



EMH2801

P-Channel Power MOSFET -20V, -3A, 85mΩ, Single EMH8 with Schottky Diode

ON Semiconductor®

<http://onsemi.com>

Features

- Composite type with a P-Channel Silicon MOSFET and a Schottky Barrier Diode contained in one package facilitating high-density mounting
- [MOSFET] • Low ON-resistance
- [SBD] • Small switching noise
- Halogen free compliance
- 1.8V drive
- Low forward voltage (IF=2.0A, VF max=0.46V)

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	VDSS		-20	V
Gate-to-Source Voltage	VGSS		±10	V
Drain Current (DC)	ID		-3	A
Drain Current (Pulse)	IDP	PW≤10μs, duty cycle≤1%	-20	A
Allowable Power Dissipation	PD	When mounted on ceramic substrate (900mm²×0.8mm) 1unit	1.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		-55 to +125	°C

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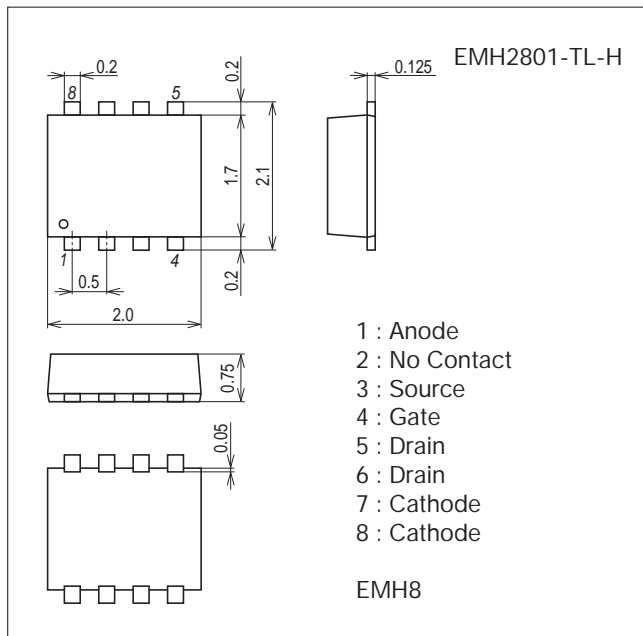
This product is designed to "ESD immunity < 200V**", so please take care when handling.

* Machine Model

Package Dimensions

unit : mm (typ)

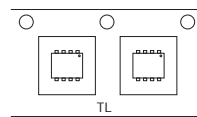
7045-007



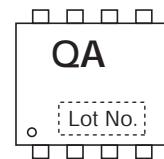
Product & Package Information

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

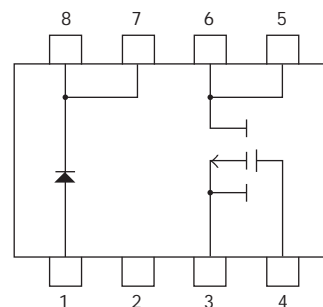
Packing Type : TL



Marking



Electrical Connection



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Parameter	Symbol	Conditions	Ratings	Unit
[SBD]				
Repetitive Peak Reverse Voltage	V_{RRM}		15	V
Nonrepetitive Peak Reverse Surge Voltage	V_{RSM}		15	V
Average Output Current	I_O	Rectangular wave	2.0	A
Surge Forward Current	I_{FSM}	50Hz sine wave, 1 cycle	20	A
Junction Temperature	T_J		-55 to +125	°C
Storage Temperature	T_{stg}		-55 to +125	°C

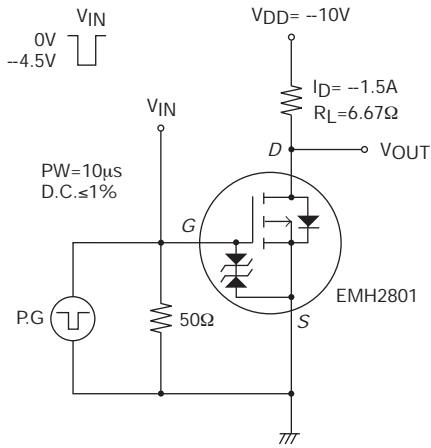
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

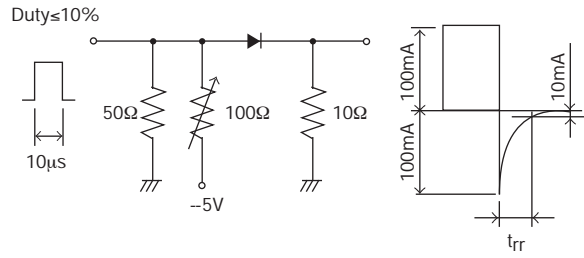
Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
[MOSFET]							
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}, V_{GS}=0\text{V}$	-20			V	
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20\text{V}, V_{GS}=0\text{V}$			-1	μA	
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8\text{V}, V_{DS}=0\text{V}$			± 10	μA	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}, I_D=-1\text{mA}$	-0.4		-1.3	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}, I_D=-1.5\text{A}$		3.6		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1.5\text{A}, V_{GS}=-4.5\text{V}$		65	85	$\text{m}\Omega$	
	$R_{DS(on)2}$	$I_D=-1\text{A}, V_{GS}=-2.5\text{V}$		98	137	$\text{m}\Omega$	
	$R_{DS(on)3}$	$I_D=-0.5\text{A}, V_{GS}=-1.8\text{V}$		155	235	$\text{m}\Omega$	
Input Capacitance	C_{iss}	See specified Test Circuit.		320		pF	
Output Capacitance	C_{oss}		$V_{DS}=-10\text{V}, f=1\text{MHz}$		66		pF
Reverse Transfer Capacitance	C_{rss}				50		pF
Turn-ON Delay Time	$t_d(on)$				7.1		ns
Rise Time	t_r				21		ns
Turn-OFF Delay Time	$t_d(off)$				37		ns
Fall Time	t_f				32		ns
Total Gate Charge	Q_g				4.0		nC
Gate-to-Source Charge	Q_{gs}		$V_{DS}=-10\text{V}, V_{GS}=-4.5\text{V}, I_D=-3\text{A}$		0.6		nC
Gate-to-Drain "Miller" Charge	Q_{gd}				1.1		nC
Diode Forward Voltage	V_{SD}	$I_S=-3\text{A}, V_{GS}=0\text{V}$		-0.83	-1.2	V	
[SBD]							
Reverse Voltage	V_R	$I_R=1\text{mA}$	15			V	
Forward Voltage	V_{F1}	$I_F=1.0\text{A}$		0.33	0.39	V	
	V_{F2}	$I_F=2.0\text{A}$		0.39	0.46	V	
Reverse Current	I_R	$V_R=7.5\text{V}$			300	μA	
Interterminal Capacitance	C	$V_R=10\text{V}, f=1\text{MHz}$		35		pF	

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Switching Time Test Circuit (MOSFET)

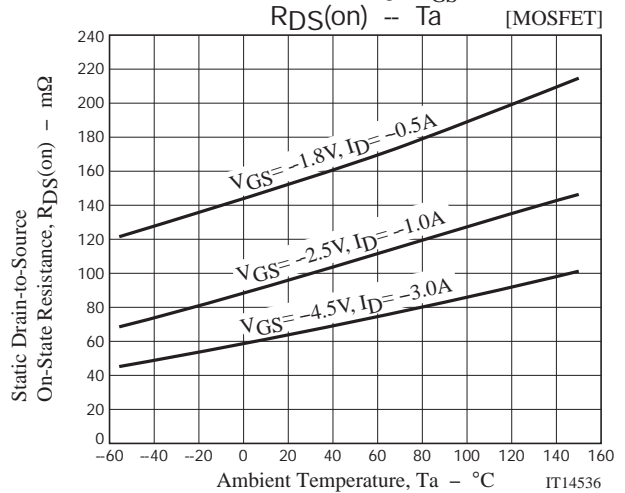
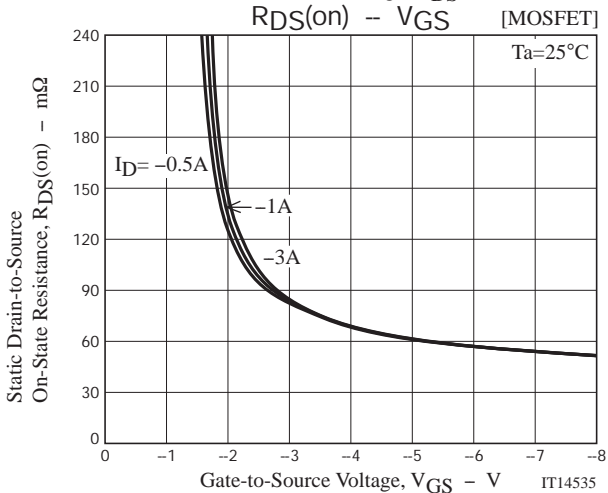
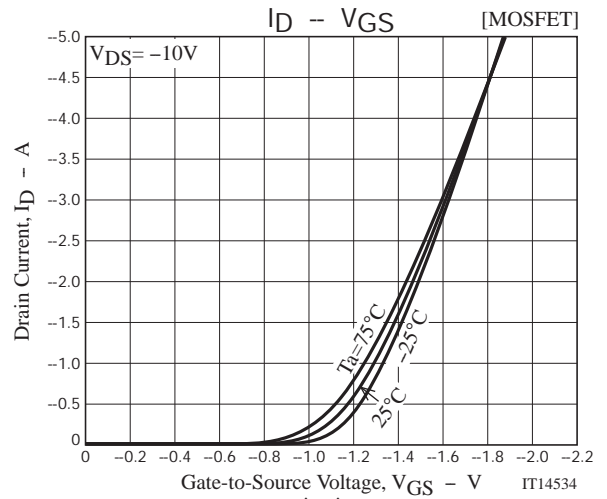
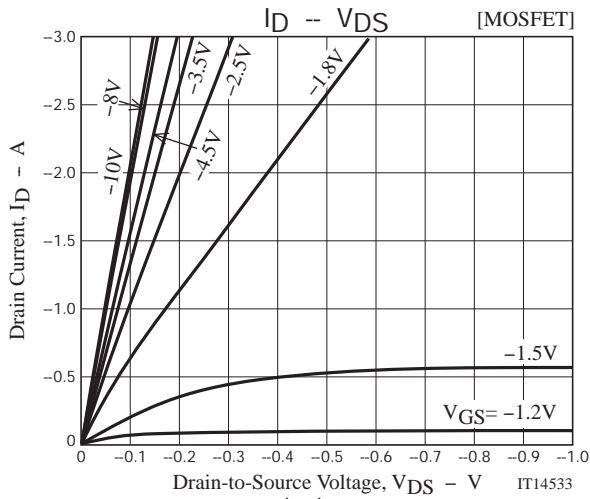


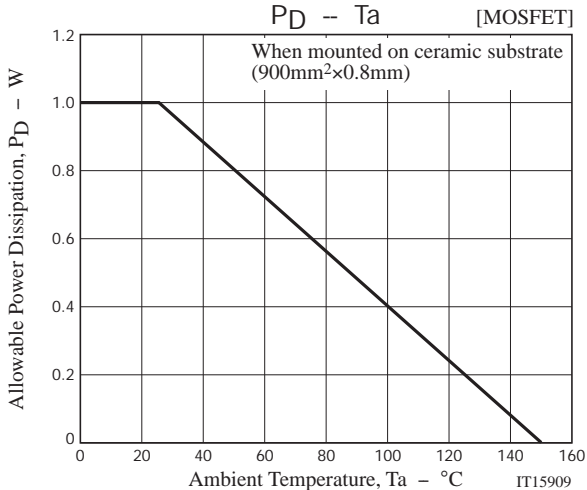
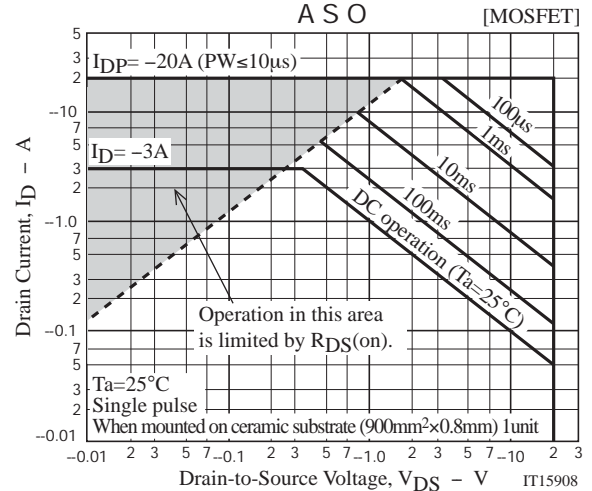
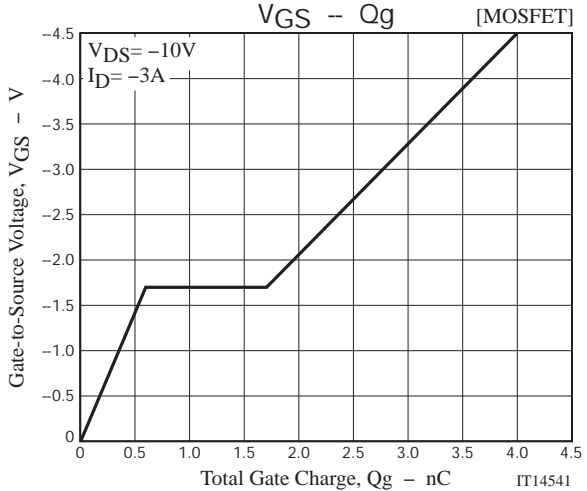
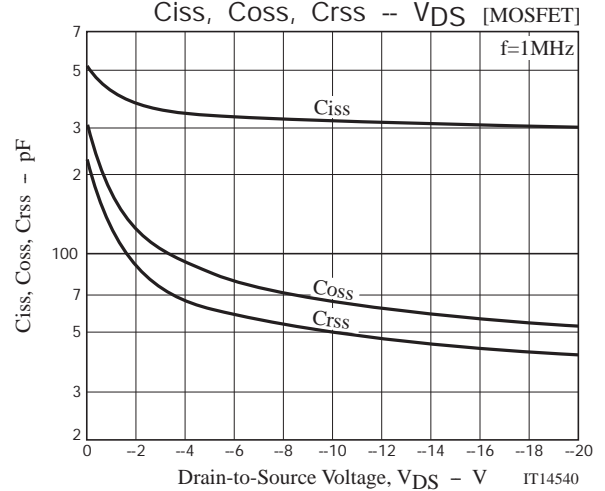
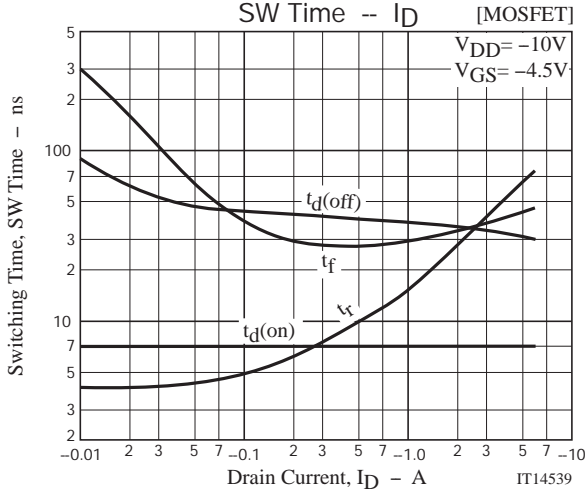
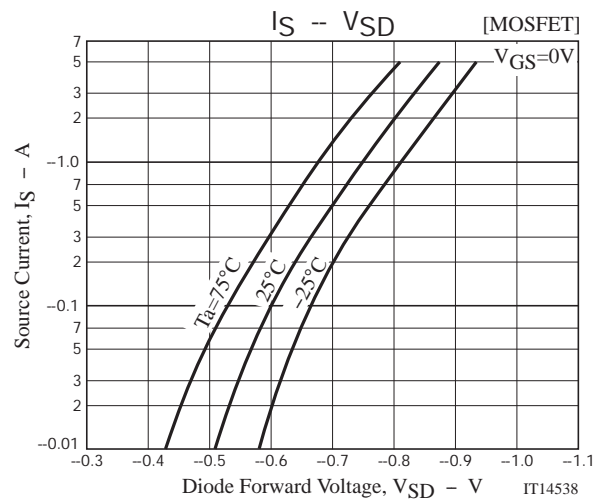
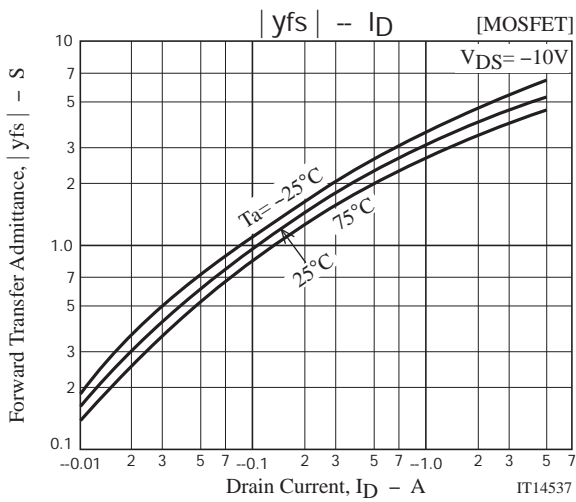
t_{rr} Test Circuit (SBD)

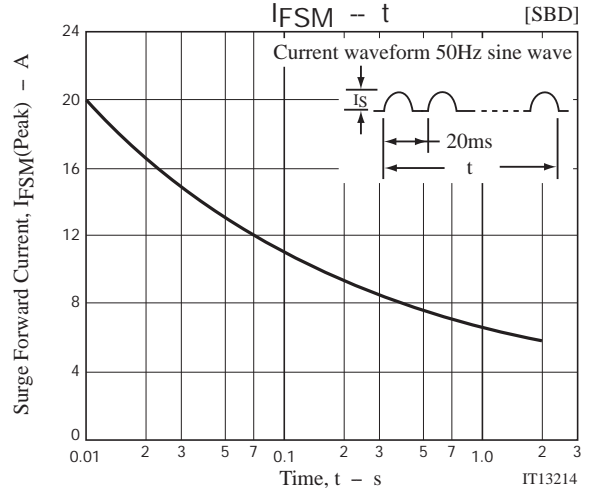
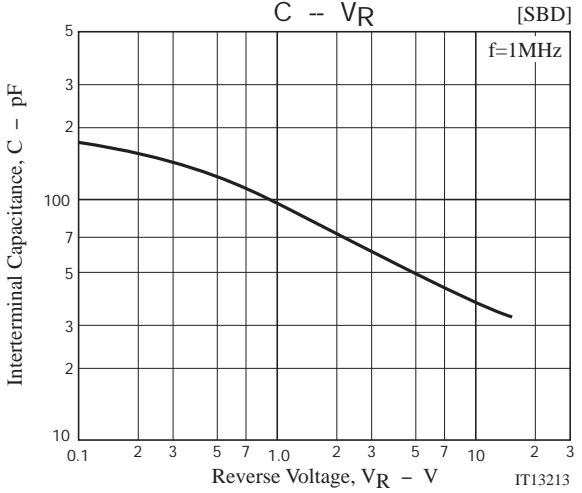
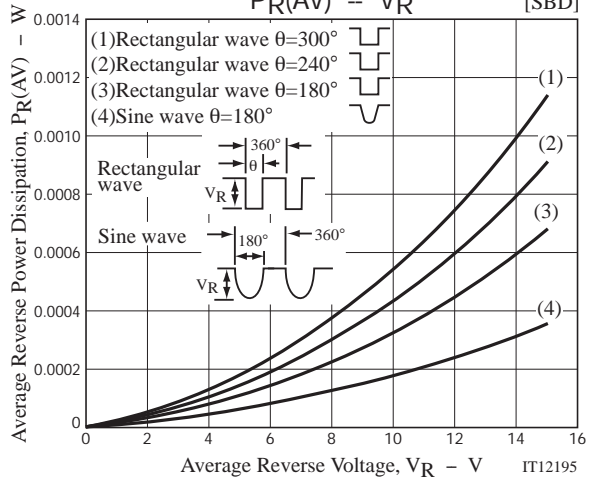
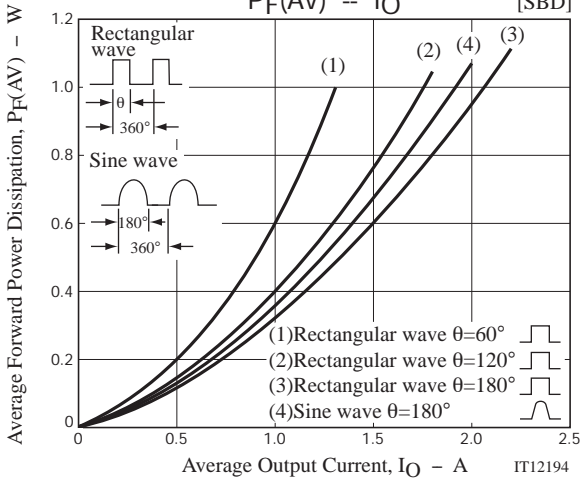
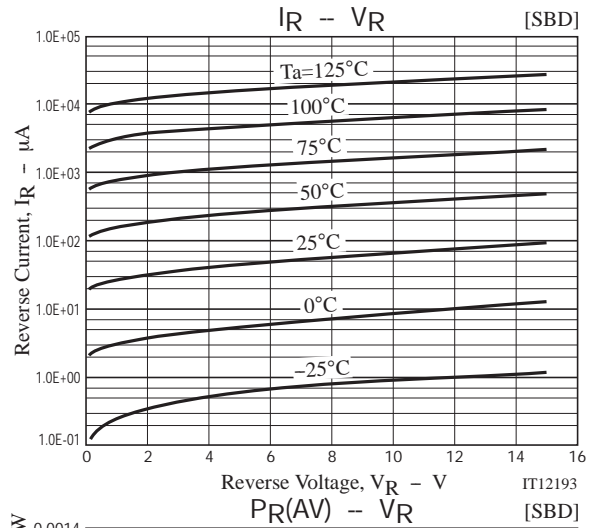
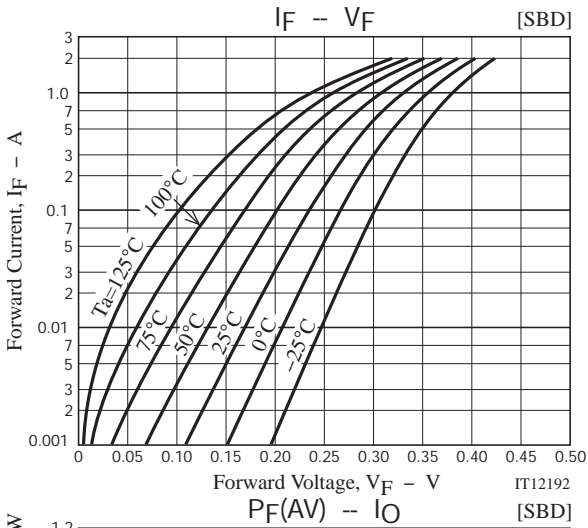


Ordering Information

Device	Package	Shipping	memo
EMH2801-TL-H	EMH8	3,000pcs./reel	Pb Free and Halogen Free







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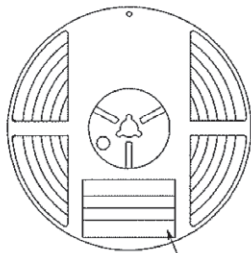
Embossed Taping Specification

EMH2801-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

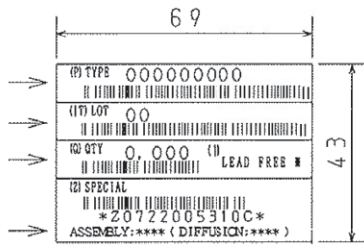
Packing method



Reel label

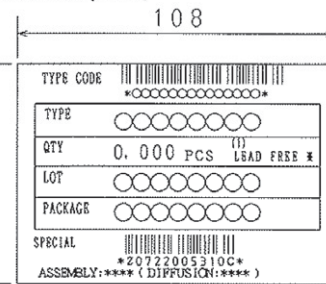
Type No. →
LOT No. →
Quantity →
Origin →

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.



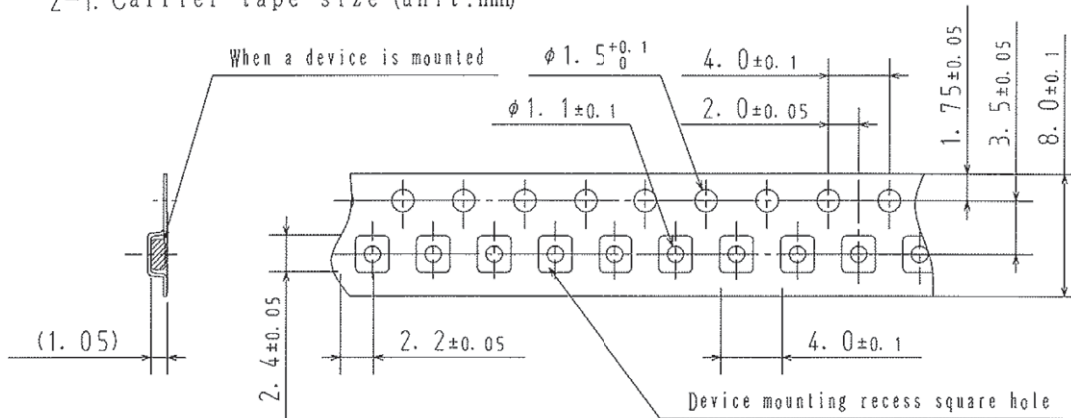
NOTE (1)

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

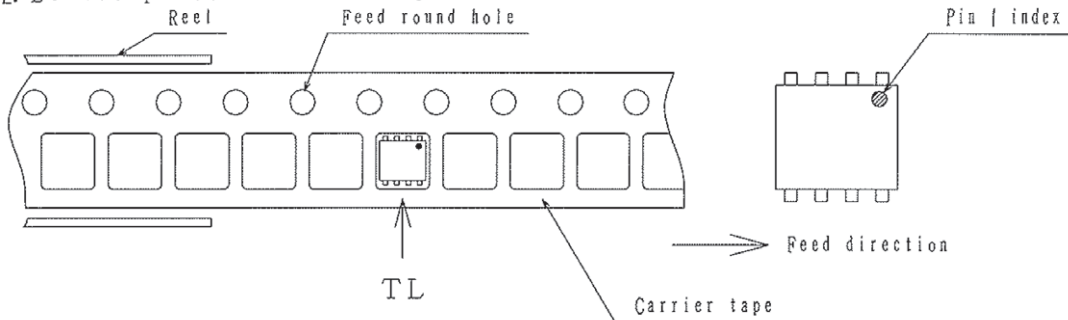
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



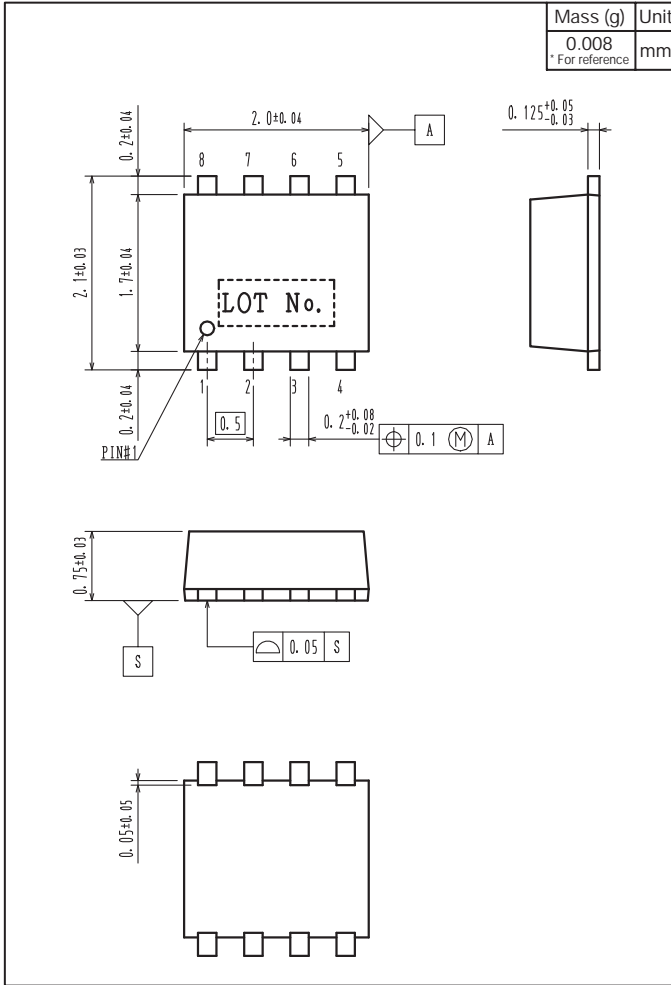
2-2. Device placement direction



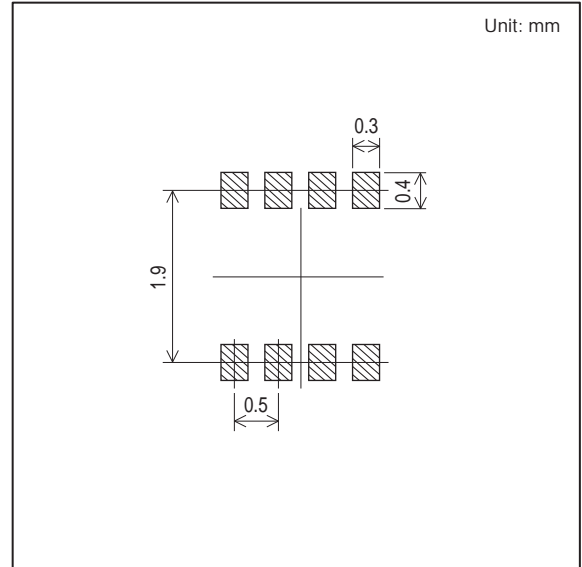
Those with pin 1 index on the feed hole side.....TL

EMH2801

Outline Drawing EMH2801-TL-H



Land Pattern Example



Note on usage : Since the EMH2801 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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