

TM08H10S

N+N-Channel Enhancement Mode Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

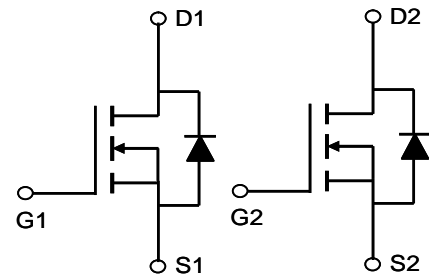
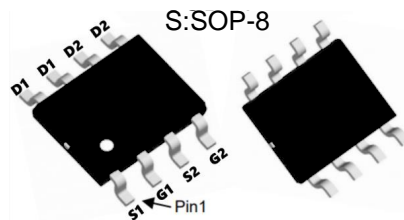
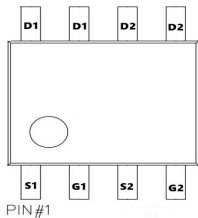
Product Summary

$V_{DS} = 100V$ $I_D = 8.0A$

$R_{DS(ON)} = 88\ m\Omega$ (typ.) @ $V_{GS} = 10V$

100% UIS Tested

100% R_g Tested



Marking: 08H10 OR 4886

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|---------------------------|--|------------|------------|
| V_{DS} | Drain-Source Voltage | 100 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D @ T_C = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 8 | A |
| $I_D @ T_C = 100^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 5 | A |
| I_{DM} | Pulsed Drain Current ² | 15 | A |
| EAS | Single Pulse Avalanche Energy ³ | 6.1 | mJ |
| $P_D @ T_A = 25^\circ C$ | Total Power Dissipation ³ | 5 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ C$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ C$ |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient ¹ | --- | 125 | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case ¹ | --- | 3.6 | $^\circ C/W$ |

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Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|--|------|------|-----------|------------|
| Off Characteristic | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | 100 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=100V, V_{GS}=0V,$ | - | - | 1.0 | μA |
| I_{GSS} | Gate to Body Leakage Current | $V_{DS}=0V, V_{GS}=\pm 20V$ | - | - | ± 100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.5 | 2.5 | V |
| $R_{DS(on)}$ | Static Drain-Source on-Resistance <small>note3</small> | $V_{GS}=10V, I_D=3A$ | - | 88 | 105 | m Ω |
| | | $V_{GS}=4.5V, I_D=2A$ | - | 100 | 128 | m Ω |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS}=25V, V_{GS}=0V,$ $f=1.0MHz$ | - | 610 | - | pF |
| C_{oss} | Output Capacitance | | - | 40 | - | pF |
| C_{rss} | Reverse Transfer Capacitance | | - | 25 | - | pF |
| Q_g | Total Gate Charge | $V_{DS}=50V, I_D=2A,$ $V_{GS}=10V$ | - | 12 | - | nC |
| Q_{gs} | Gate-Source Charge | | - | 2.2 | - | nC |
| Q_{gd} | Gate-Drain("Miller") Charge | | - | 2.5 | - | nC |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DS}=50V, I_D=3A,$ $R_G=1.8\Omega, V_{GS}=10V$ | - | 7 | - | ns |
| t_r | Turn-on Rise Time | | - | 5 | - | ns |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 16 | - | ns |
| t_f | Turn-off Fall Time | | - | 6 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I_S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 3 | A |
| I_{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 8 | A |
| V_{SD} | Drain to Source Diode Forward Voltage | $V_{GS}=0V, I_S=3A$ | - | - | 1.2 | V |
| t_{rr} | Body Diode Reverse Recovery Time | $I_F=3A, di/dt=100A/\mu s$ | - | 21 | - | ns |
| Q_{rr} | Body Diode Reverse Recovery Charge | | - | 21 | - | nC |

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition : $T_J=25^{\circ}\text{C}, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=4A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure 1: Output Characteristics

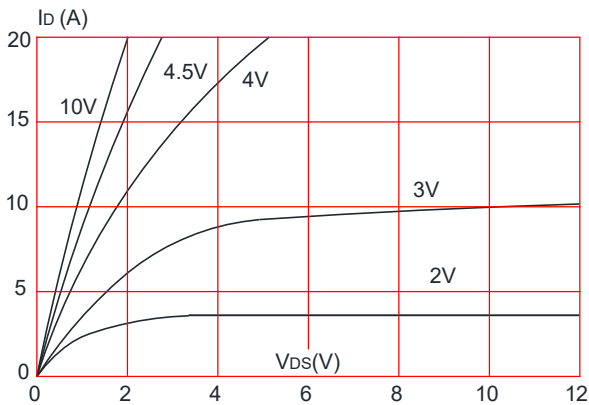


Figure 2: Typical Transfer Characteristics

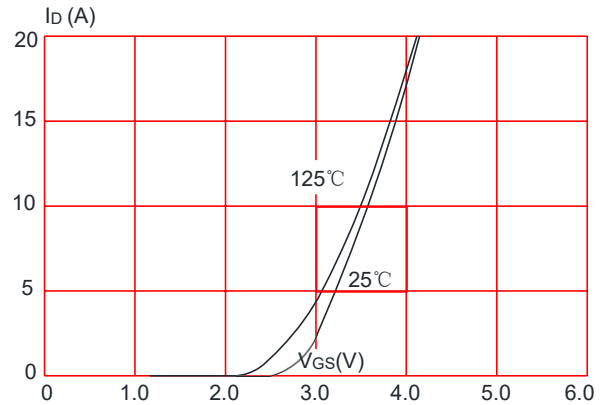


Figure 3: On-resistance vs. Drain Current

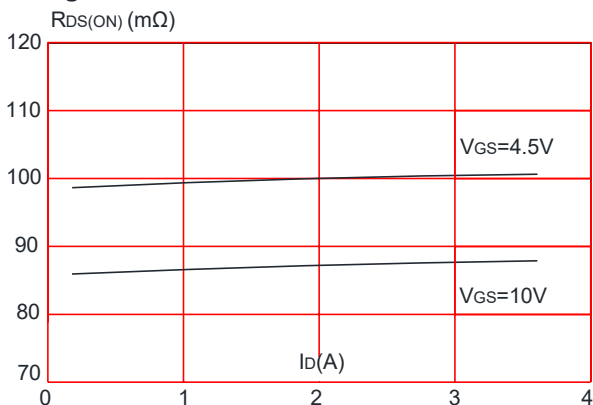


Figure 4: Body Diode Characteristics

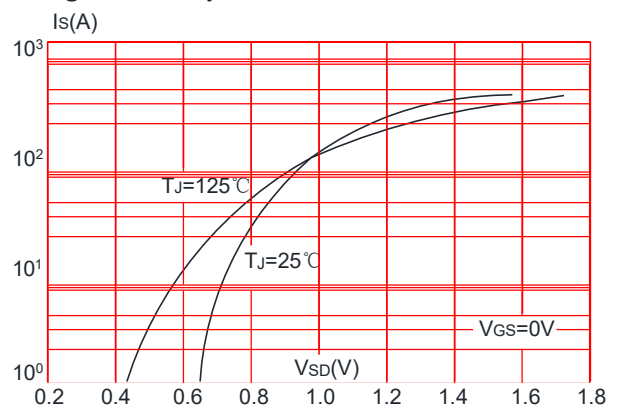


Figure 5: Gate Charge Characteristics

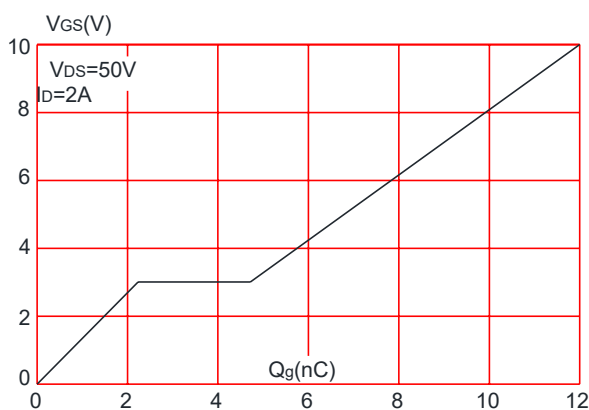
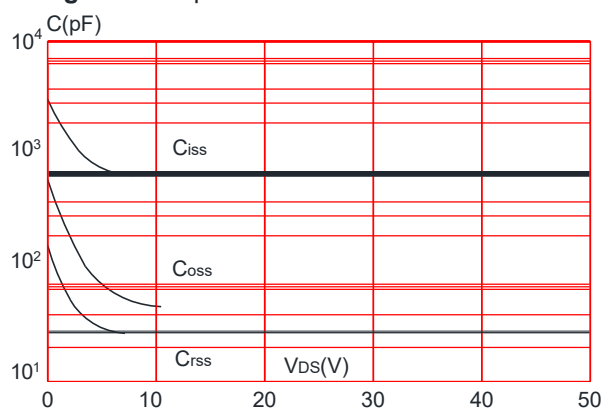


Figure 6: Capacitance Characteristics



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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

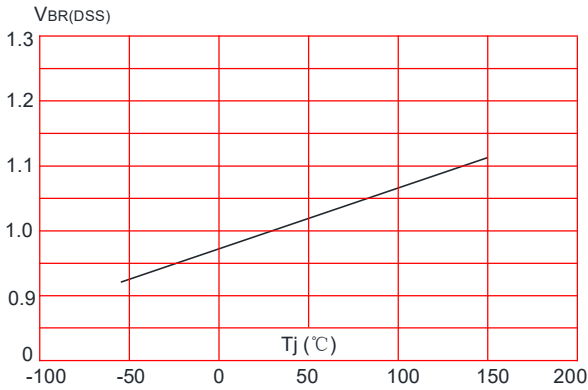


Figure 8: Normalized on Resistance vs. Junction Temperature

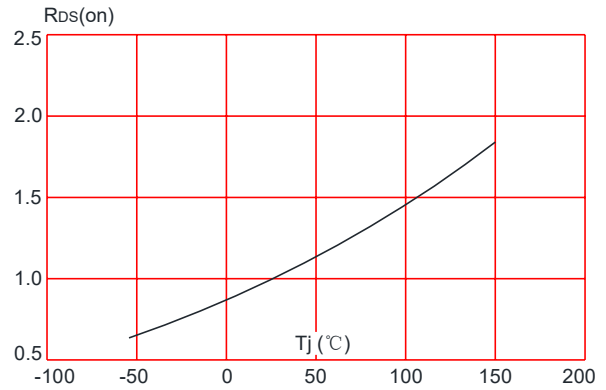


Figure 9: Maximum Safe Operating Area

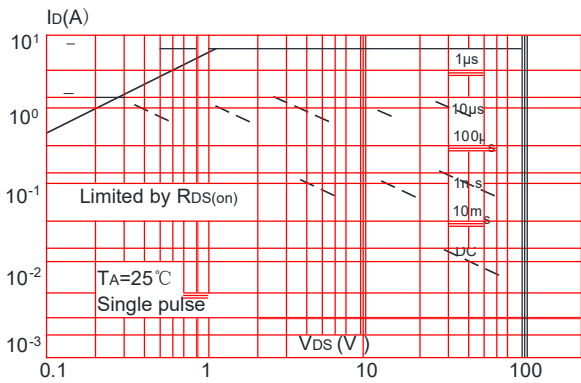


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

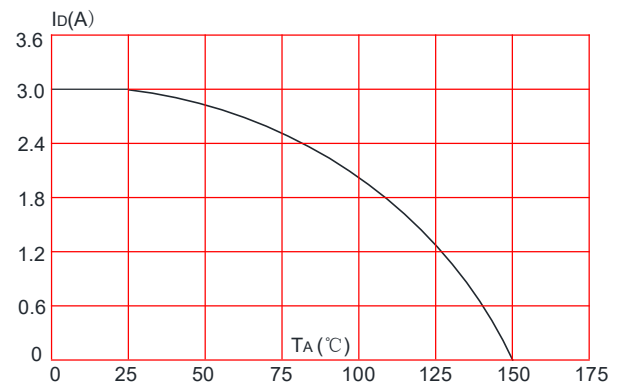
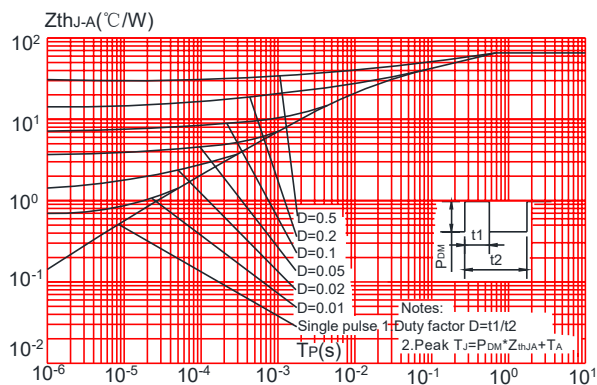
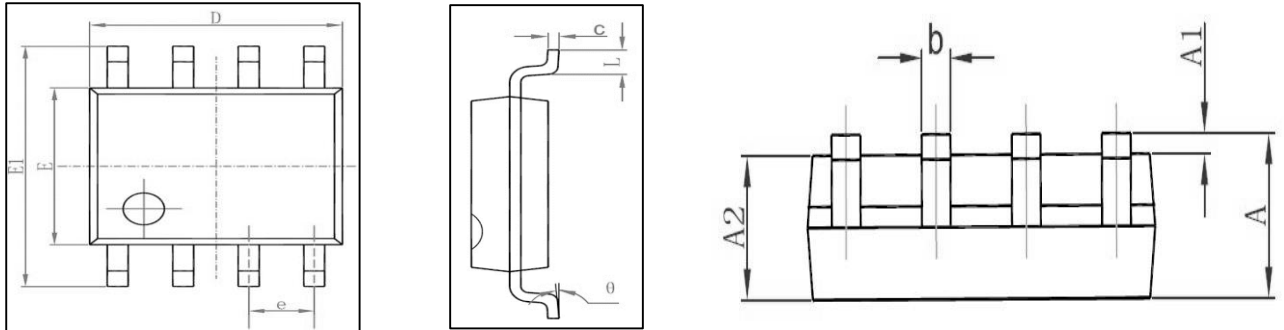


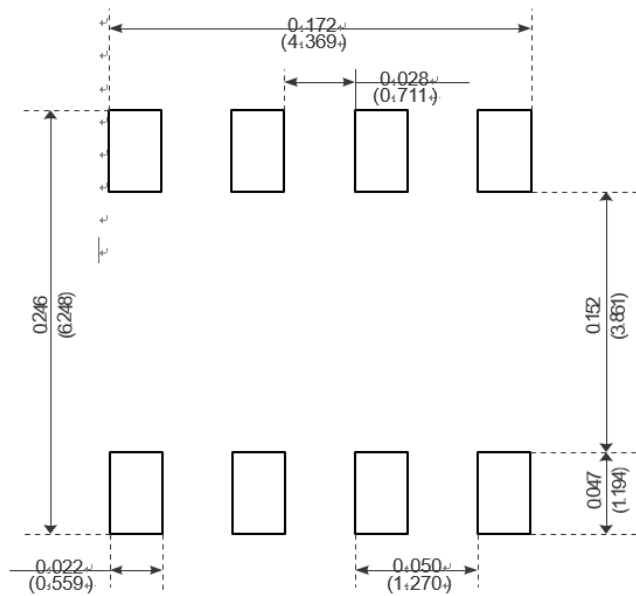
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Package Mechanical Data:SOP-8L



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270 (BSC) | | 0.050 (BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |



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