# EMH2418R

# N-Channel Power MOSFET 24V, 9A, 15mΩ, Dual EMH8



### **Electrical Connection**

N-channel



### Marking



# Packing Type:TL



# **Ordering & Package Information**

| Device        | Package      | Shipping    |  |
|---------------|--------------|-------------|--|
| EMH2418R-TL-H |              | 3 000       |  |
| Pb-free and   | EMH8         | 3,000       |  |
| Halogen Free  | lalogen Free | pcs. / reel |  |

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.

# Features

- Low On-resistance
- 2.5V drive
- Common-Drain Type
- Protection diode in
- Built-in gate protection resistor
- Best suited for LiB charging and discharging switch
- Halogen free compliance

# **Specifications**

#### Absolute Maximum Ratings at $Ta = 25^{\circ}C$

| Parameter  | Symbol | Value   | Unit |
|--|--------|---------|------|
| Drain to Source Voltage  | VDSS   | 24      | V    |
| Gate to Source Voltage   | VGSS   | ±12     | V    |
| Drain Current (DC)   | ۱D     | 9       | А    |
| Drain Current (Pulse)  | IDP    | 40      | А    |
| PW≤10μs, duty cycle≤1%   |        |         |      |
| Power Dissipation  | PD     | 1.3     | W    |
| When mounted on ceramic substrate(900mm <sup>2</sup> ×0.8mm) 1unit |        |         |      |
| Total Dissipation  | PT     | 1.4     | W    |
| When mounted on ceramic substrate(900mm <sup>2</sup> ×0.8mm)       |        |         |      |
| JunctionTemperature  | Tj     | 150     | °C   |
| Storage Temperature  | Tstg   | - 55 to | °C   |
|  |        | +150    |      |

#### **Thermal Resistance Ratings**

| Parameter  | Symbol         | Value | Unit |
|--|----------------|-------|------|
| Junction to Ambient  | $R_{\theta}JA$ | 96    | °C/W |
| When mounted on ceramic substrate(900mm <sup>2</sup> ×0.8mm) |                |       |      |

# **Electrical Characteristics** at $Ta = 25^{\circ}C$

| Parameter                                  |                       |   |      | Value |      |      |
|--|-----------------------|---|------|-------|------|------|
|  | Symbol                | Conditions  | min  | typ   | max  | Unit |
| Drain to Source Breakdown Voltage          | V(BR)DSS              | ID=1mA, VGS=0V  | 24   |       |      | V    |
| Zero-Gate Voltage Drain Current            | IDSS                  | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V                       |      |       | 1    | μA   |
| Gate to Source Leakage Current             | IGSS                  | V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V                       |      |       | ±1   | μA   |
| Gate Threshold Voltage                     | VGS(th)               | V <sub>DS</sub> =10V, I <sub>D</sub> =1mA                       | 0.5  |       | 1.3  | V    |
| Forward Transconductance                   | 9FS                   | V <sub>DS</sub> =10V, I <sub>D</sub> =4A                        |      | 4     |      | S    |
| Static Drain to Source On-State Resistance | R <sub>DS</sub> (on)1 | I <sub>D</sub> =4A, V <sub>GS</sub> =4.5V                       | 9.6  | 12    | 15   | mΩ   |
|  | R <sub>DS</sub> (on)2 | ID=4A, VGS=4.0V   | 10.0 | 12.5  | 16.3 | mΩ   |
|  | R <sub>DS</sub> (on)3 | ID=4A, VGS=3.1V   | 11.3 | 14.2  | 20   | mΩ   |
|  | R <sub>DS</sub> (on)4 | ID=2A, VGS=2.5V   | 13.2 | 16.5  | 23.1 | mΩ   |
| Turn-ON Delay Time                         | t <sub>d</sub> (on)   | See specified Test Circuit.                                     |      | 120   |      | ns   |
| Rise Time                                  | tr                    |   |      | 170   |      | ns   |
| Turn-OFF Delay Time                        | t <sub>d</sub> (off)  |   |      | 17500 |      | ns   |
| Fall Time                                  | tf                    |   |      | 22600 |      | ns   |
| Total Gate Charge                          | Qg                    | V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =9A |      | 4.4   |      | nC   |
| Gate to Source Charge                      | Qgs                   |   |      | 0.9   |      | nC   |
| Gate to Drain "Miller" Charge              | Qgd                   |   |      | 0.7   |      | nC   |
| Forward Diode Voltage                      | VSD                   | IS=9A, VGS=0V   |      | 0.8   | 1.2  | V    |

# Switching Time Test Circuit







# **Package Dimensions**

EMH2418R-TL-H











Note on usage : Since the EMH2418R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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