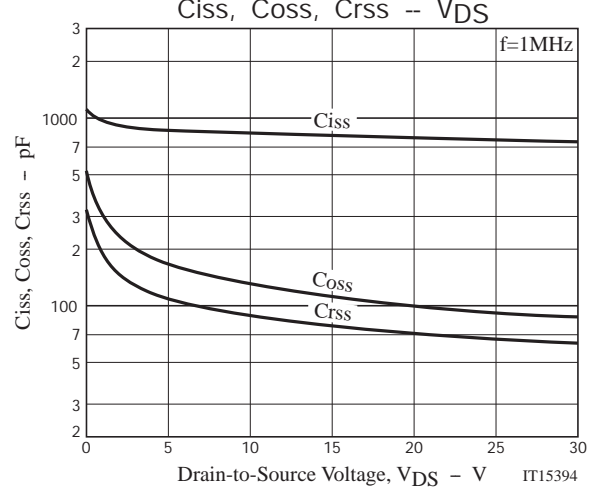
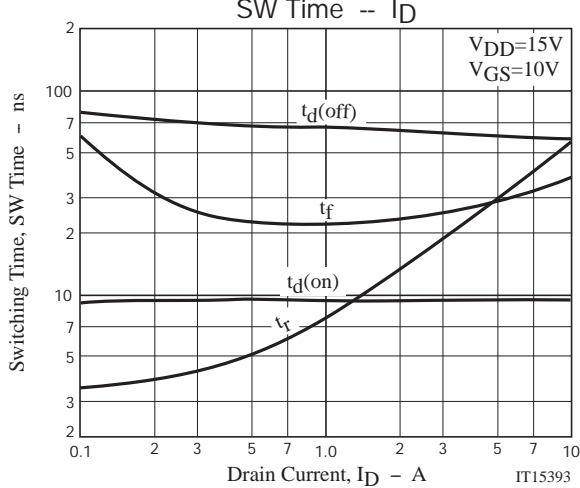
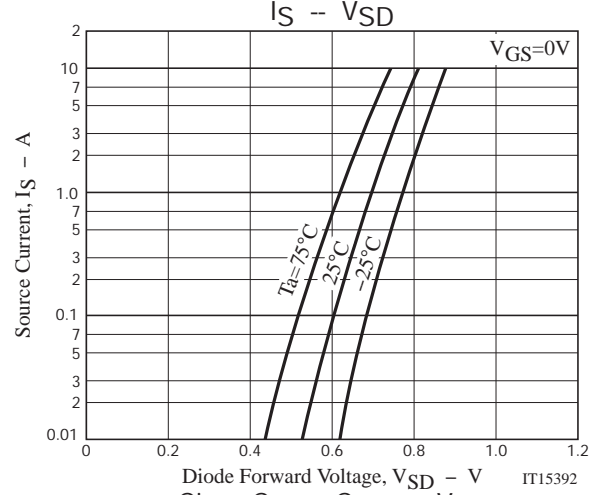
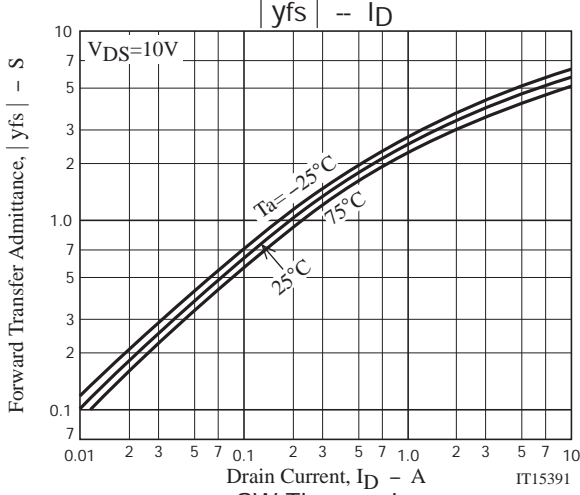
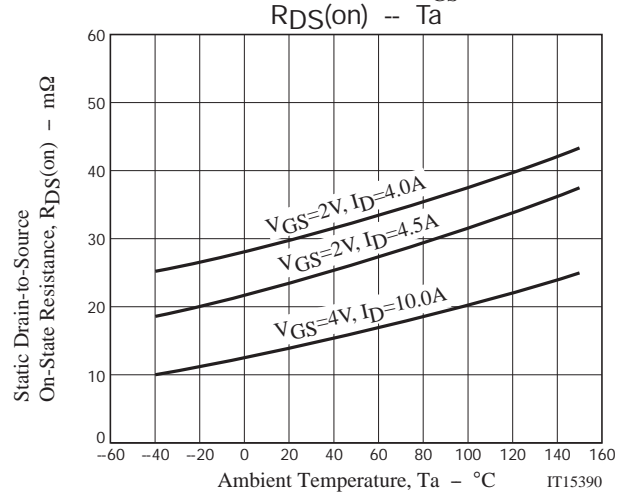
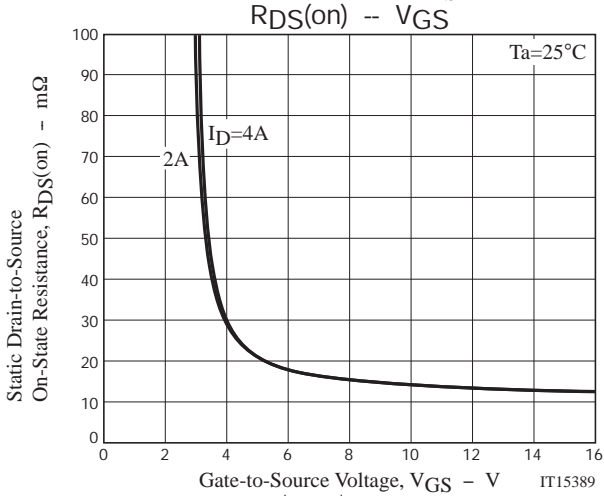
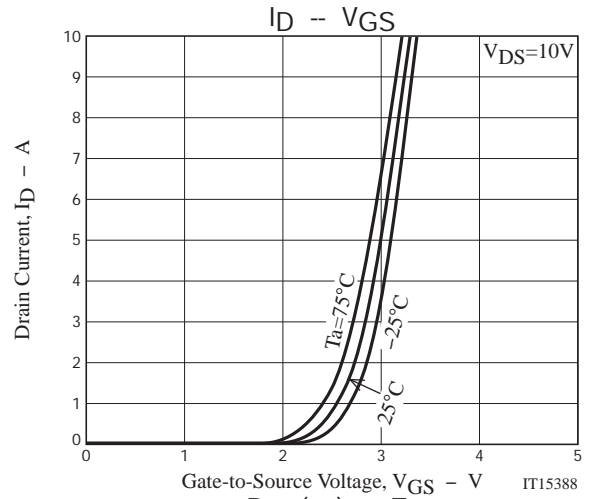
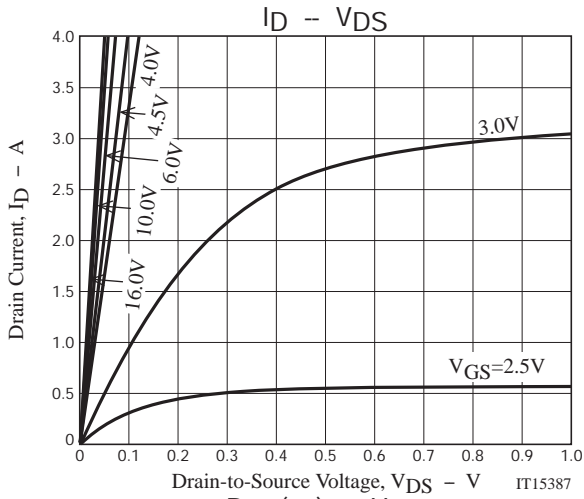
Parameter	Symbol	Conditions	Ratings			Unit
			min.	typ.	max.	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
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} $	$V_{DS}=10\text{V}$, $I_D=4\text{A}$		4.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=4\text{A}$, $V_{GS}=10\text{V}$		14	19	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=2\text{A}$, $V_{GS}=4.5\text{V}$		24	34	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=2\text{A}$, $V_{GS}=4\text{V}$		30	42	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $f=1\text{MHz}$		820		pF
Output Capacitance	C_{oss}			130		pF
Reverse Transfer Capacitance	C_{rss}			90		pF
Turn-ON Delay Time	$t_{d(on)}$		See specified Test Circuit.		9.5	
Rise Time	t_r			25		ns
Turn-OFF Delay Time	$t_{d(off)}$			63		ns
Fall Time	t_f			28		ns
Total Gate Charge	Q_g	$V_{DS}=15\text{V}$, $V_{GS}=10\text{V}$, $I_D=8.5\text{A}$			15	
Gate-to-Source Charge	Q_{gs}			2.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}			2.7		nC
Diode Forward Voltage	V_{SD}		$I_S=8.5\text{A}$, $V_{GS}=0\text{V}$		0.8	1.2

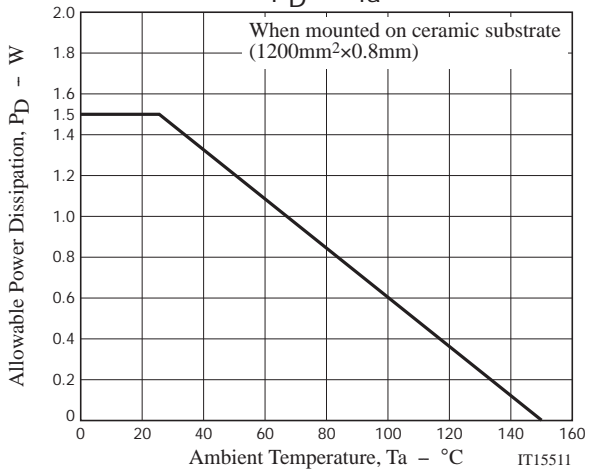
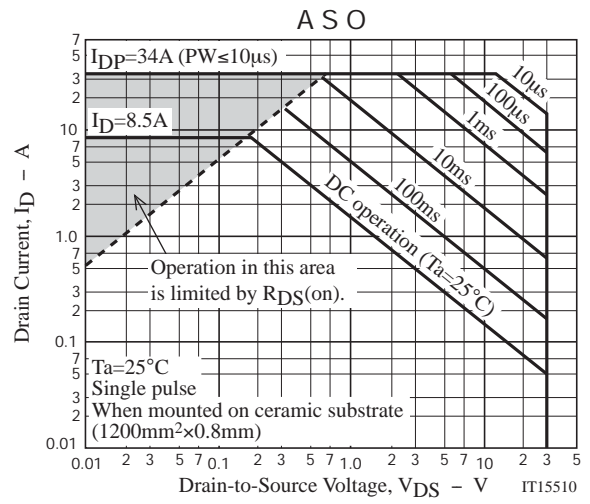
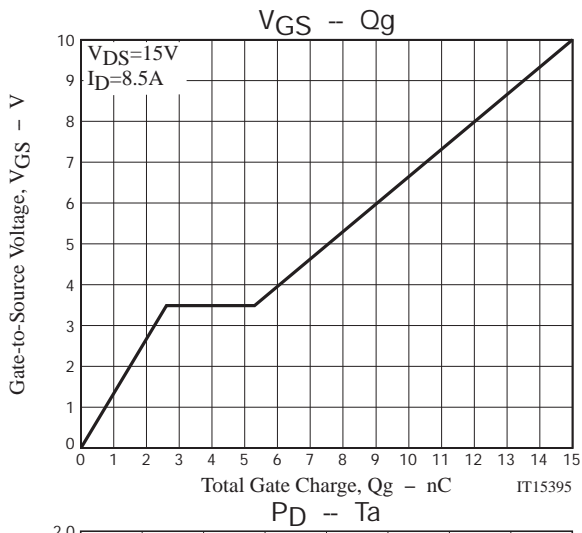
Switching Time Test Circuit



Ordering Information

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





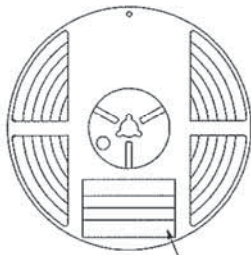
Embossed Taping Specification

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

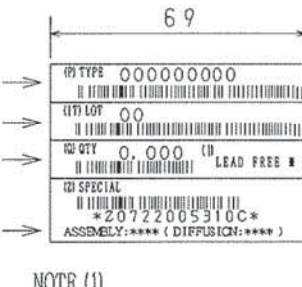
Packing method



Reel label

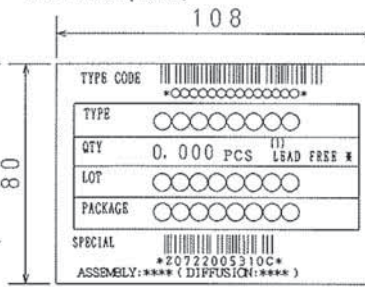
Type No. →
 LOT No. →
 Quantity →
 Origin →

Reel label, Inner box label (unit:mm)



Outer box label

It is a label at the time of factory shipments. The form of a label may change in physical distribution process.



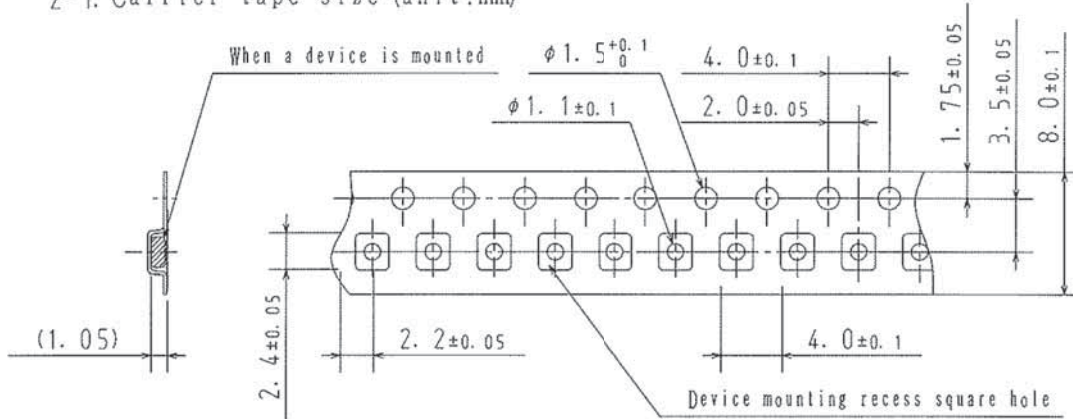
NOTE (1)

The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

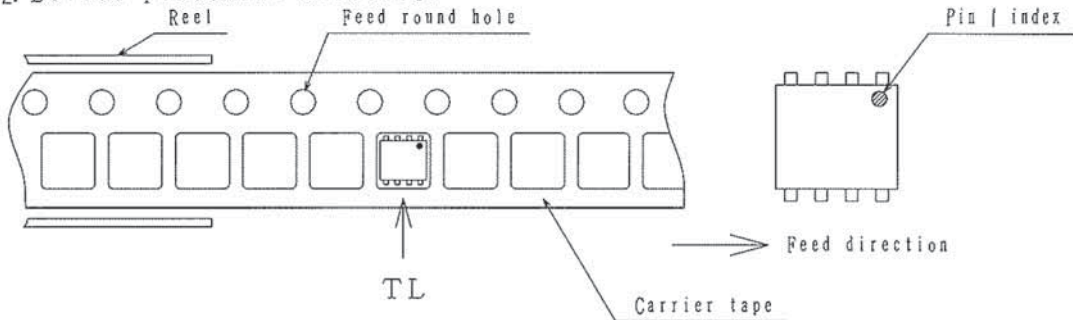
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction



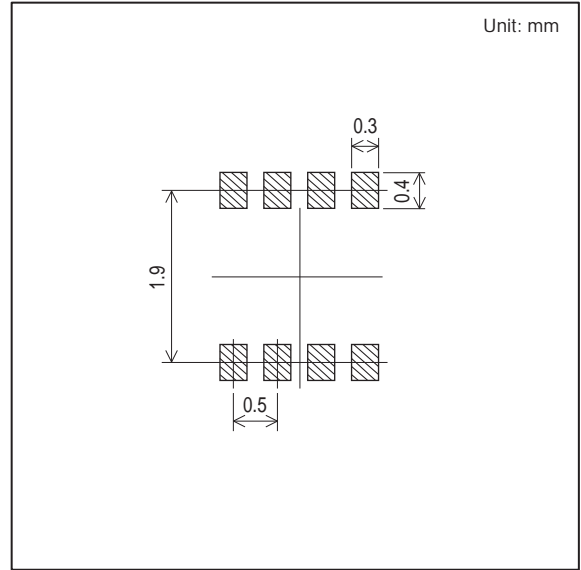
Those with pin | index on the feed hole side.....TL

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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