

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 Ta = 25°C

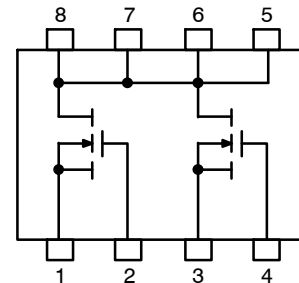
| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|-----------------------------|---|-------------|------|
| V _{DSS} | Drain to Source Voltage | | 20 | V |
| V _{GSS} | Gate to Source Voltage | | ±12 | V |
| I _D | Drain Current (DC) | | 6 | A |
| I _{DP} | Drain Current (Pulse) | PW ≤ 10 μs, duty cycles ≤ 1% | 40 | A |
| P _D | Allowable Power Dissipation | When mounted on ceramic substrate (900 mm ² × 0.8 mm) 1 unit | 1.3 | W |
| P _T | Total Dissipation | When mounted on ceramic substrate (900 mm ² × 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.

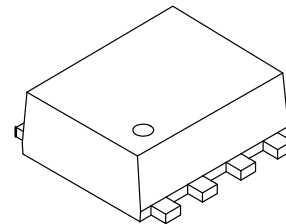


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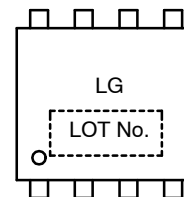


ELECTRICAL CONNECTION



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 |

EMH2407

ELECTRICAL CHARACTERISTICS at Ta = 25°C

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|--|--|---|------|----------|------------------|
| $V_{(BR)DSS}$ | 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 |
| $V_{GS(off)}$ | 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 |
| $R_{DS(on)1}$ | Static Drain to Source On-State Resistance | $I_D = 3 \text{ A}, V_{GS} = 4.5 \text{ V}$ | 13 | 19 | 25 | $\text{m}\Omega$ |
| $R_{DS(on)2}$ | | $I_D = 3 \text{ A}, V_{GS} = 4 \text{ V}$ | 14 | 20 | 26 | $\text{m}\Omega$ |
| $R_{DS(on)3}$ | | $I_D = 1.5 \text{ A}, V_{GS} = 2.5 \text{ V}$ | 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 |
| $t_d(on)$ | 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 |
| 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 | |

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.

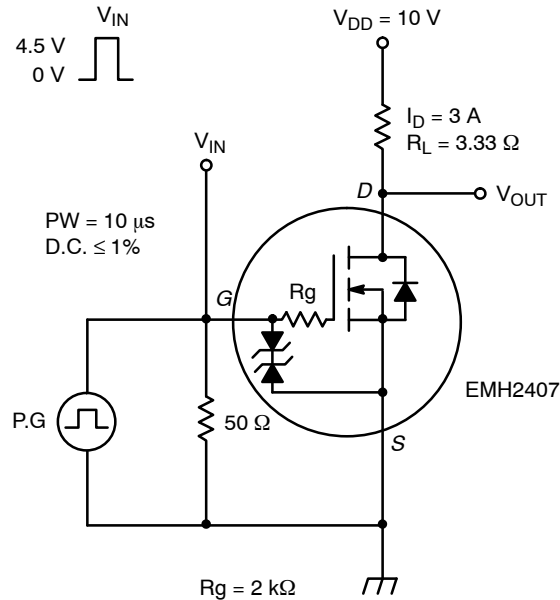


Figure 1. Switching Time Test Circuit

TYPICAL CHARACTERISTICS

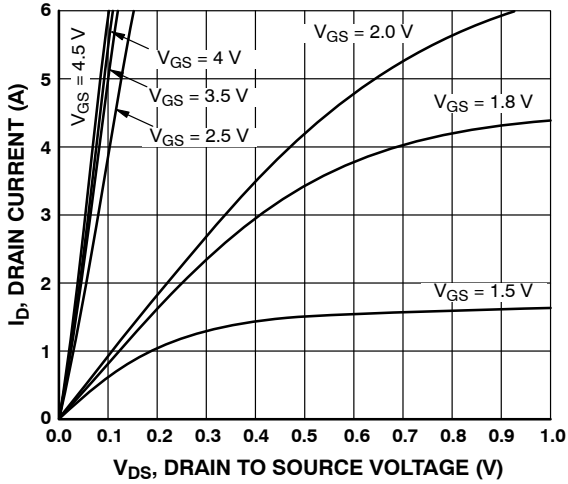


Figure 2. $I_D - V_{DS}$

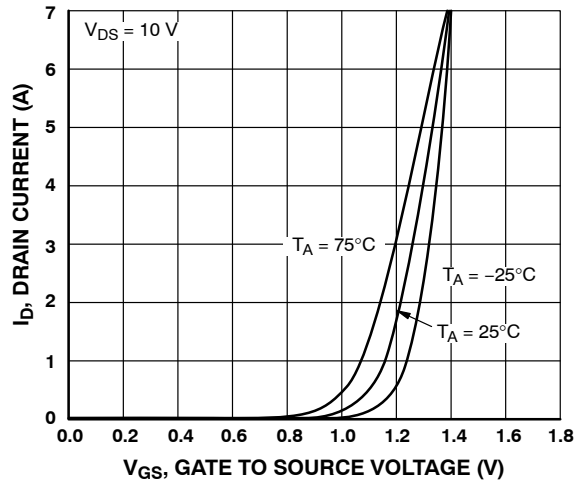


Figure 3. $I_D - V_{GS}$

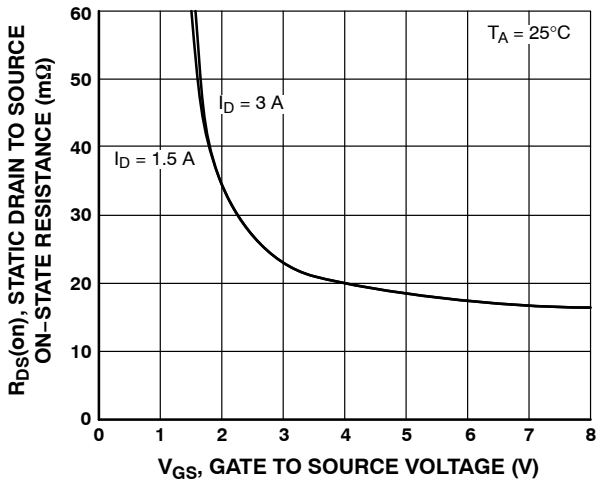


Figure 4. $R_{DS(on)} - V_{GS}$

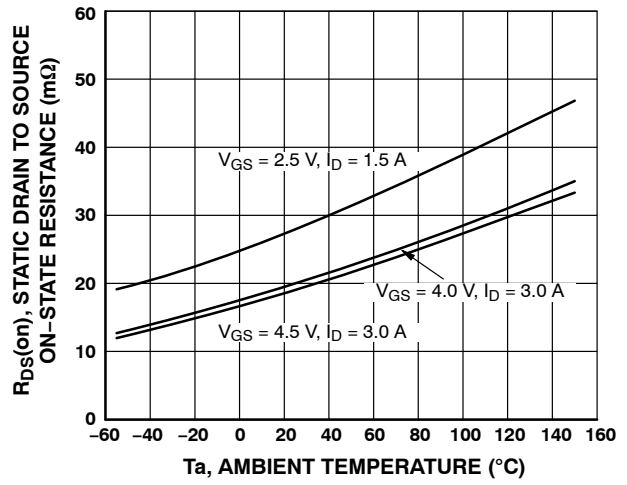


Figure 5. $R_{DS(on)} - T_a$

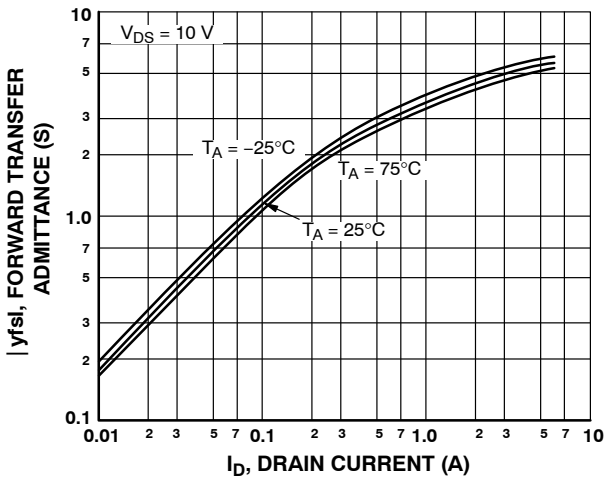


Figure 6. $|y_{fs}| - I_D$

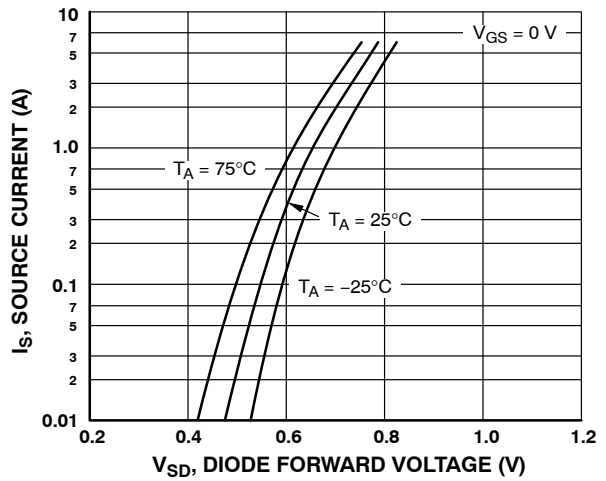


Figure 7. $I_S - V_{SD}$

TYPICAL CHARACTERISTICS (continued)

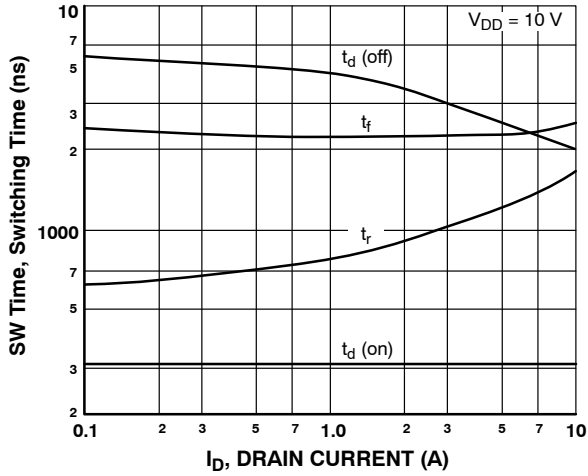


Figure 8. SW Time - I_D

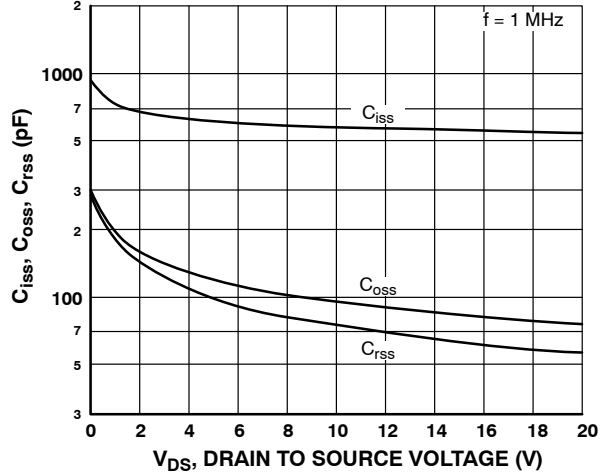


Figure 9. C_{iss} , C_{oss} , C_{rss} - V_{DS}

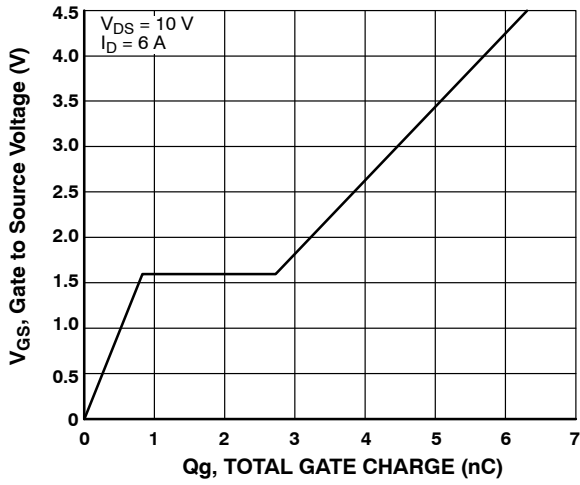


Figure 10. V_{GS} - Q_g

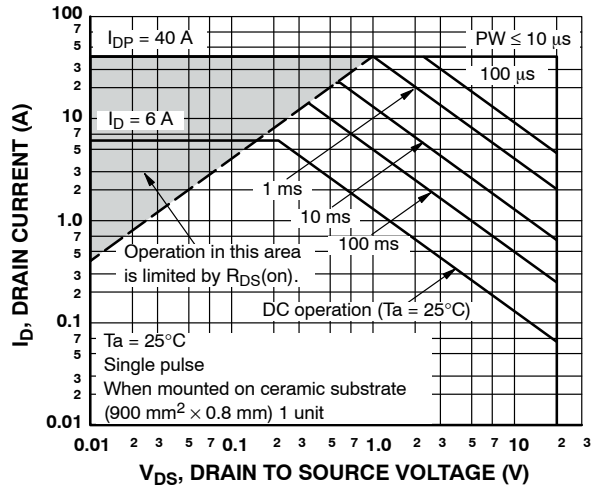


Figure 11. ASO

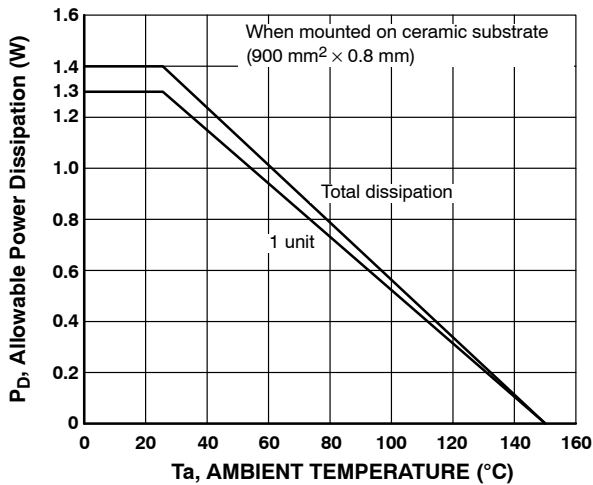
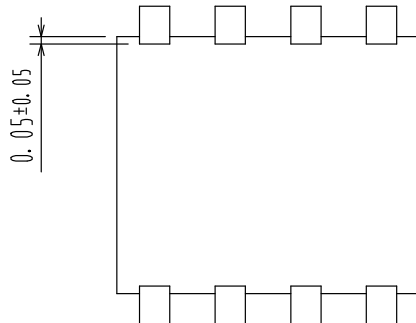
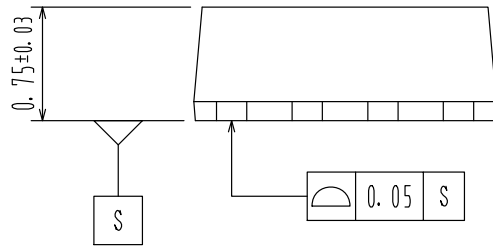
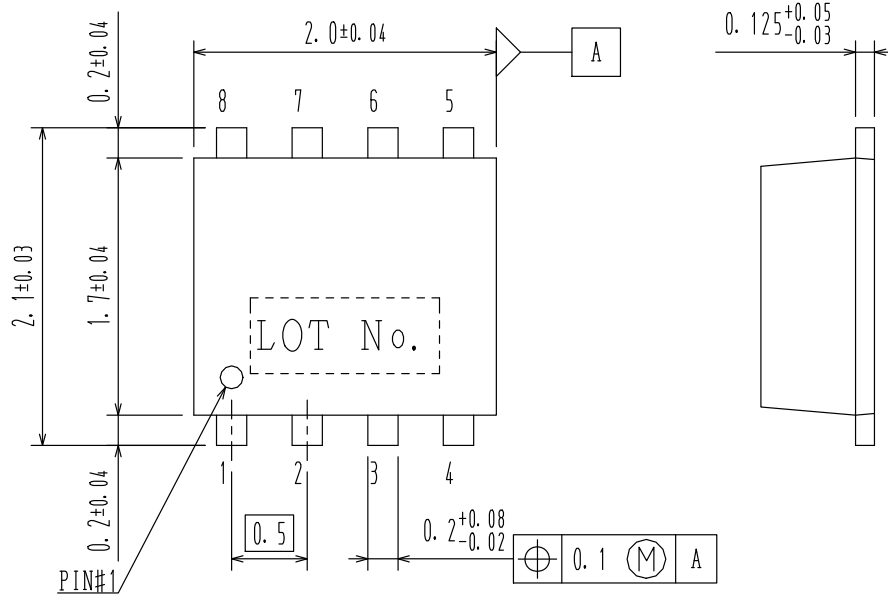



Figure 12. P_D - T_a

EMH2407

PACKAGE DIMENSIONS

SOT-383FL / EMH8
CASE 419AT
ISSUE O



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