Ordering number : ENA2267A

EMH2418R

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

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

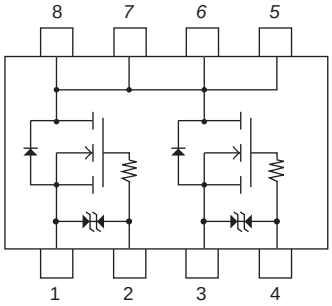
Parameter	Symbol	Value	Unit
Drain to Source Voltage	V_{DSS}	24	V
Gate to Source Voltage	V_{GSS}	±12	V
Drain Current (DC)	I_D	9	A
Drain Current (Pulse) PW≤10μs, duty cycle≤1%	I_{DP}	40	A
Power Dissipation When mounted on ceramic substrate(900mm^2×0.8mm) 1unit	P_D	1.3	W
Total Dissipation When mounted on ceramic substrate(900mm^2×0.8mm)	P_T	1.4	W
JunctionTemperature	Tj	150	°C
Storage Temperature	Tstg	- 55 to +150	°C

Thermal Resistance Ratings

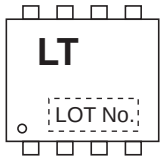
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate(900mm^2×0.8mm)	$R_{\theta JA}$	96	°C/W

Electrical Connection

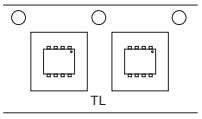
N-channel



Marking



Packing Type:TL



Ordering & Package Information

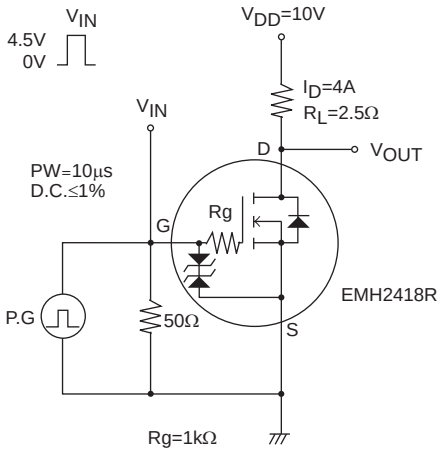
Device	Package	Shipping
EMH2418R-TL-H Pb-free and Halogen Free	EMH8	3,000 pcs. / reel

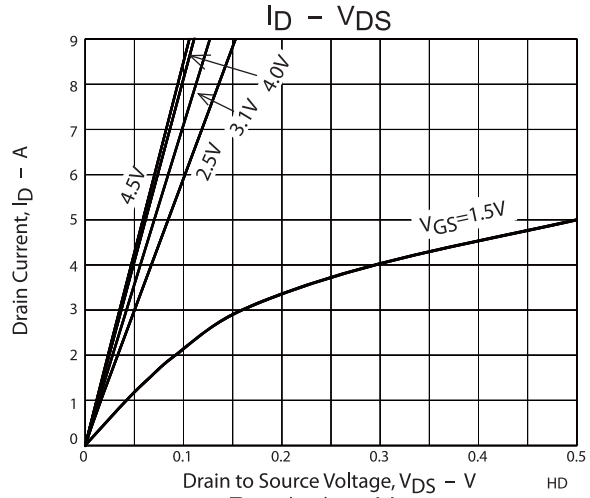
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

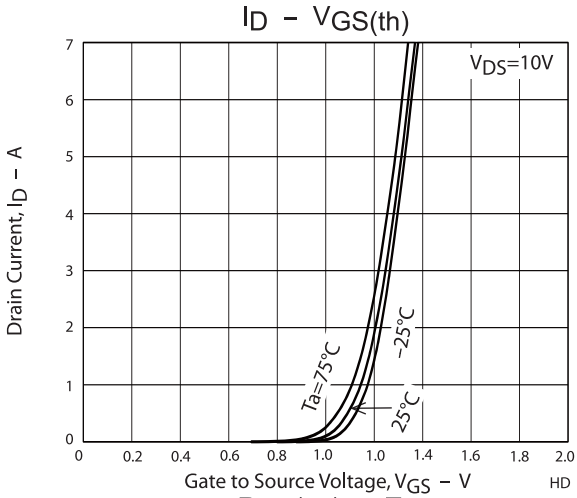
Electrical Characteristics at Ta = 25°C

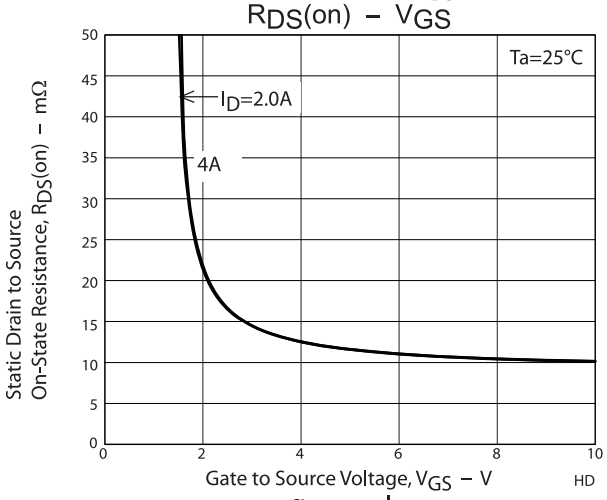
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	24			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±1	μA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}=10V, I_D=1mA	0.5		1.3	V
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=4A		4		S
Static Drain to Source On-State Resistance	$R_{DS}(on)1$	I_D=4A, V_{GS}=4.5V	9.6	12	15	mΩ
	$R_{DS}(on)2$	I_D=4A, V_{GS}=4.0V	10.0	12.5	16.3	mΩ
	$R_{DS}(on)3$	I_D=4A, V_{GS}=3.1V	11.3	14.2	20	mΩ
	$R_{DS}(on)4$	I_D=2A, V_{GS}=2.5V	13.2	16.5	23.1	mΩ
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		120		ns
Rise Time	t_r			170		ns
Turn-OFF Delay Time	$t_d(off)$			17500		ns
Fall Time	t_f			22600		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=4.5V, I_D=9A		4.4		nC
Gate to Source Charge	Qgs			0.9		nC
Gate to Drain “Miller” Charge	Qgd			0.7		nC
Forward Diode Voltage	V_{SD}	I_S=9A, V_{GS}=0V		0.8	1.2	V

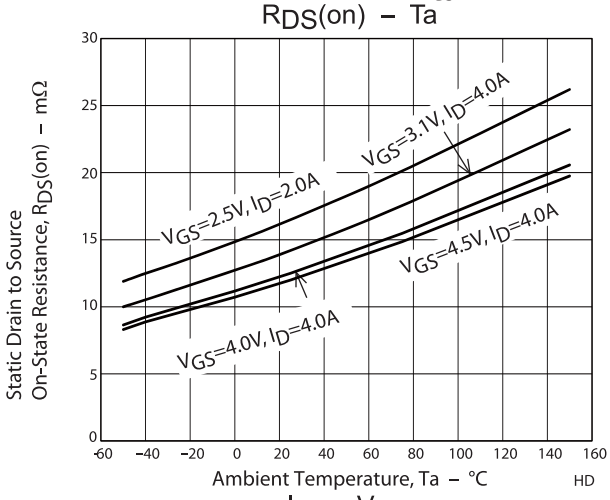
Switching Time Test Circuit

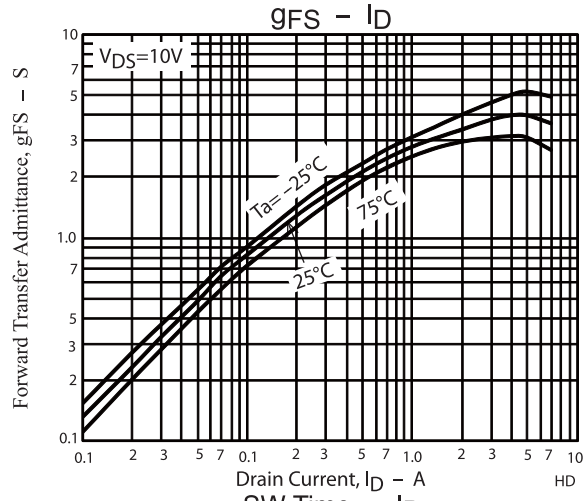


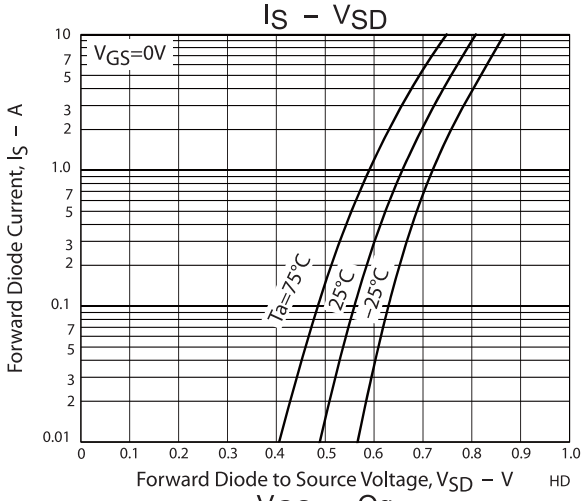

ID – VDS
Drain Current, ID – A
Drain to Source Voltage, VDS – V
4.5V
2.5V
3.1V
4.0V
VGS=1.5V
HD

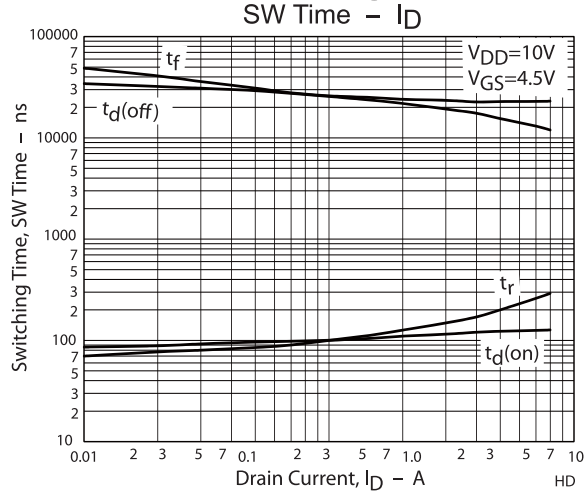

ID – VGS(th)
Drain Current, ID – A
Gate to Source Voltage, VGS – V
VDS=10V
Ta=75°C
25°C
–25°C
HD

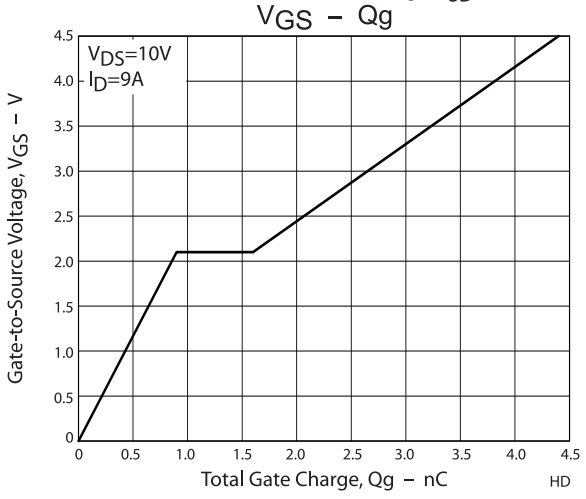

RDS(on) – VGS
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Gate to Source Voltage, VGS – V
Ta=25°C
ID=2.0A
4A
HD

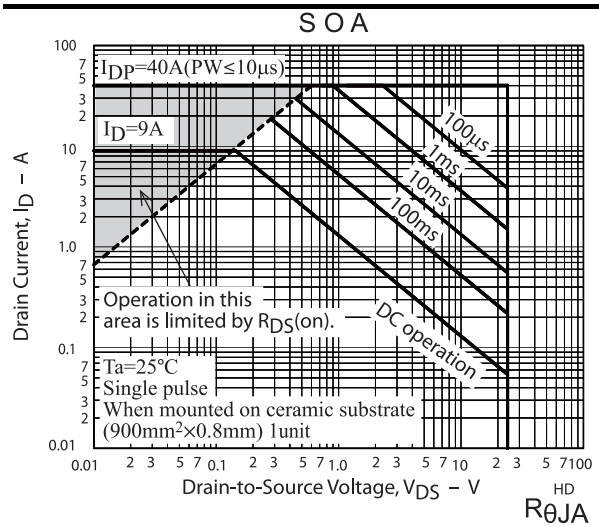

RDS(on) – Ta
Static Drain to Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
VGS=3.1V, ID=4.0A
VGS=2.5V, ID=2.0A
VGS=4.5V, ID=4.0A
VGS=4.0V, ID=4.0A
HD

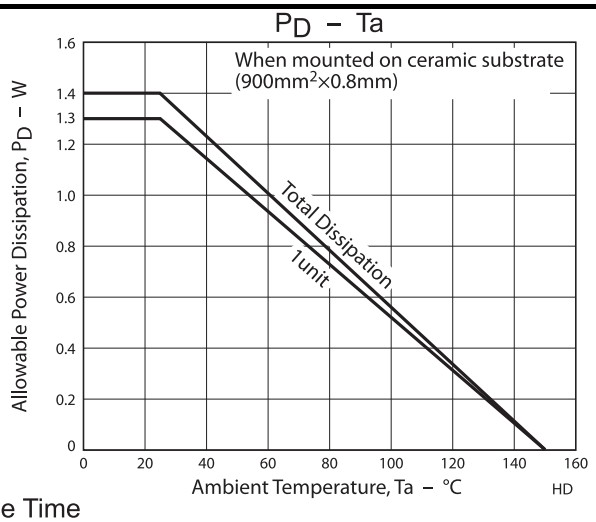

gFS – ID
Forward Transfer Admittance, gFS – S
Drain Current, ID – A
VDS=10V
Ta=–25°C
75°C
25°C
HD

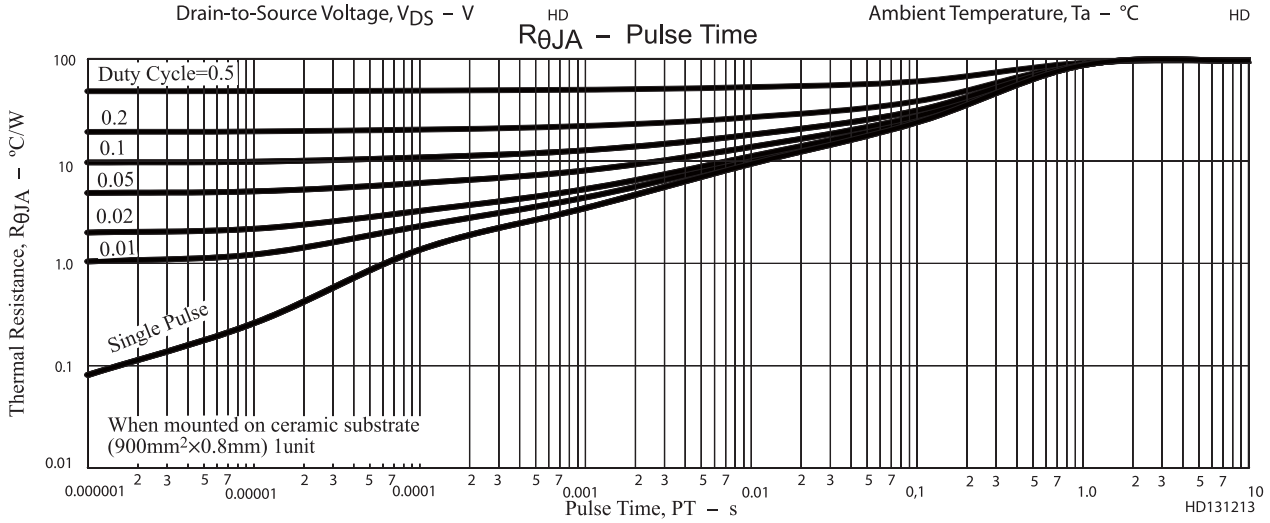

IS – VSD
Forward Diode Current, IS – A
Forward Diode to Source Voltage, VSD – V
VGS=0V
Ta=75°C
25°C
–25°C
HD


SW Time – ID
Switching Time, SW Time – ns
Drain Current, ID – A
VDD=10V
VGS=4.5V
tf
td(off)
tr
td(on)
HD


VGS – Qg
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
VDS=10V
ID=9A
HD


S O A
I_{DP}=40A(PW≤10μs)
I_D=9A
100μs
1ms
10ms
100ms
DC operation
Operation in this area is limited by R_{DS}(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate (900mm²×0.8mm) 1unit
Drain Current, I_D – A
Drain-to-Source Voltage, V_{DS} – V
HD


P_D – Ta
When mounted on ceramic substrate (900mm²×0.8mm)
Total Dissipation
1unit
Allowable Power Dissipation, P_D – W
Ambient Temperature, Ta – °C
HD


$R_{\theta JA}$ – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
When mounted on ceramic substrate (900mm²×0.8mm) 1unit
Thermal Resistance, $R_{\theta JA}$ – °C/W
Pulse Time, PT – s
HD131213

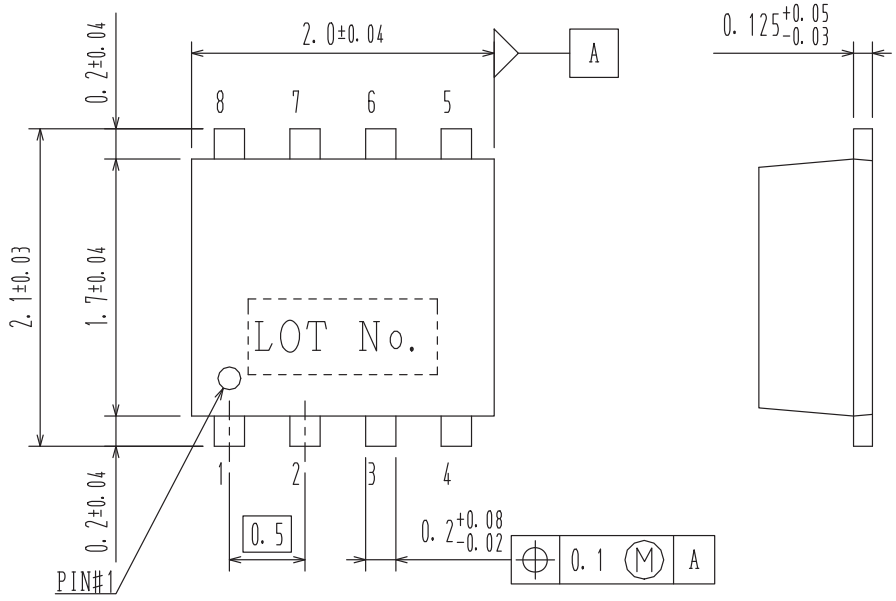
Package Dimensions

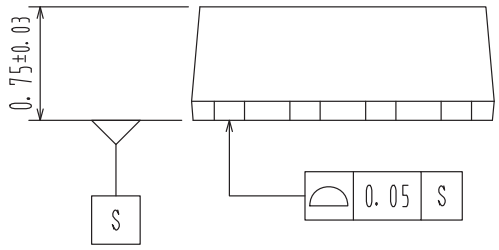
EMH2418R-TL-H

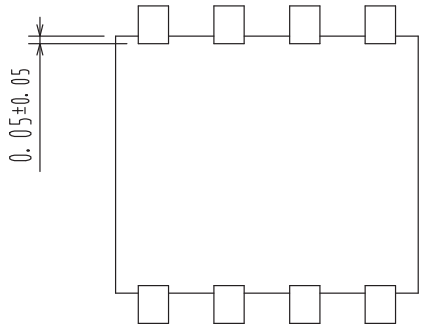
SOT-383FL/EMH8

CASE419AT
ISSUE O
Unit : mm

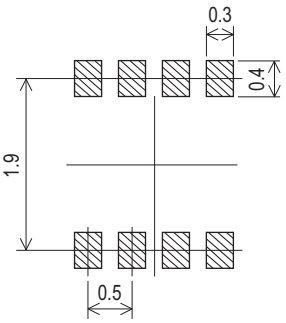
1: Source1
2: Gate1
3: Source2
4: Gate2
5: Drain
6: Drain
7: Drain
8: Drain







Soldering Footprint



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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