Ordering number : EN8759A

EMH2314

ON Semiconductor®

http://onsemi.com

Power MOSFET

−12V, 37mΩ, −5A, Dual P-Channel

Features

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

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}		±8	V
Drain Current (DC)	I_D		−5	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−20	A
Power Dissipation	P_D	When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	1.0	W
Total Dissipation	P_T	When mounted on ceramic substrate (900mm^2×0.8mm)	1.2	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

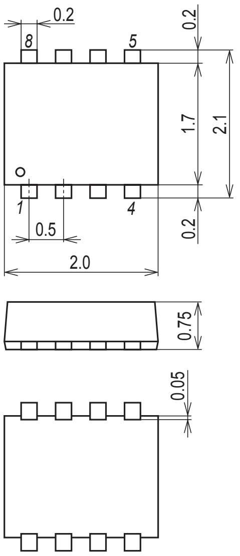
Thermal Resistance Ratings

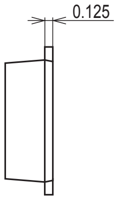
Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (900mm^2×0.8mm) 1unit	$R_{\theta JA}$	125	°C/W

Package Dimensions

unit : mm (typ)
7045-002

EMH2314-TL-H





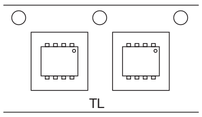
1 : Source1
2 : Gate1
3 : Source2
4 : Gate2
5 : Drain2
6 : Drain2
7 : Drain1
8 : Drain1

EMH8

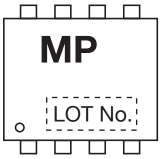
Product & Package Information

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

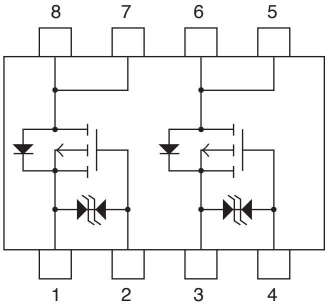
Taping Type : TL



Marking



Electrical Connection



ORDERING INFORMATION

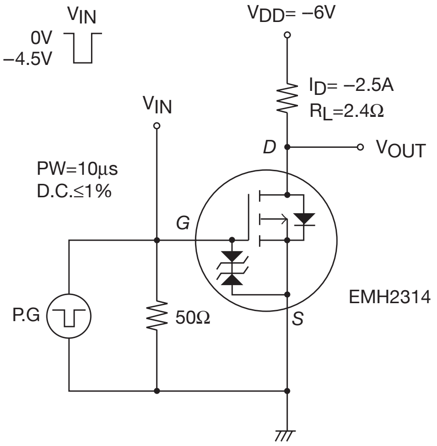
See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			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}= −12V, V_{GS}=0V			−10	µA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	µA
Gate Threshold Voltage	$V_{GS}(th)$	V_{DS}= −6V, I_D= −1mA	−0.4		−1.3	V
Forward Transconductance	g_{FS}	V_{DS}= −6V, I_D= −2.5A		11		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D= −2.5A, V_{GS}= −4.5V		28	37	mΩ
	$R_{DS}(on)2$	I_D= −1.5A, V_{GS}= −2.5V		53	75	mΩ
	$R_{DS}(on)3$	I_D= −0.5A, V_{GS}= −1.8V		133	200	mΩ
Input Capacitance	Ciss	V_{DS}= −6V, f=1MHz		1300		pF
Output Capacitance	Coss			158		pF
Reverse Transfer Capacitance	Crss			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	Qg	V_{DS}= −6V, V_{GS}= −4.5V, I_D= −5A		12		nC
Gate-to-Source Charge	Qgs			3		nC
Gate-to-Drain “Miller” Charge	Qgd			2		nC
Forward Diode Voltage	V_{SD}	I_S= −5A, V_{GS}=0V		−0.9	−1.2	V

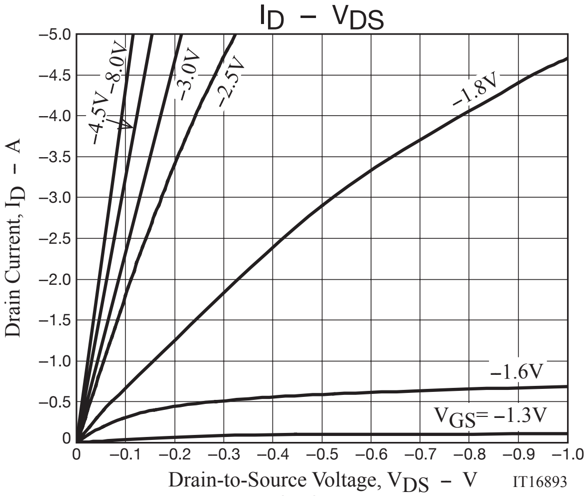
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

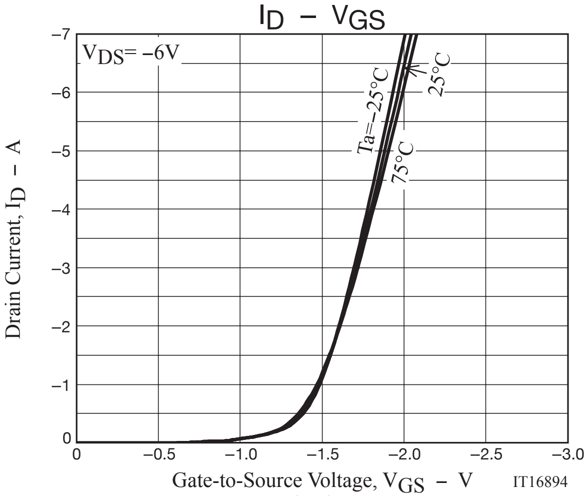
Switching Time Test Circuit

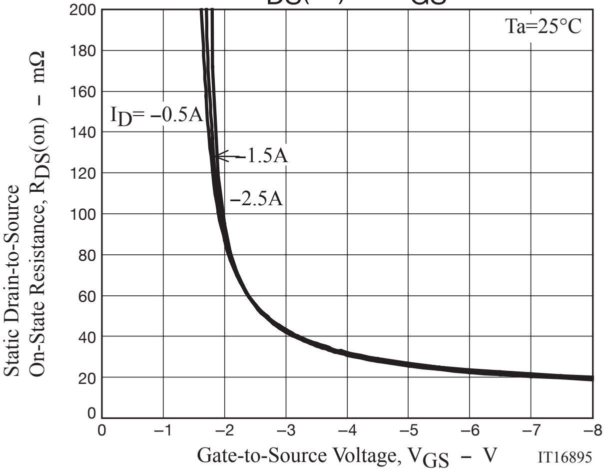


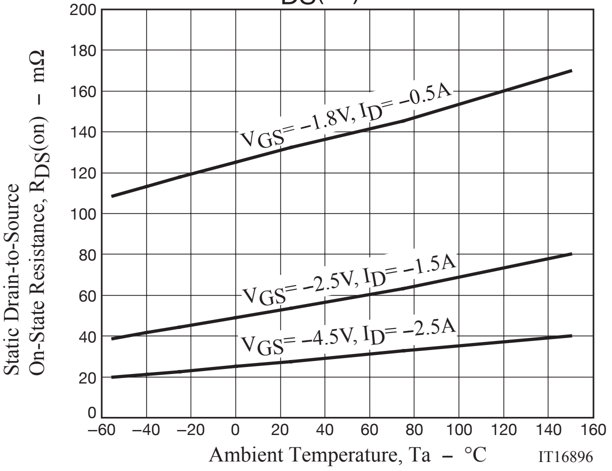
Ordering Information

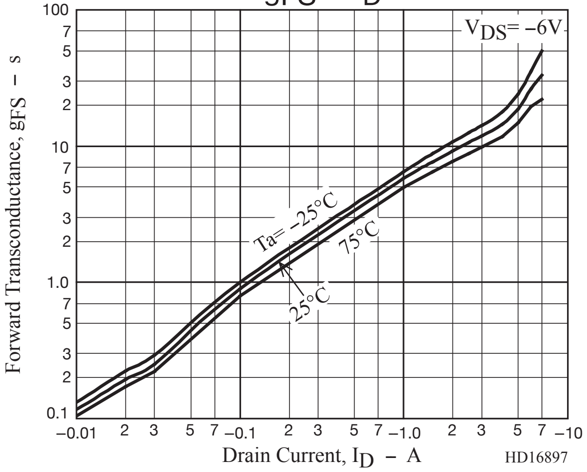
Device	Package	Shipping	memo
EMH2314-TL-H	EMH8	3,000pcs./reel	Pb-Free and Halogen Free

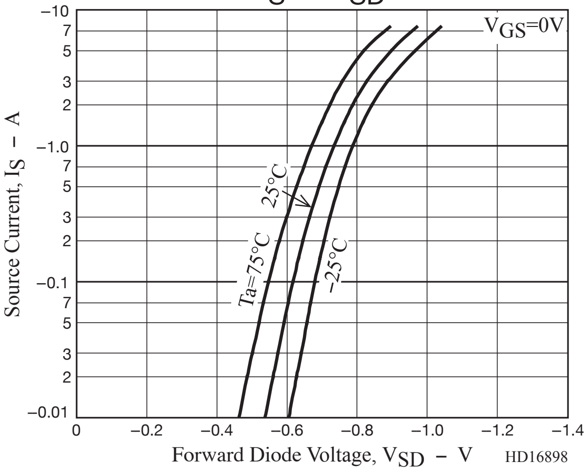

I_D – V_{DS}

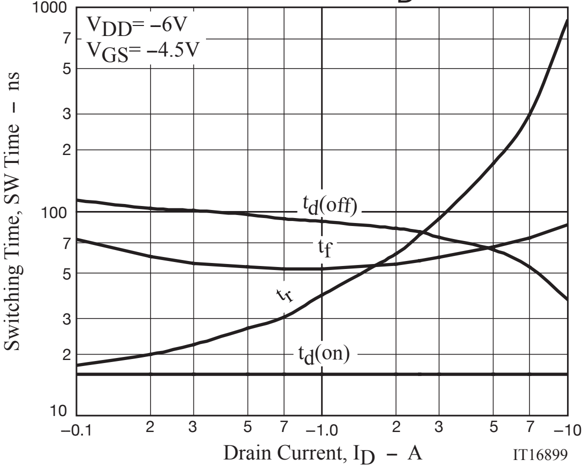

I_D – V_{GS}

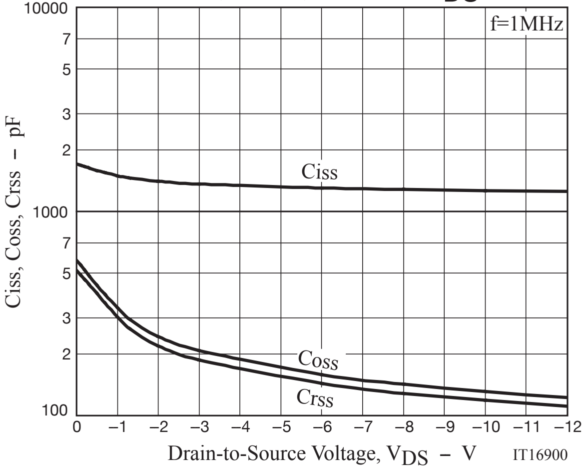

R_{DS}(on) – V_{GS}

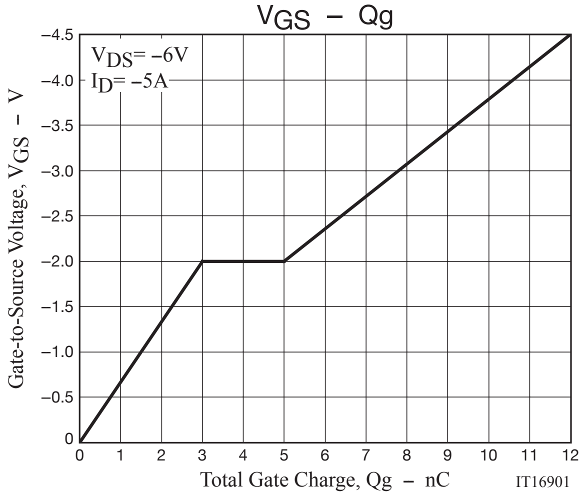

R_{DS}(on) – Ta

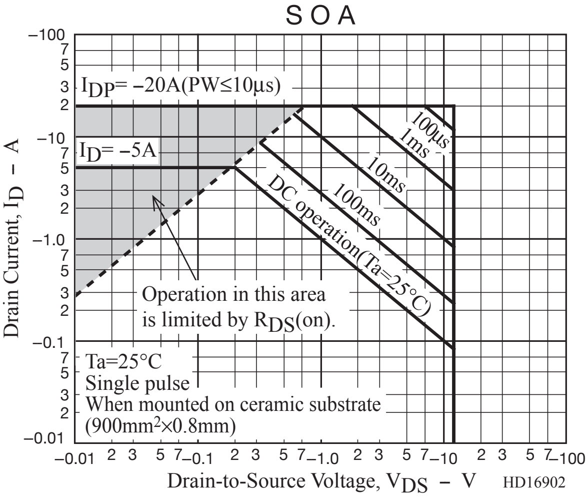

g_{FS} – I_D

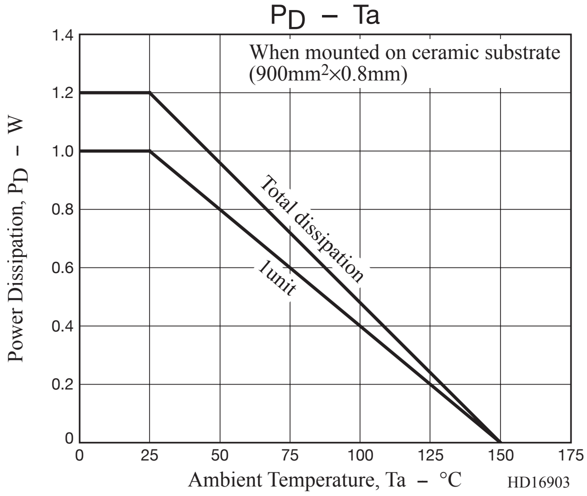

I_S – V_{SD}

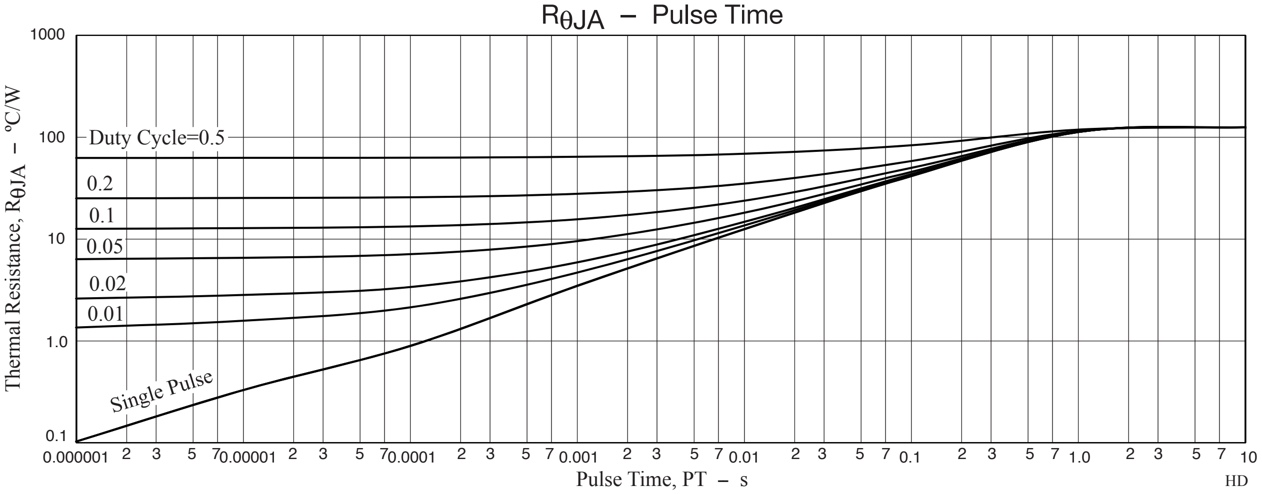

SW Time – I_D


Ciss, Coss, Crss – V_{DS}


VGS – Qg
VDS= –6V
ID= –5A
Gate-to-Source Voltage, VGS – V
–4.5
–4.0
–3.5
–3.0
–2.5
–2.0
–1.5
–1.0
–0.5
0
0 1 2 3 4 5 6 7 8 9 10 11 12
Total Gate Charge, Qg – nC
IT16901

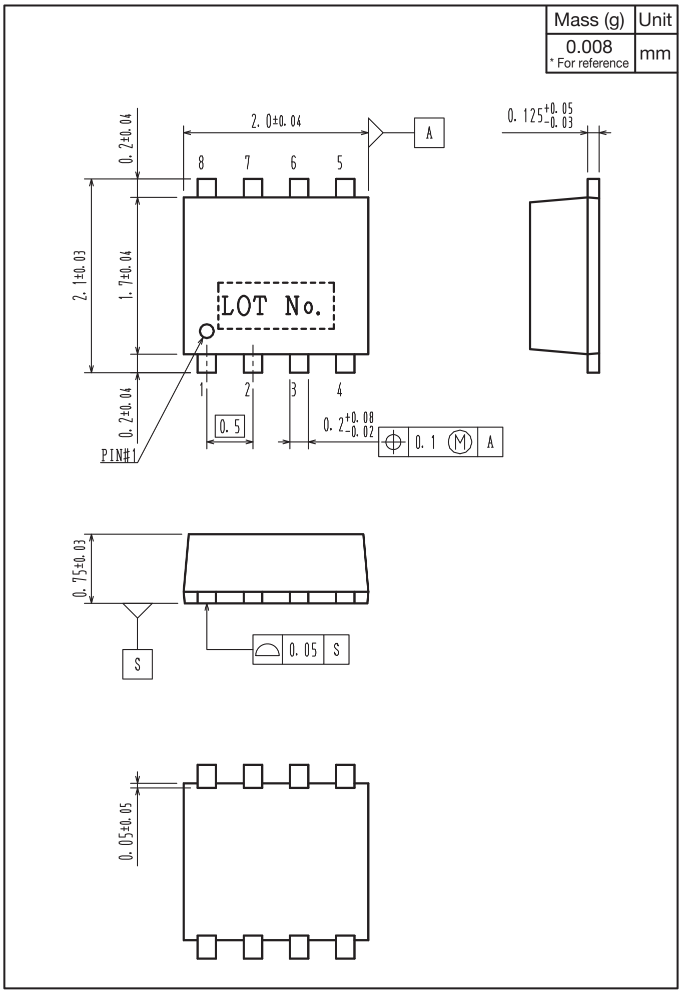

S O A
IDP= –20A(PW≤10µs)
ID= –5A
100µs
1ms
10ms
100ms
DC operation(Ta=25°C)
Operation in this area
is limited by RDS(on).
Ta=25°C
Single pulse
When mounted on ceramic substrate
(900mm2×0.8mm)
Drain Current, ID – A
–100
–10
–1.0
–0.1
–0.01
–0.01 2 3 5 7 –0.1 2 3 5 7 –1.0 2 3 5 7 –10 2 3 5 7 –100
Drain-to-Source Voltage, VDS – V
HD16902


PD – Ta
When mounted on ceramic substrate
(900mm2×0.8mm)
Total dissipation
1unit
Power Dissipation, PD – W
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
0 25 50 75 100 125 150 175
Ambient Temperature, Ta – °C
HD16903


RθJA – Pulse Time
Duty Cycle=0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Thermal Resistance, RθJA – °C/W
1000
100
10
1.0
0.1
0.000001 2 3 5 7 0.00001 2 3 5 7 0.0001 2 3 5 7 0.001 2 3 5 7 0.01 2 3 5 7 0.1 2 3 5 7 1.0 2 3 5 7 10
Pulse Time, PT – s
HD

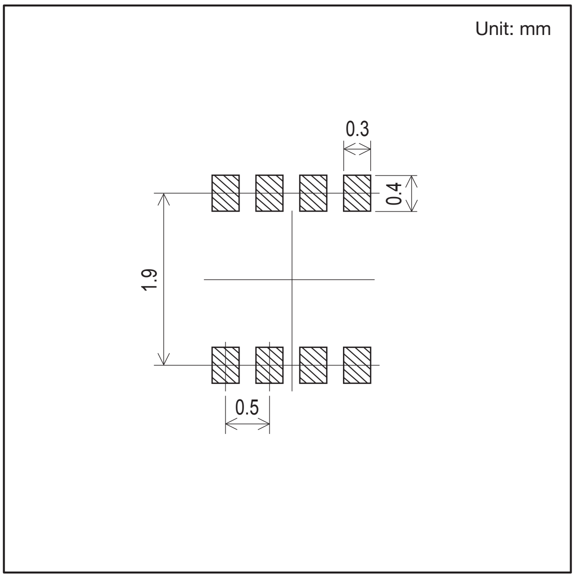
Outline Drawing

EMH2314-TL-H



Mass (g)	Unit
0.008 * For reference	mm

Land Pattern Example



Note on usage : Since the EMH2314 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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