



# EMH2314

## Power MOSFET -12V, 37mΩ, -5A, Dual P-Channel

ON Semiconductor®

<http://onsemi.com>

### Features

- ON-resistance  $R_{DS(on)}$  1=28mΩ(typ.)
- 1.8V drive
- Halogen free compliance
- Protection Diode in

### Specifications

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

| Parameter               | Symbol    | Conditions                                                          | Value       | Unit |
|-------------------------|-----------|---------------------------------------------------------------------|-------------|------|
| Drain-to-Source Voltage | $V_{DS}$  |                                                                     | -12         | V    |
| Gate-to-Source Voltage  | $V_{GS}$  |                                                                     | ±8          | V    |
| Drain Current (DC)      | $I_D$     |                                                                     | -5          | A    |
| Drain Current (Pulse)   | $I_{DP}$  | $PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$                     | -20         | A    |
| Power Dissipation       | $P_D$     | When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit | 1.0         | W    |
| Total Dissipation       | $P_T$     | When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm)       | 1.2         | W    |
| Junction Temperature    | $T_J$     |                                                                     | 150         | °C   |
| Storage Temperature     | $T_{stg}$ |                                                                     | -55 to +150 | °C   |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

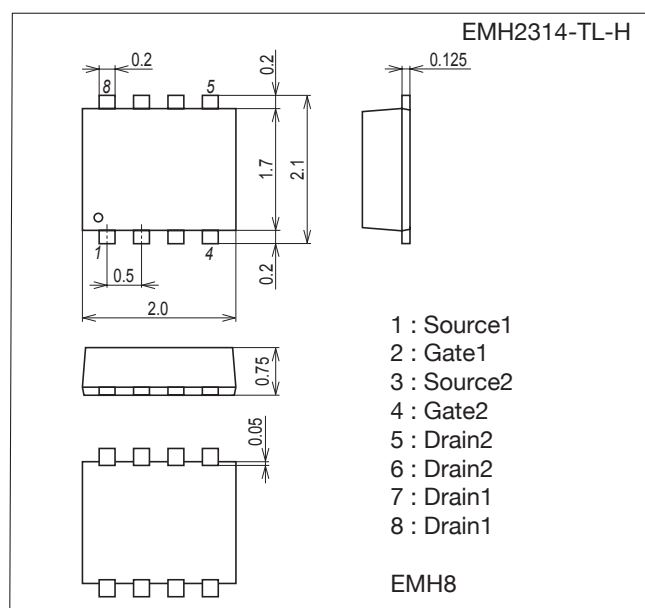
### Thermal Resistance Ratings

| Parameter                                                                                  | Symbol          | Value | Unit |
|--------------------------------------------------------------------------------------------|-----------------|-------|------|
| Junction to Ambient<br>When mounted on ceramic substrate (900mm <sup>2</sup> ×0.8mm) 1unit | $R_{\theta JA}$ | 125   | °C/W |

### Package Dimensions

unit : mm (typ)

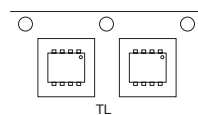
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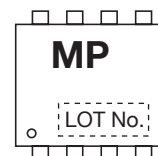
### Product & Package Information

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

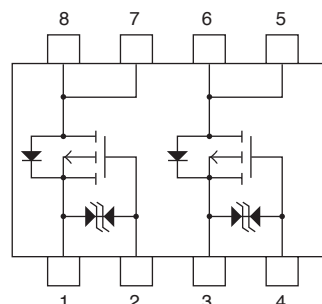
### Taping Type : TL



### Marking



### Electrical Connection



### ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

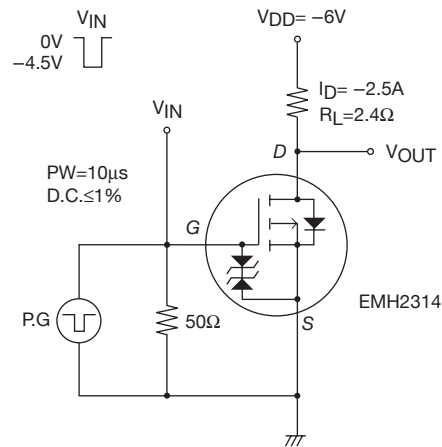
EMH2314

Electrical Characteristics at Ta=25°C

| Parameter                                  | Symbol        | Conditions                                                           | Ratings |      |          | Unit             |
|--------------------------------------------|---------------|----------------------------------------------------------------------|---------|------|----------|------------------|
|                                            |               |                                                                      | min     | typ  | max      |                  |
| Drain-to-Source Breakdown Voltage          | $V_{(BR)DSS}$ | $I_D = -1\text{mA}$ , $V_{GS} = 0\text{V}$                           | -12     |      |          | V                |
| Zero-Gate Voltage Drain Current            | $I_{DSS}$     | $V_{DS} = -12\text{V}$ , $V_{GS} = 0\text{V}$                        |         |      | -10      | $\mu\text{A}$    |
| Gate-to-Source Leakage Current             | $I_{GSS}$     | $V_{GS} = \pm 8\text{V}$ , $V_{DS} = 0\text{V}$                      |         |      | $\pm 10$ | $\mu\text{A}$    |
| Gate Threshold Voltage                     | $V_{GS(th)}$  | $V_{DS} = -6\text{V}$ , $I_D = -1\text{mA}$                          | -0.4    |      | -1.3     | V                |
| Forward Transconductance                   | $g_{FS}$      | $V_{DS} = -6\text{V}$ , $I_D = -2.5\text{A}$                         |         | 11   |          | S                |
| Static Drain-to-Source On-State Resistance | $R_{DS(on)1}$ | $I_D = -2.5\text{A}$ , $V_{GS} = -4.5\text{V}$                       |         | 28   | 37       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)2}$ | $I_D = -1.5\text{A}$ , $V_{GS} = -2.5\text{V}$                       |         | 53   | 75       | $\text{m}\Omega$ |
|                                            | $R_{DS(on)3}$ | $I_D = -0.5\text{A}$ , $V_{GS} = -1.8\text{V}$                       |         | 133  | 200      | $\text{m}\Omega$ |
| Input Capacitance                          | $C_{iss}$     | $V_{DS} = -6\text{V}$ , $f = 1\text{MHz}$                            |         | 1300 |          | pF               |
| Output Capacitance                         | $C_{oss}$     |                                                                      |         | 158  |          | pF               |
| Reverse Transfer Capacitance               | $C_{rss}$     |                                                                      |         | 143  |          | pF               |
| Turn-ON Delay Time                         | $t_{d(on)}$   | See specified Test Circuit.                                          |         | 16   |          | ns               |
| Rise Time                                  | $t_r$         |                                                                      |         | 77   |          | ns               |
| Turn-OFF Delay Time                        | $t_{d(off)}$  |                                                                      |         | 79   |          | ns               |
| Fall Time                                  | $t_f$         |                                                                      |         | 58   |          | ns               |
| Total Gate Charge                          | $Q_g$         | $V_{DS} = -6\text{V}$ , $V_{GS} = -4.5\text{V}$ , $I_D = -5\text{A}$ |         | 12   |          | nC               |
| Gate-to-Source Charge                      | $Q_{gs}$      |                                                                      |         | 3    |          | nC               |
| Gate-to-Drain "Miller" Charge              | $Q_{gd}$      |                                                                      |         | 2    |          | nC               |
| Forward Diode Voltage                      | $V_{SD}$      | $I_S = -5\text{A}$ , $V_{GS} = 0\text{V}$                            |         | -0.9 | -1.2     | V                |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Switching Time Test Circuit



Ordering Information

| Device       | Package | Shipping       | memo                     |
|--------------|---------|----------------|--------------------------|
| EMH2314-TL-H | EMH8    | 3,000pcs./reel | Pb-Free and Halogen Free |

