EMH2407

EMH2407 General-Purpose Switching Device Applications

ON Semiconductor®

www.onsemi.com

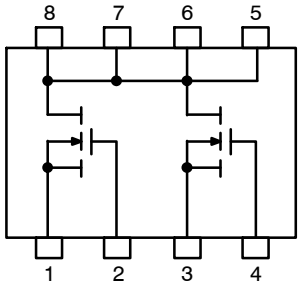
Features

- Low ON−Resistance
- Best Suited for LiB Charging and Discharging Switch
- Common−Drain Type
- 2.5 V Drive
- Protection Diode In

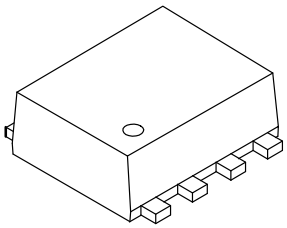
ABSOLUTE MAXIMUM RATINGS at Ta = 25°C

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain to Source Voltage		20	V
V_{GSS}	Gate to Source Voltage		±12	V
I_D	Drain Current (DC)		6	A
I_{DP}	Drain Current (Pulse)	PW ≤ 10 μs, duty cycles ≤ 1%	40	A
P_D	Allowable Power Dissipation	When mounted on ceramic substrate (900 $mm^2 \times 0.8$ mm) 1 unit	1.3	W
P_T	Total Dissipation	When mounted on ceramic substrate (900 $mm^2 \times 0.8$ mm)	1.4	W
T_{CH}	Channel Temperature		150	°C
T_{STG}	Storage Temperature		−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.

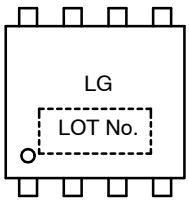


ELECTRICAL CONNECTION



EMH8
CASE 419AT

MARKING DIAGRAM



LG = Specific Device Code
XX = Lot Number

ORDERING INFORMATION

Device	Package	Memo	Shipping
EMH2407−TL−H	EMH8	Pb−Free/ Halogen Free	3000 Units/ Reel

ELECTRICAL CHARACTERISTICS at Ta = 25°C

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{(BR)DSS}$	Drain to Source Breakdown Voltage	I_D = 1 mA, V_{GS} = 0 V	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20 V, V_{GS} = 0 V			1	μA
I_{GSS}	Gate to Source Leakage Current	V_{GS} = ±8 V, V_{DS} = 0 V			±10	μA
V_{GS}(off)	Cutoff Voltage	V_{DS} = 10 V, I_D = 1 mA	0.5		1.3	V
| yfs |	Forward Transfer Admittance	V_{DS} = 10 V, I_D = 3 A	3	5		S
R_{DS}(on)1	Static Drain to Source On−State Resistance	I_D = 3 A, V_{GS} = 4.5 V	13	19	25	mΩ
R_{DS}(on)2		I_D = 3 A, V_{GS} = 4 V	14	20	26	mΩ
R_{DS}(on)3		I_D = 1.5 A, V_{GS} = 2.5 V	16	28	39	mΩ
C_{iss}	Input Capacitance	V_{DS} = 10 V, f = 1 MHz		580		pF
C_{oss}	Output Capacitance			95		pF
C_{rss}	Reverse Transfer Capacitance			75		pF
t_d(on)	Turn−ON Delay Time	See specified Test Circuit.		310		ns
t_r	Rise Time			1020		ns
t_d(off)	Turn−OFF Delay Time			3000		ns
t_f	Fall Time			2250		ns
Qg	Total Gate Charge	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 6 A		6.3		nC
Qgs	Gate to Source Charge			0.83		nC
Qgd	Gate to Drain “Miller” Charge			1.9		nC
V_{SD}	Diode Forward Voltage	I_S = 6 A, V_{GS} = 0 V		0.78		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.

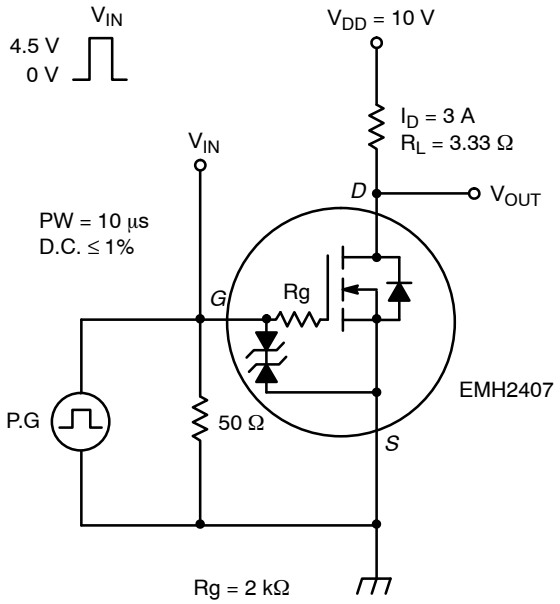


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

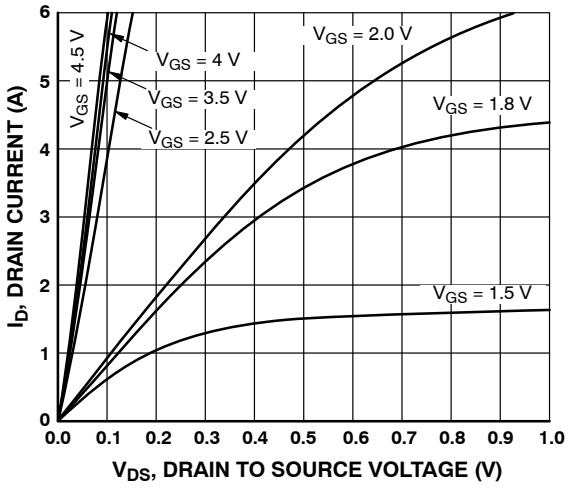


Figure 2. I_D – V_{DS}

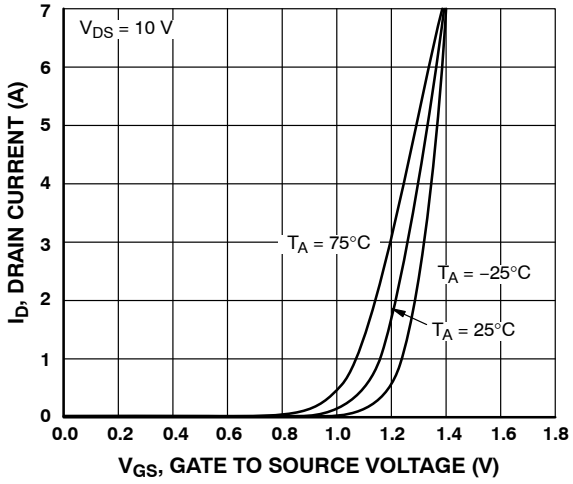


Figure 3. I_D – V_{GS}

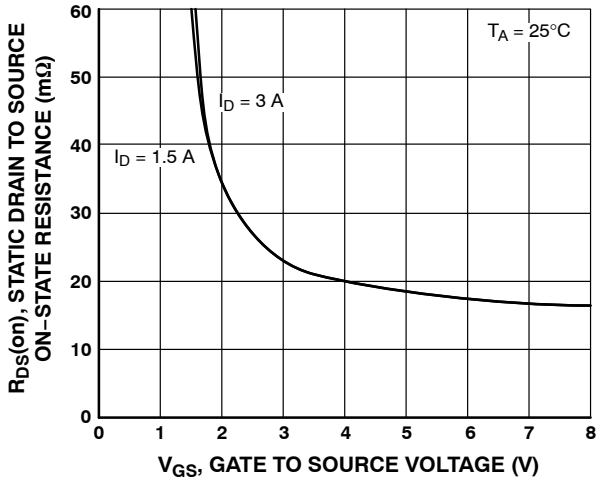


Figure 4. R_{DS}(on) – V_{GS}

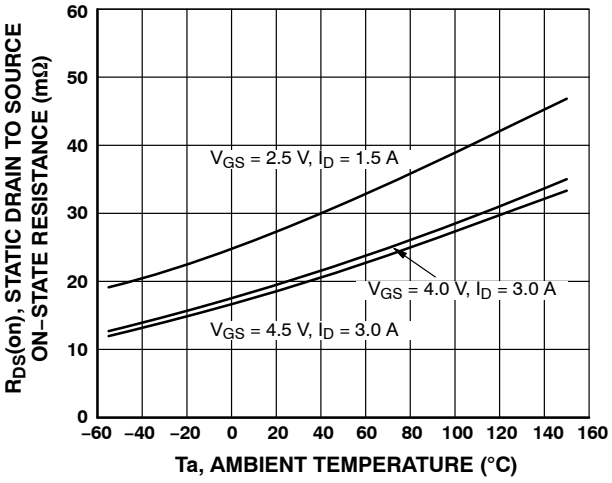


Figure 5. R_{DS}(on) – Ta

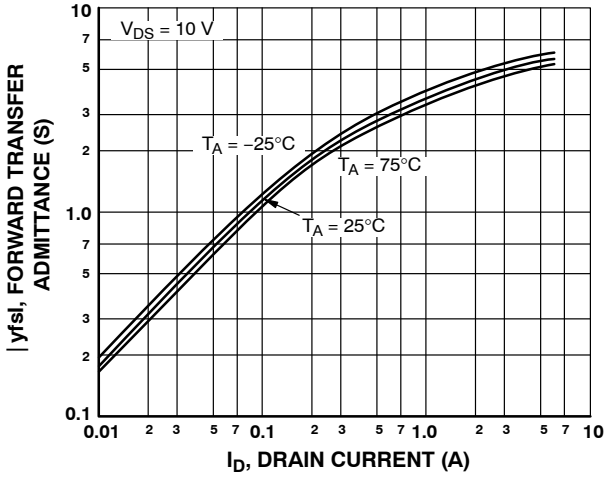


Figure 6. |yfs| – I_D

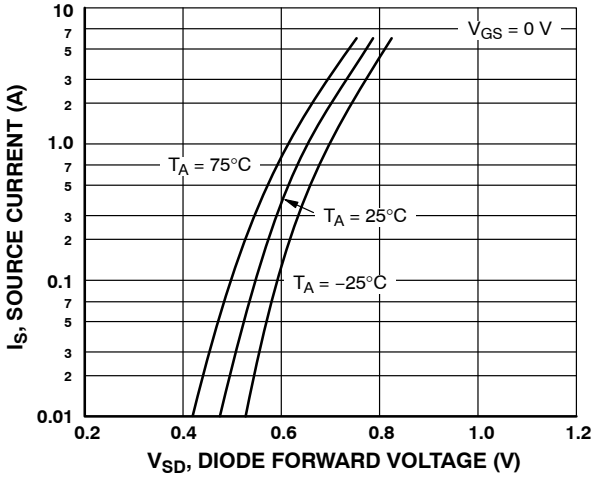


Figure 7. I_S – V_{SD}

TYPICAL CHARACTERISTICS (continued)

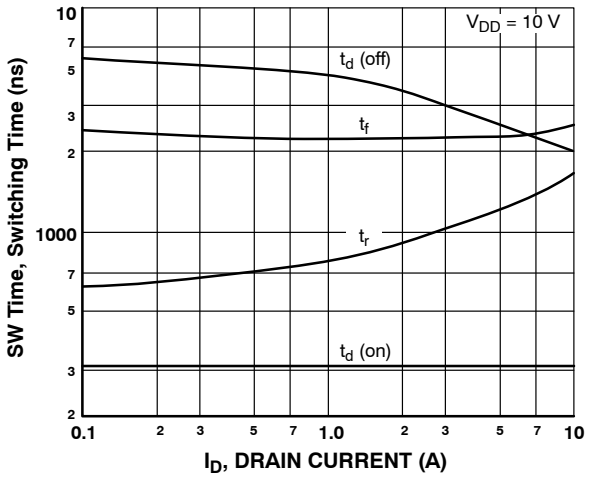


Figure 8. SW Time – I_D

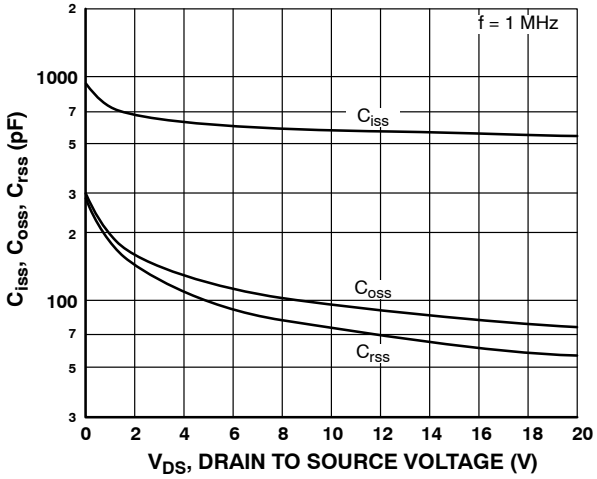


Figure 9. C_{iss}, C_{oss}, C_{rss} – V_{DS}

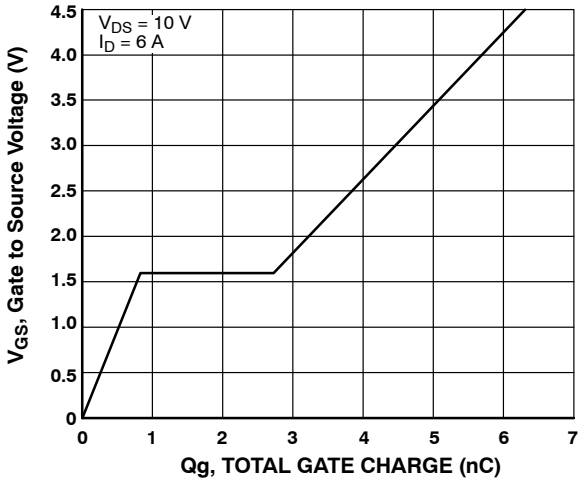


Figure 10. V_{GS} – Qg

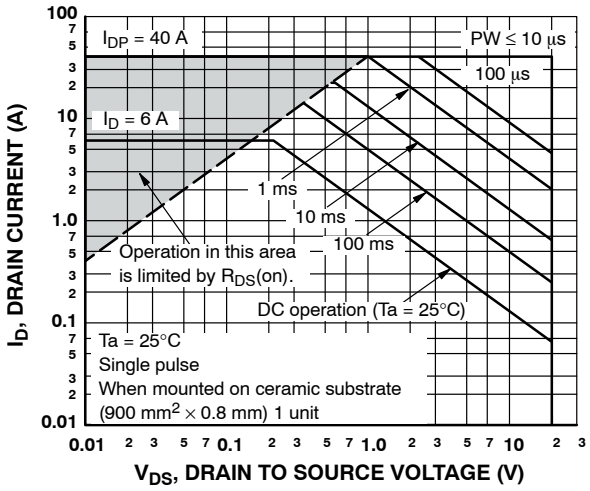


Figure 11. ASO

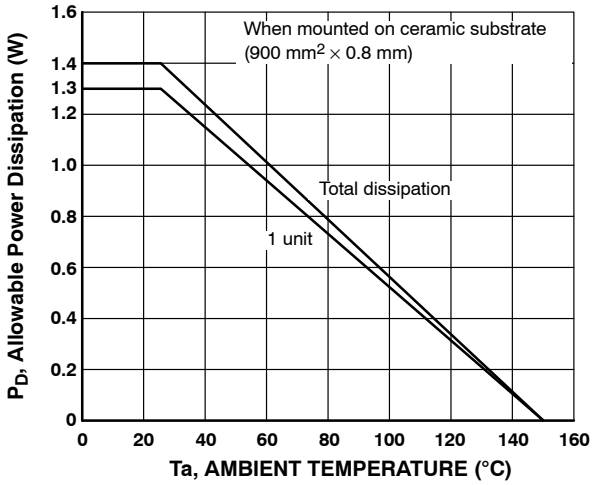
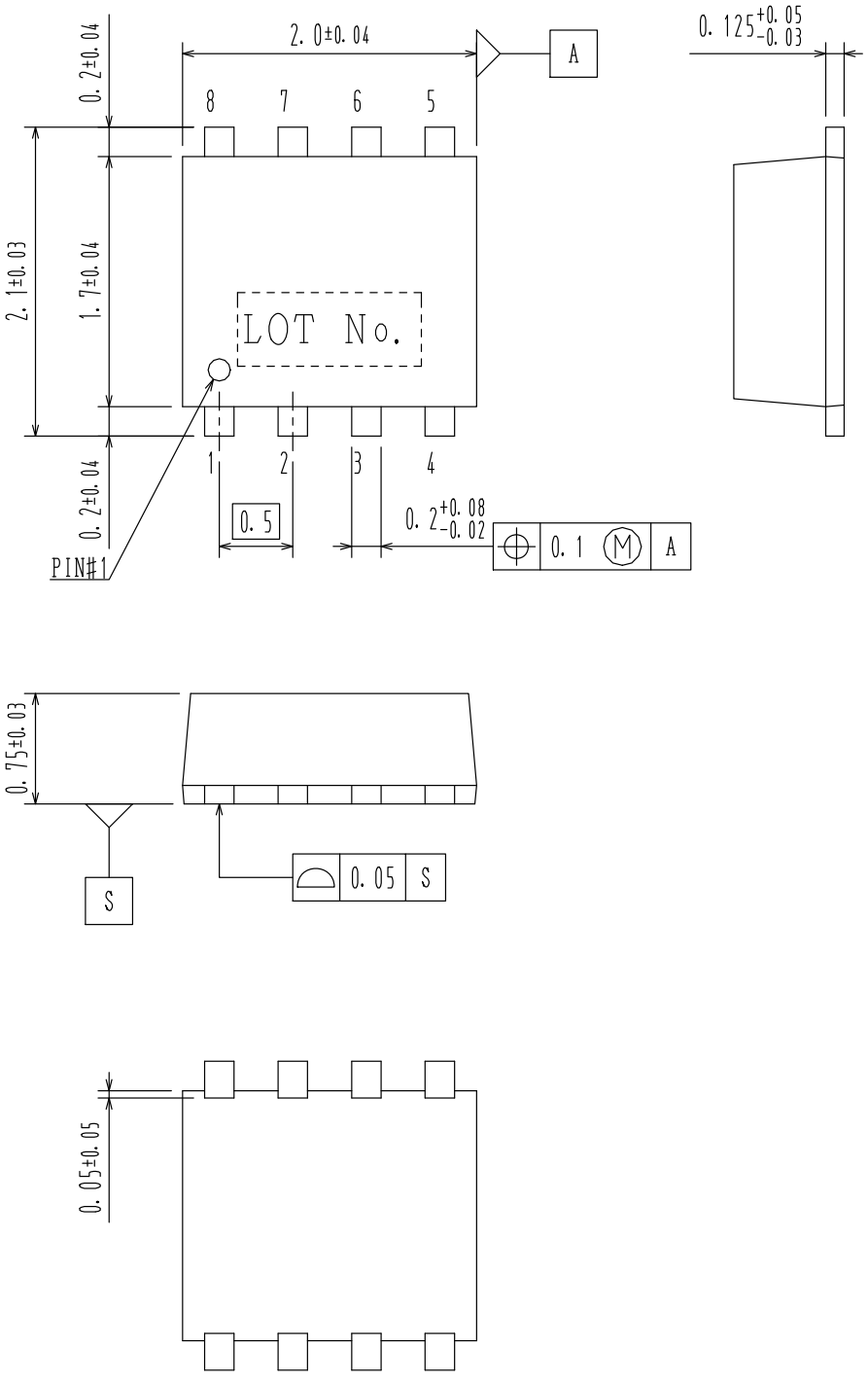


Figure 12. P_D – Ta

PACKAGE DIMENSIONS

SOT−383FL / EMH8
CASE 419AT
ISSUE O



PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative