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# EMH2417R

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

ON Semiconductor®

<http://onsemi.com>

### 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 <sub>DSS</sub>		12	V
Gate to Source Voltage	V <sub>GSS</sub>		±12	V
Drain Current (DC)	I <sub>D</sub>		11	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	40	A
Power Dissipation	P <sub>D</sub>	When mounted on ceramic substrate(900mm <sup>2</sup> ×0.8mm) 1unit	1.3	W
Total Dissipation	P <sub>T</sub>	When mounted on ceramic substrate(900mm <sup>2</sup> ×0.8mm)	1.4	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		- 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 <sup>2</sup> ×0.8mm)	R <sub>θJA</sub>	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 <sub>D</sub> =1mA, V <sub>GS</sub> =0V	12			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V			1	μA
Gate to Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±1	μA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =6V, I <sub>D</sub> =1mA	0.5		1.3	V
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =6V, I <sub>D</sub> =5A		13		S
Static Drain to Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =4.5V	6.4	8	10	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =4.0V	6.8	8.5	11	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =5A, V <sub>GS</sub> =3.1V	8.8	11	15.4	mΩ
	R <sub>DS(on)4</sub>	I <sub>D</sub> =2.5A, V <sub>GS</sub> =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.

# EMH2417R

Continued from preceding page

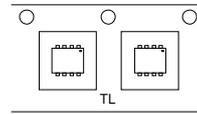
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		470		ns
Rise Time	$t_r$			1600		ns
Turn-OFF Delay Time	$t_{d(off)}$			8900		ns
Fall Time	$t_f$			6400		ns
Total Gate Charge	$Q_g$	$V_{DS}=6V, V_{GS}=4.5V, I_D=11A$		16		nC
Gate to Source 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.

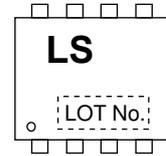
## Ordering & Package Information

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

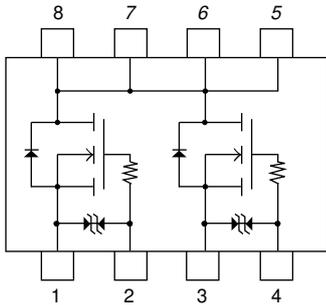
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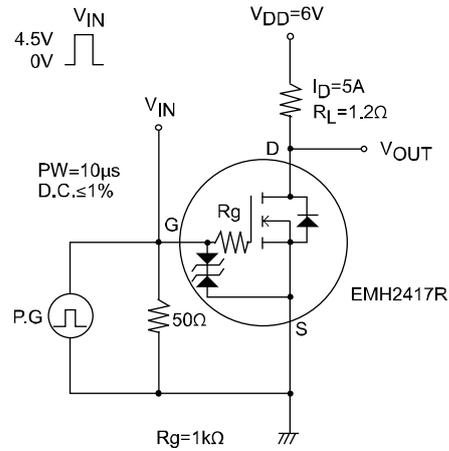
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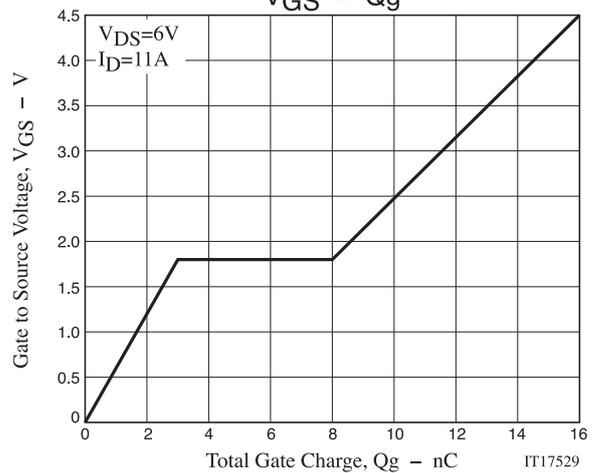
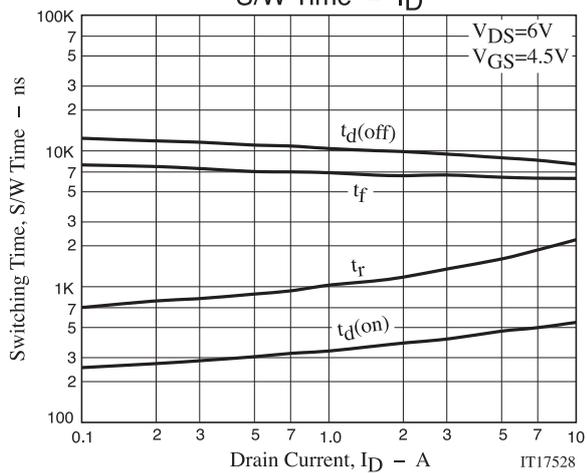
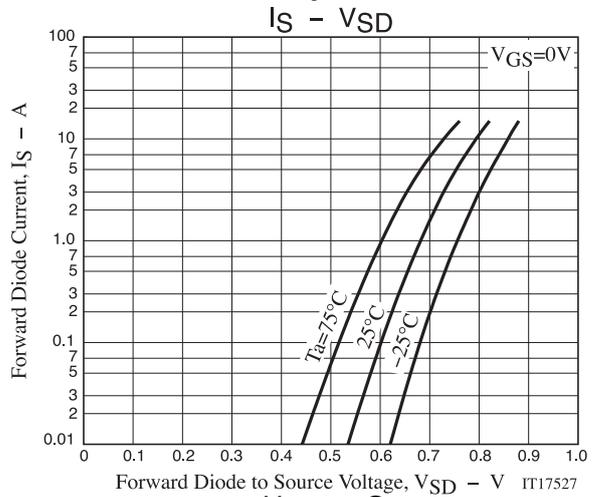
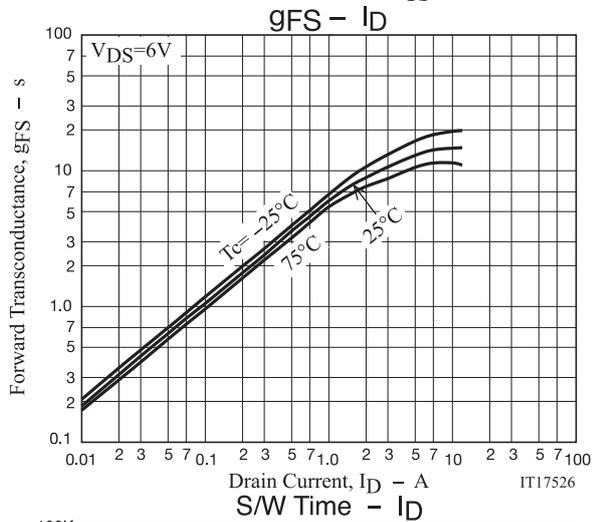
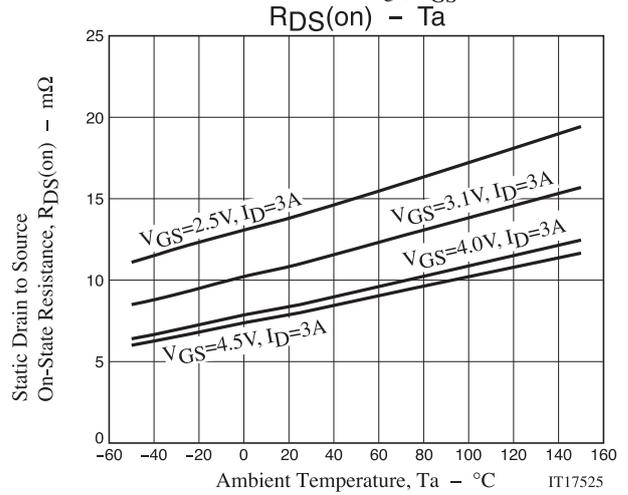
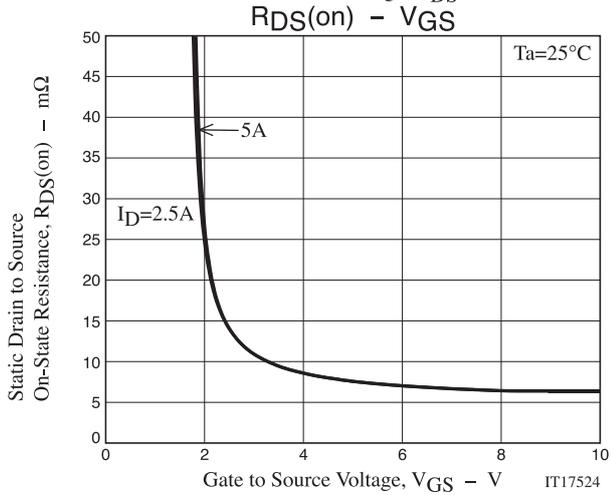
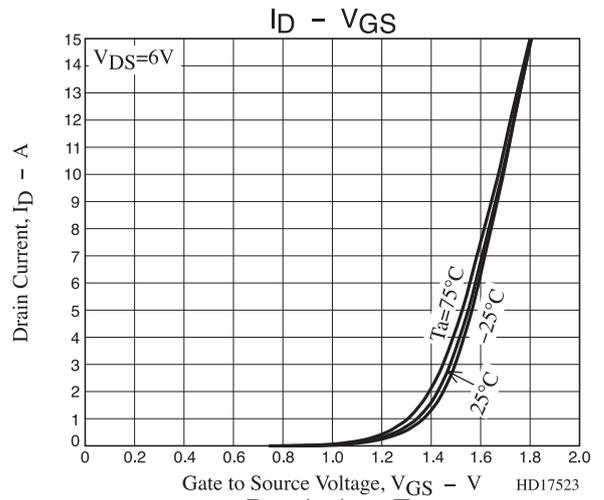
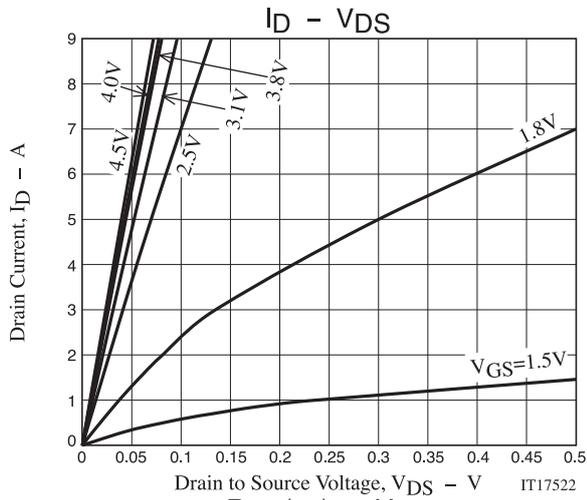
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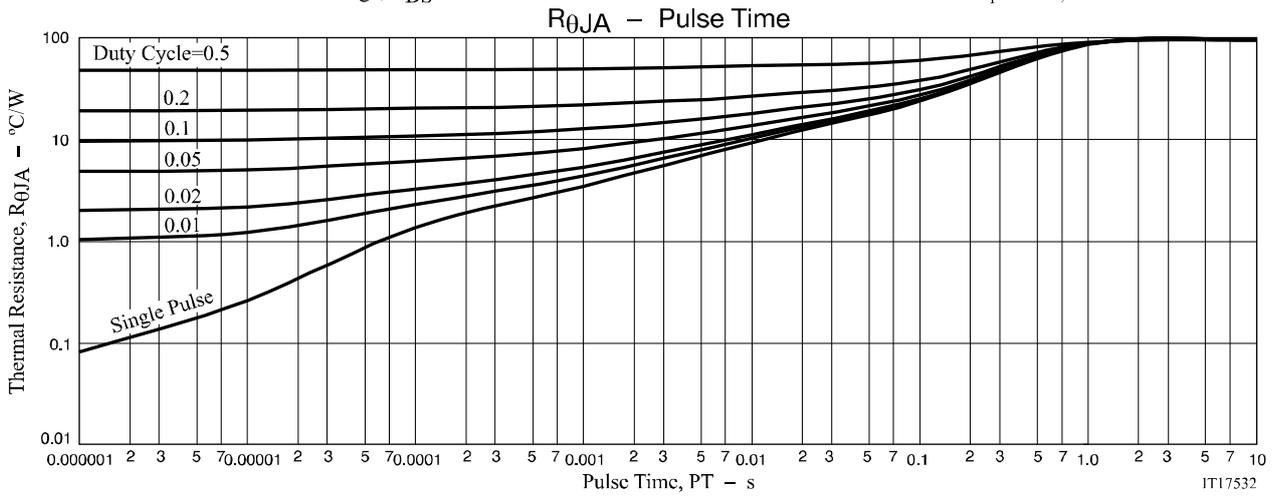
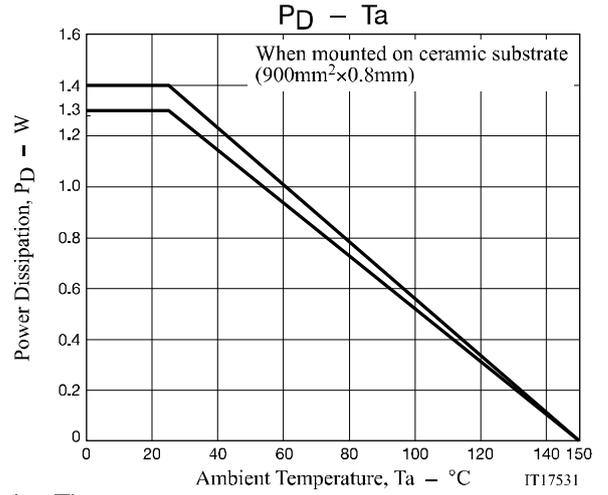
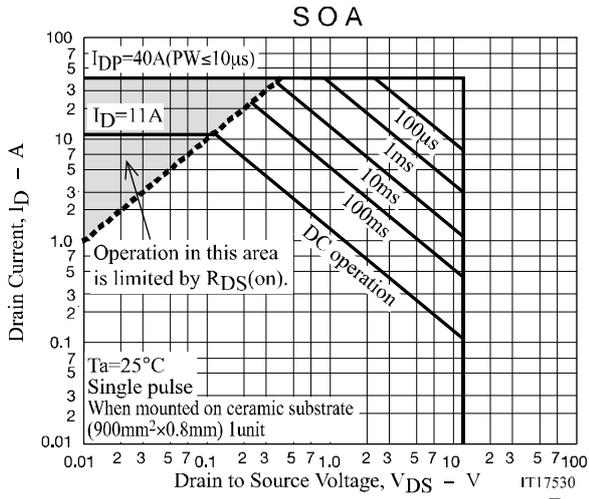
## Switching Time Test Circuit



# EMH2417R



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## Package Dimensions

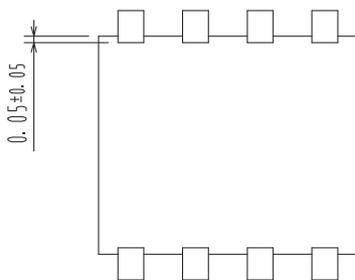
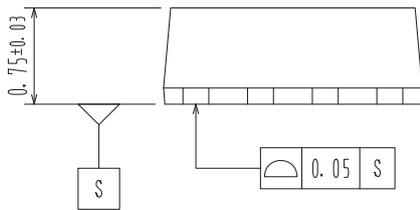
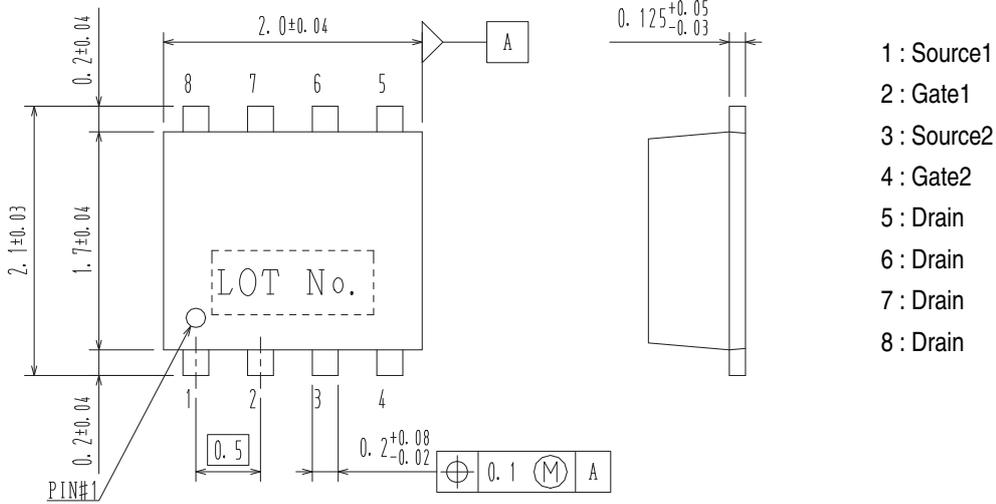
EMH2417R-TL-H

unit : mm

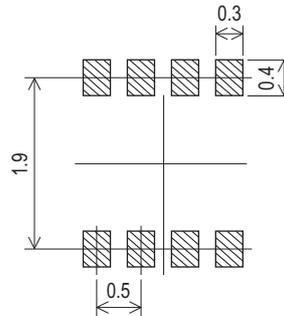
SOT-383FL / EMH8

CASE 419AT

ISSUE O



## 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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