

EMH2407

EMH2407 General-Purpose Switching Device Applications

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 $T_a = 25^\circ\text{C}$

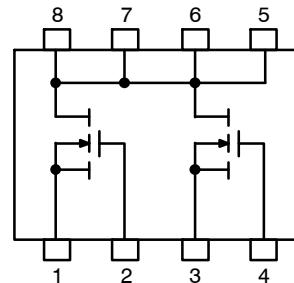
Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain to Source Voltage		20	V
V_{GSS}	Gate to Source Voltage		± 12	V
I_D	Drain Current (DC)		6	A
I_{DP}	Drain Current (Pulse)	$PW \leq 10 \mu\text{s}$, duty cycles $\leq 1\%$	40	A
P_D	Allowable Power Dissipation	When mounted on ceramic substrate ($900 \text{ mm}^2 \times 0.8 \text{ mm}$) 1 unit	1.3	W
P_T	Total Dissipation	When mounted on ceramic substrate ($900 \text{ mm}^2 \times 0.8 \text{ mm}$)	1.4	W
T_{CH}	Channel Temperature		150	$^\circ\text{C}$
T_{STG}	Storage Temperature		-55 to +150	$^\circ\text{C}$

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.

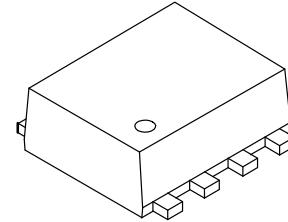


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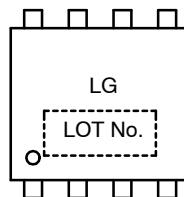


ELECTRICAL CONNECTION



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 $T_a = 25^\circ\text{C}$

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

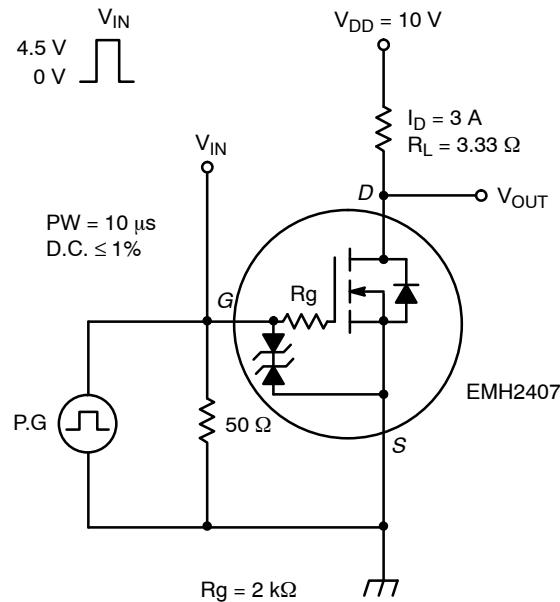
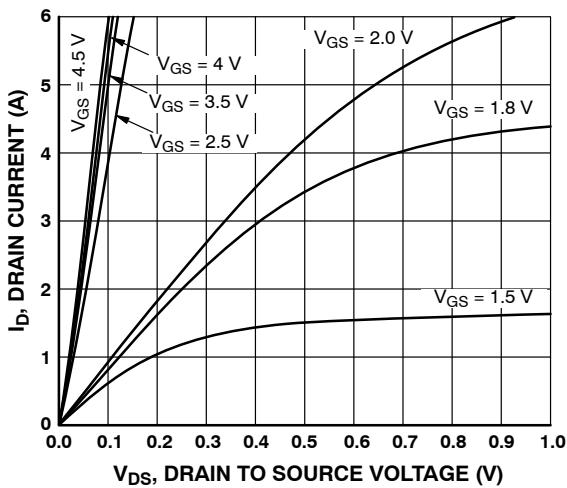
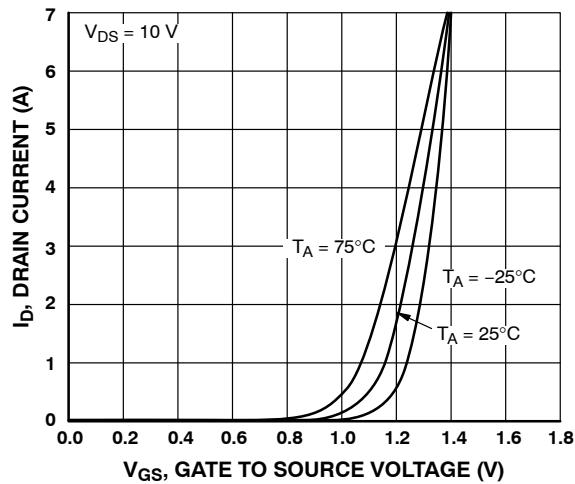
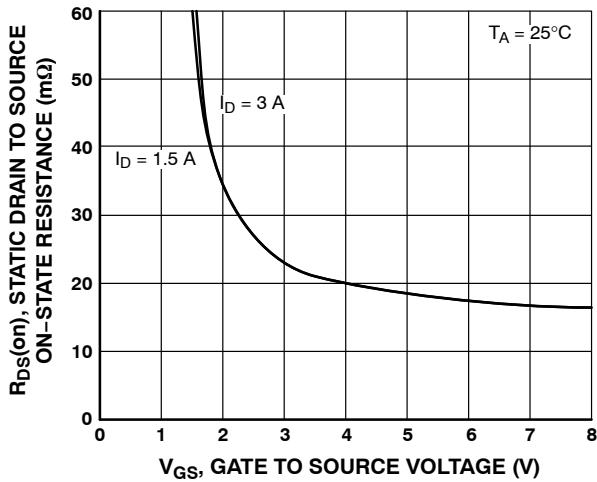
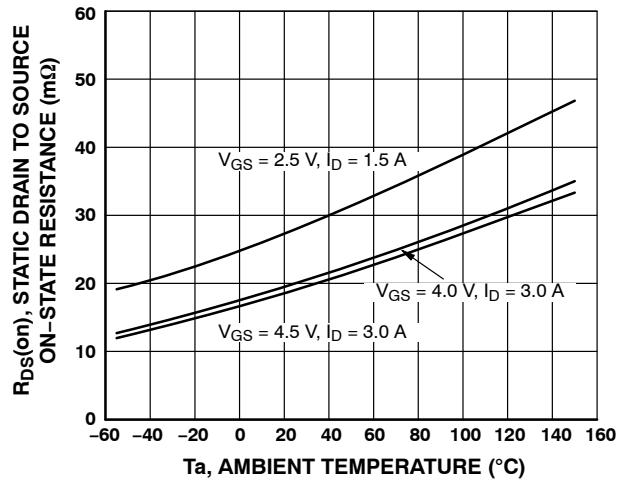
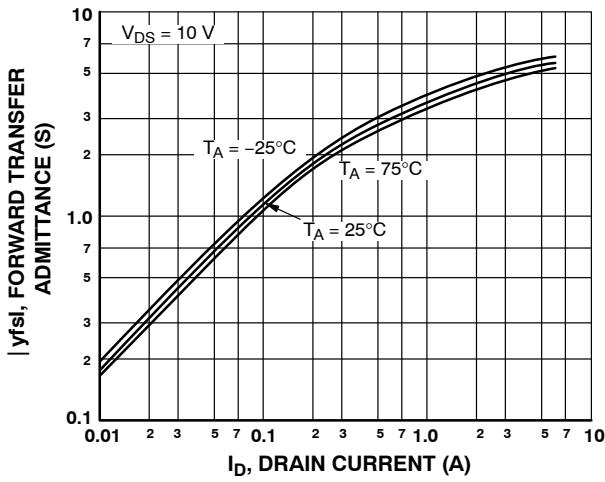
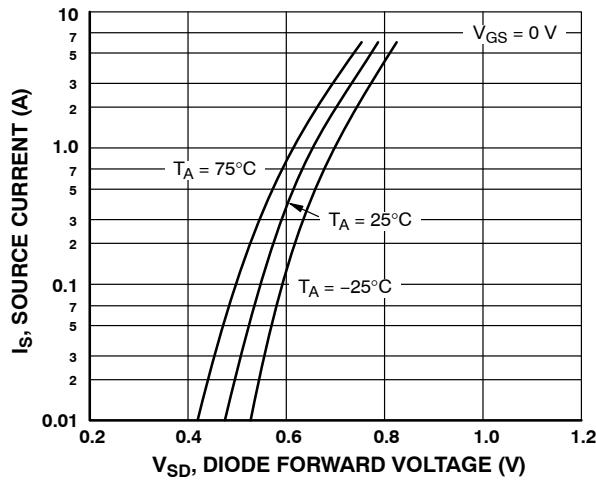


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

Figure 2. I_D – V_{DS} Figure 3. I_D – V_{GS} Figure 4. $R_{DS(on)}$ – V_{GS} Figure 5. $R_{DS(on)}$ – T_A Figure 6. $|y_{fs}|$ – I_D Figure 7. I_S – V_{SD}

TYPICAL CHARACTERISTICS (continued)

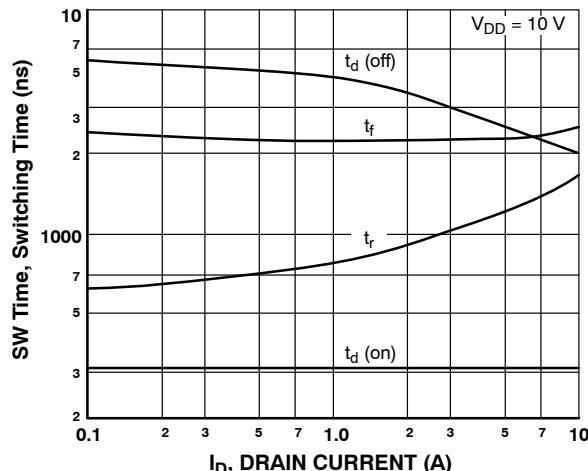
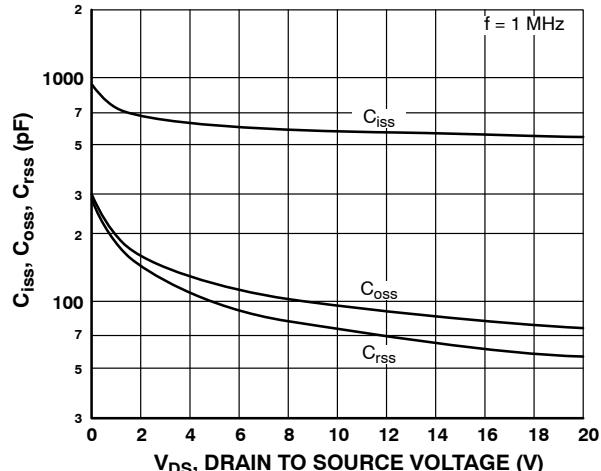
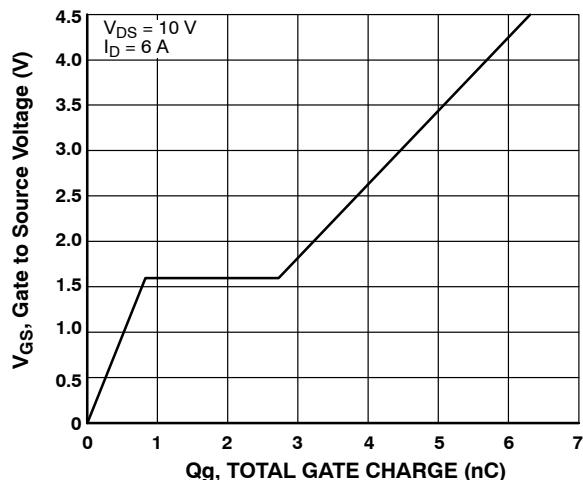
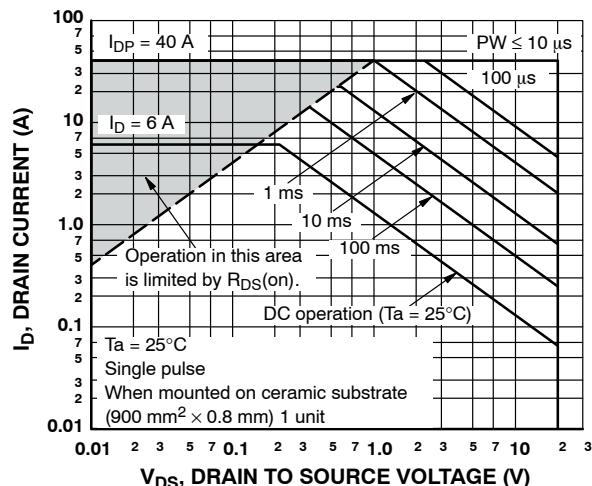
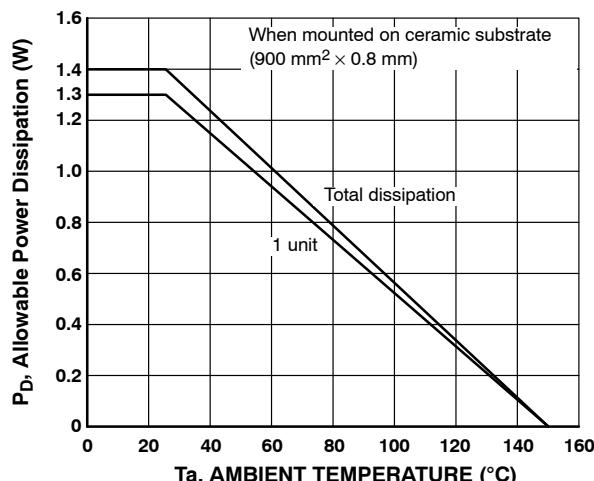
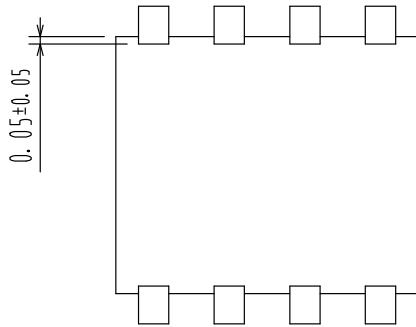
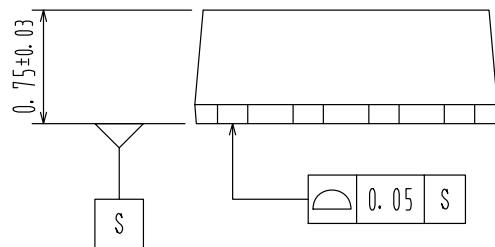
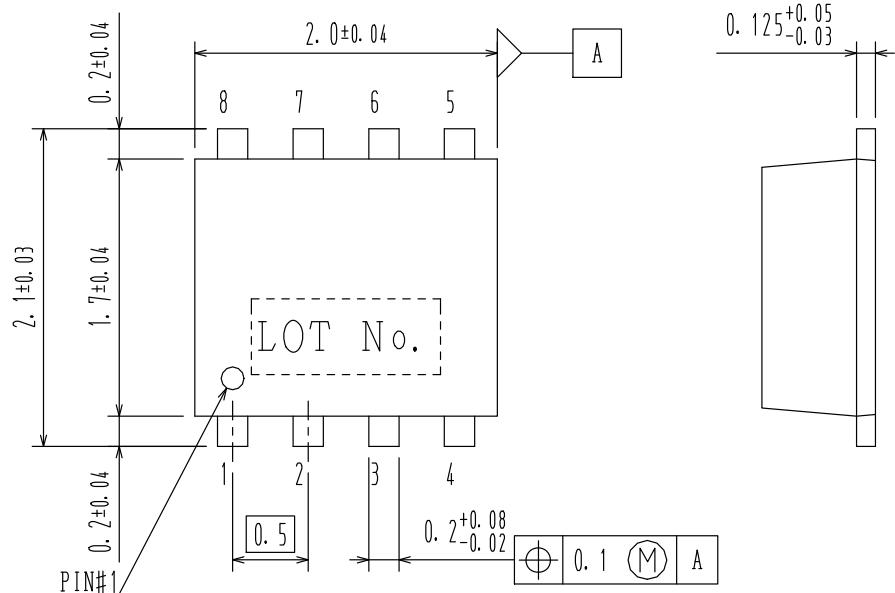
Figure 8. SW Time – I_D Figure 9. C_{iss} , C_{oss} , C_{rss} – V_{DS} Figure 10. V_{GS} – Q_g 

Figure 11. ASO

Figure 12. P_D – T_a

PACKAGE DIMENSIONS

SOT-383FL / EMH8
CASE 419AT
ISSUE O



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