



EMH2417R

N-Channel Power MOSFET 12V, 11A, 10mΩ, Dual EMH8 Common Drain

ON Semiconductor®

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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°C

| Parameter | Symbol | Conditions | Value | Unit |
|-------------------------|------------------|--------------------------------------------------------------------|--------------|------|
| Drain to Source Voltage | V _{DSS} | | 12 | V |
| Gate to Source Voltage | V _{GSS} | | ±12 | V |
| Drain Current (DC) | I _D | | 11 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 40 | A |
| Power Dissipation | P _D | When mounted on ceramic substrate(900mm ² ×0.8mm) 1unit | 1.3 | W |
| Total Dissipation | P _T | When mounted on ceramic substrate(900mm ² ×0.8mm) | 1.4 | 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 When mounted on ceramic substrate (900mm ² ×0.8mm) | R _{θJA} | 96 | °C /W |

Electrical Characteristics at Ta = 25°C

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------------|----------------------|---------------------------------------------|-------|-----|------|------|
| | | | min | typ | max | |
| Drain to Source Breakdown Voltage | V _{(BR)DSS} | I _D =1mA, V _{GS} =0V | 12 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =10V, V _{GS} =0V | | | 1 | μA |
| Gate to Source Leakage Current | I _{GSS} | V _{GS} =±8V, V _{DS} =0V | | | ±1 | μA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} =6V, I _D =1mA | 0.5 | | 1.3 | V |
| Forward Transconductance | g _{FS} | V _{DS} =6V, I _D =5A | | 13 | | S |
| Static Drain to Source On-State Resistance | R _{DS(on)1} | I _D =5A, V _{GS} =4.5V | 6.4 | 8 | 10 | mΩ |
| | R _{DS(on)2} | I _D =5A, V _{GS} =4.0V | 6.8 | 8.5 | 11 | mΩ |
| | R _{DS(on)3} | I _D =5A, V _{GS} =3.1V | 8.8 | 11 | 15.4 | mΩ |
| | R _{DS(on)4} | I _D =2.5A, V _{GS} =2.5V | 11.2 | 14 | 19.6 | mΩ |

Continued on next page.

ORDERING INFORMATION

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

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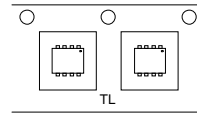
| Parameter | Symbol | Conditions | Value | | | Unit |
|-------------------------------|--------------|-----------------------------------|-------|------|-----|------|
| | | | min | typ | max | |
| Turn-ON Delay Time | $t_{d(on)}$ | See specified Test Circuit. | | 470 | | ns |
| Rise Time | t_r | | | 1600 | | ns |
| Turn-OFF Delay Time | $t_{d(off)}$ | | | 8900 | | ns |
| Fall Time | t_f | | | 6400 | | ns |
| Total Gate Charge | Q_g | $V_{DS}=6V, V_{GS}=4.5V, I_D=11A$ | | 16 | | nC |
| Gate to Source Charge | Q_{gs} | | | 3 | | nC |
| Gate to Drain "Miller" Charge | Q_{gd} | | | 5 | | nC |
| Forward Diode Voltage | V_{SD} | $I_S=11A, V_{GS}=0V$ | | 0.8 | 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.

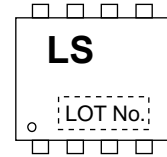
Ordering & Package Information

| Device | Package | Shipping | note |
|---------------|---------|-------------------|--------------------------|
| EMH2417R-TL-H | EMH8 | 3,000 pcs. / reel | Pb-Free and Halogen Free |

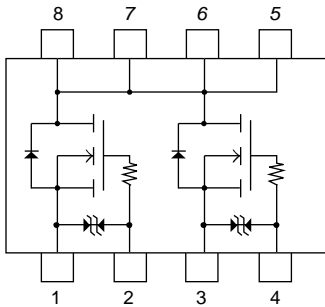
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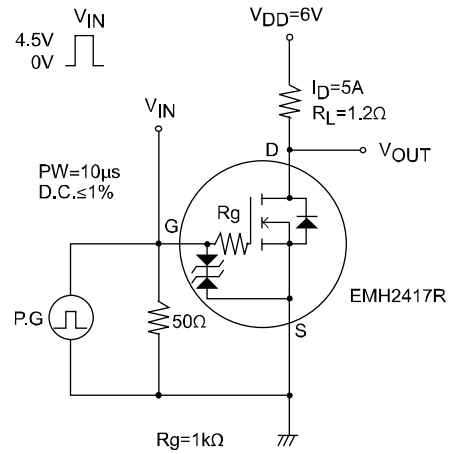
Marking



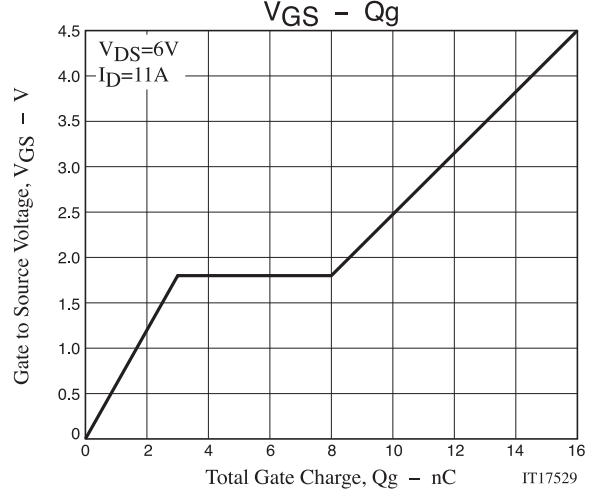
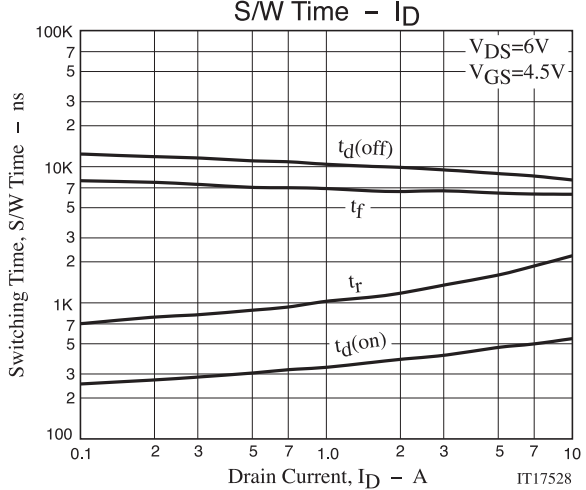
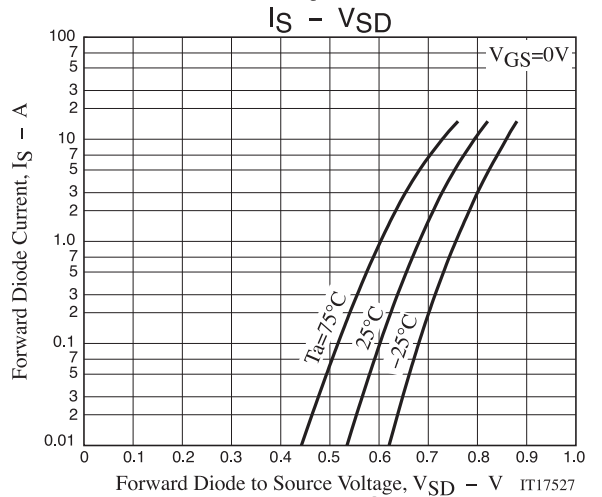
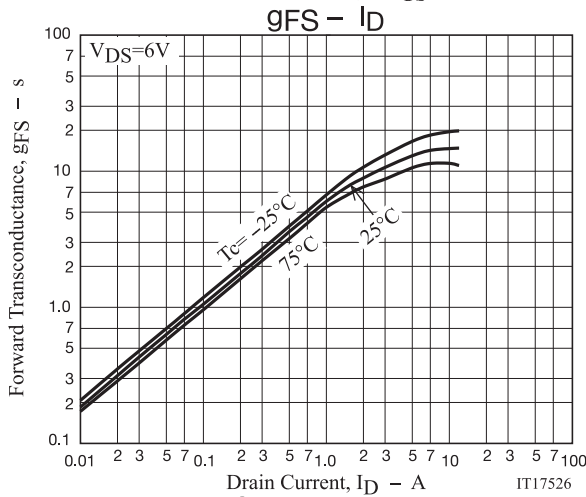
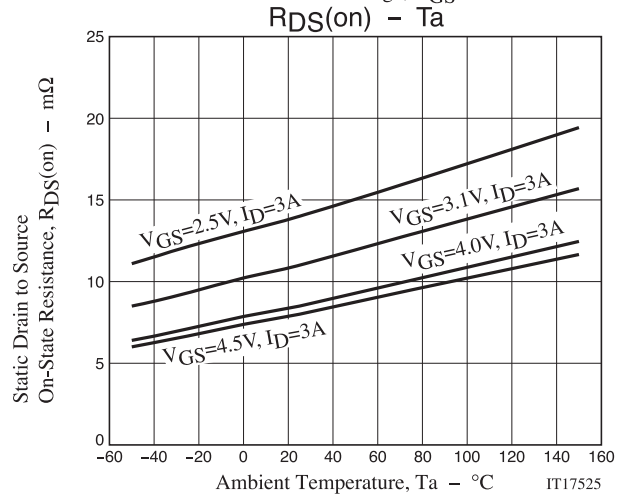
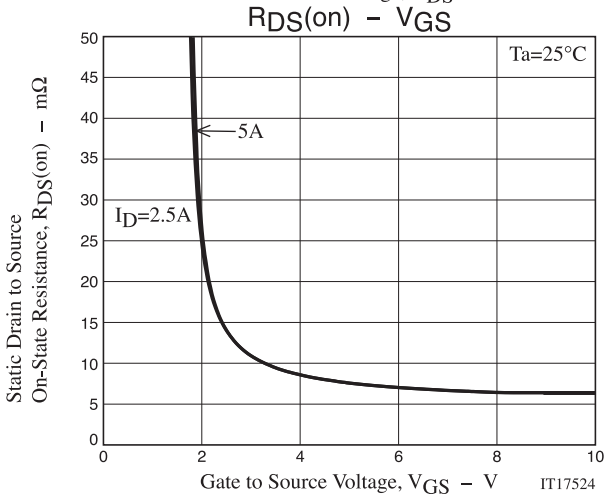
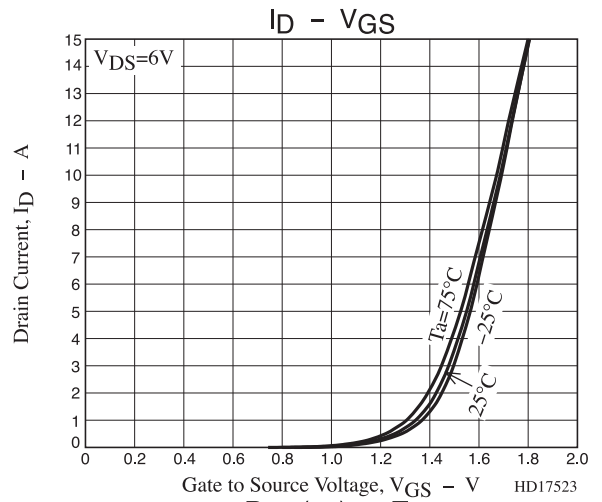
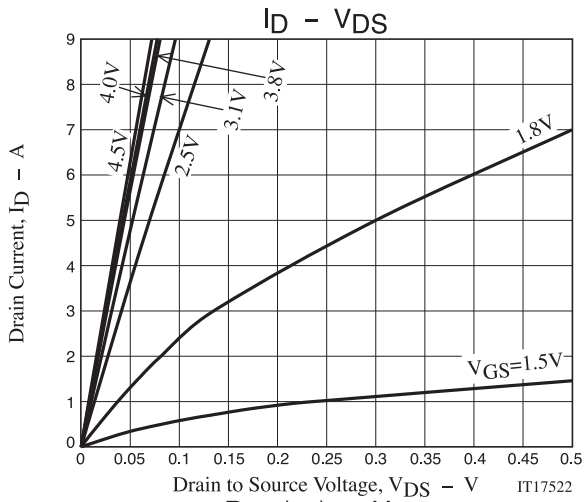
Electrical Connection



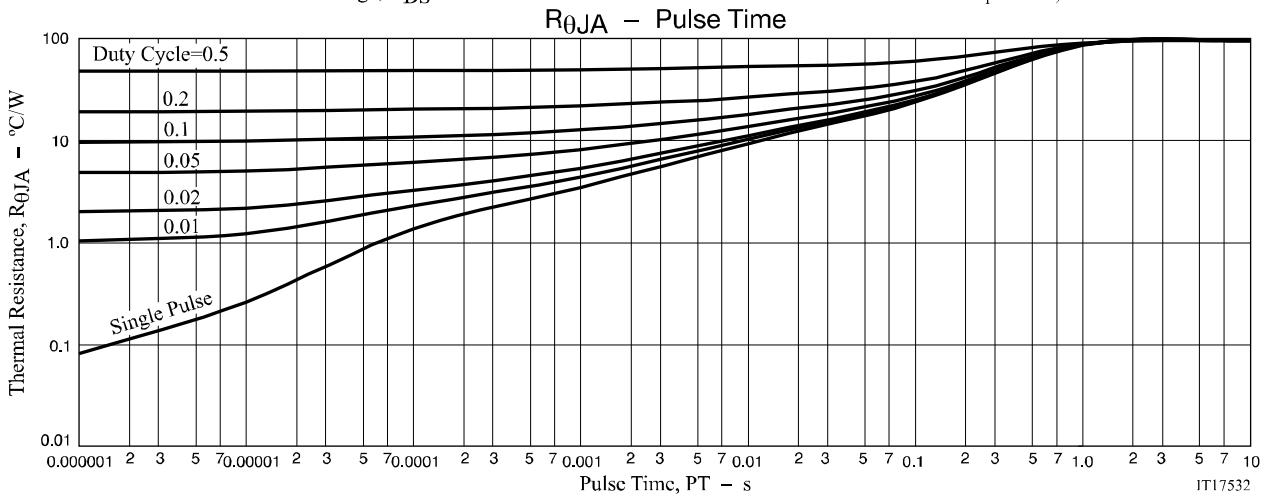
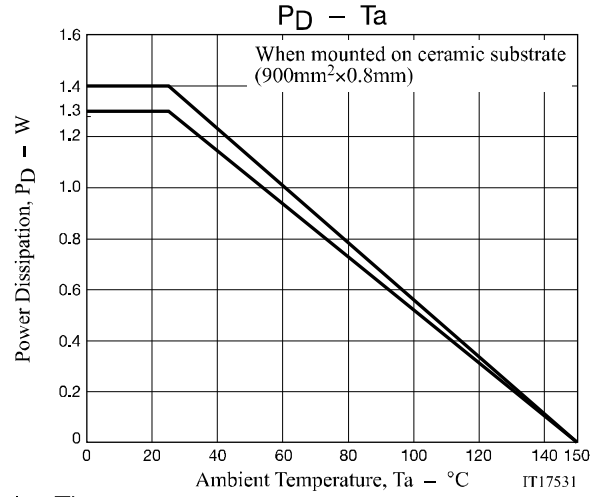
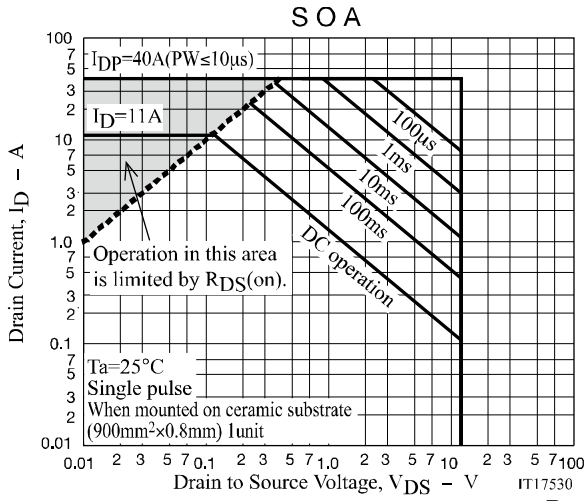
Switching Time Test Circuit



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Package Dimensions

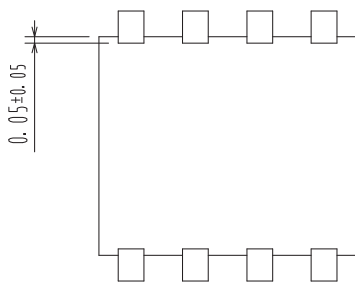
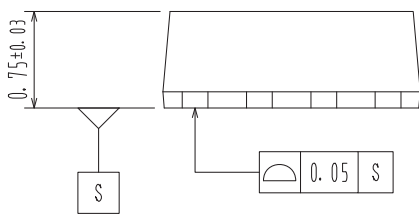
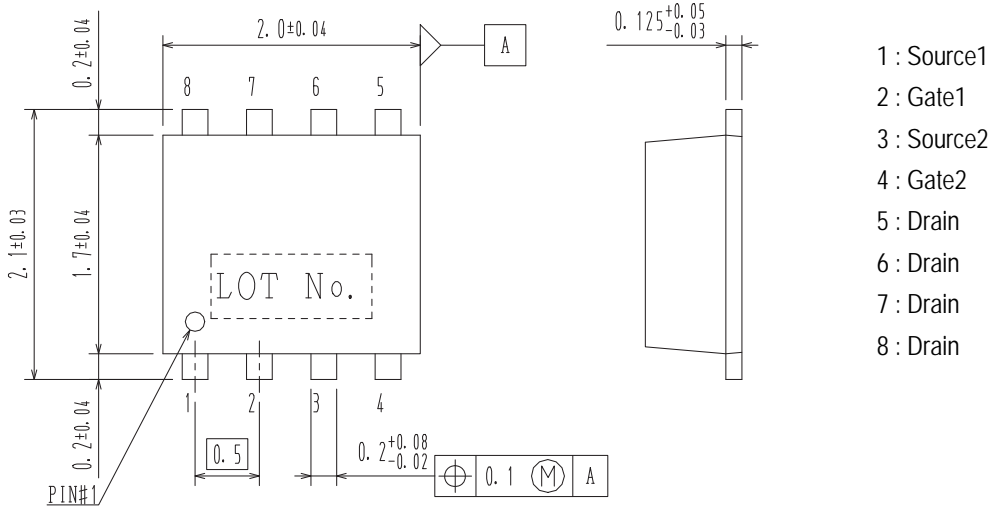
EMH2417R-TL-H

unit : mm

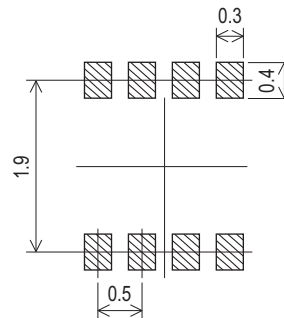
SOT-383FL / EMH8

CASE 419AT

ISSUE 0



Recommended Soldering Footprint



Note on usage : Since the EMH2417R is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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