
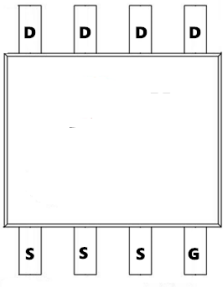
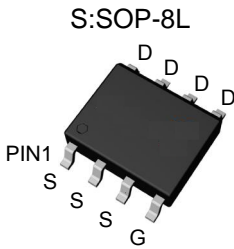
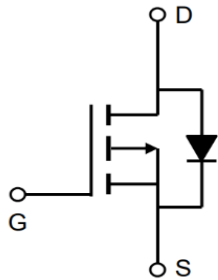


TM4907

P-Channel Enhancement Mosfet

| | |
|--|--|
| <p>General Description</p> <ul style="list-style-type: none"> • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant <p>Applications</p> <ul style="list-style-type: none"> • Load switch • PWM | <p>General Features</p> <p>$V_{DS} = -40V$ $I_D = -7.5A$ $R_{DS(ON)} = 32 m\Omega @ V_{GS} = -10V$</p> <p>100% UIS Tested 100% R_g Tested</p>  |
|--|--|

Marking: 08P04 OR 040

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

| Symbol | Parameter | Ratings | Units |
|----------------|--|-------------|------------|
| V_{DS} | Drain-Source Voltage | -40 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Continuous Drain Current- $T_C = 25^\circ C$ | -7.5 | A |
| | Continuous Drain Current- $T_C = 100^\circ C$ | -5.7 | |
| | Pulsed Drain Current ¹ | -15 | |
| E_{AS} | Single Pulse Avalanche Energy | 36 | mJ |
| P_D | Power Dissipation | 3.1 | W |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ C$ |

Thermal Characteristics:

| Symbol | Parameter | Max | Units |
|-----------------|---|-----|--------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 40 | $^\circ C/W$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 85 | |

Electrical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|--|------|------|-----------|---------------|
| Off Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\ \mu\text{A}$ | -40 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS}=0V, V_{DS}=-32V, T_J=25^\circ\text{C}$ | --- | --- | -1 | μA |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0A$ | --- | --- | ± 100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$ | -1.0 | --- | -2.5 | V |
| $R_{DS(on)}$ | Drain-Source On Resistance ² | $V_{GS}=-10V, I_D=-6A$ | --- | 32 | 40 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-3A$ | --- | 56 | 70 | |
| G_{FS} | Forward Transconductance | $V_{DS}=-5V, I_D=-6A$ | --- | 12 | --- | S |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$ | --- | 1004 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 108 | --- | |
| C_{rss} | Reverse Transfer Capacitance | | --- | 80 | --- | |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time ^{2,3} | $V_{DS}=-15V, V_{GS}=-10V$ $I_D=-1A, R_{GEN}=3.3\ \Omega$ | --- | 19.2 | --- | ns |
| t_r | Rise Time ^{2,3} | | --- | 12.8 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time ^{2,3} | | --- | 48.6 | --- | ns |
| t_f | Fall Time ^{2,3} | | --- | 4.6 | --- | ns |
| Q_g | Total Gate Charge ^{2,3} | $V_{DS}=-20V, V_{GS}=-4.5V,$ $I_D=-6A$ | --- | 9 | --- | nC |
| Q_{gs} | Gate-Source Charge ^{2,3} | | --- | 2.54 | --- | nC |
| Q_{gd} | Gate-Drain "Miller" Charge ^{2,3} | | --- | 3.1 | --- | nC |
| Drain-Source Diode Characteristics | | | | | | |
| V_{SD} | Source-Drain Diode Forward Voltage ² | $V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$ | --- | --- | -1 | V |
| LS | Continuous Source Current ^{1, 5} | $V_G=V_D=0V, \text{ Force Current}$ | --- | --- | -7.5 | |
| LSM | Pulsed Source Current ^{2, 5} | | --- | --- | -15 | |

Notes: 1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Characteristics: ($T_C=25^\circ\text{C}$ unless otherwise noted)

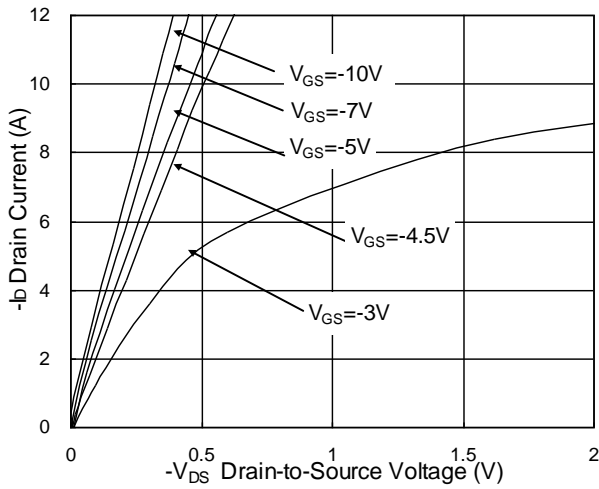


Fig.1 Typical Output Characteristics

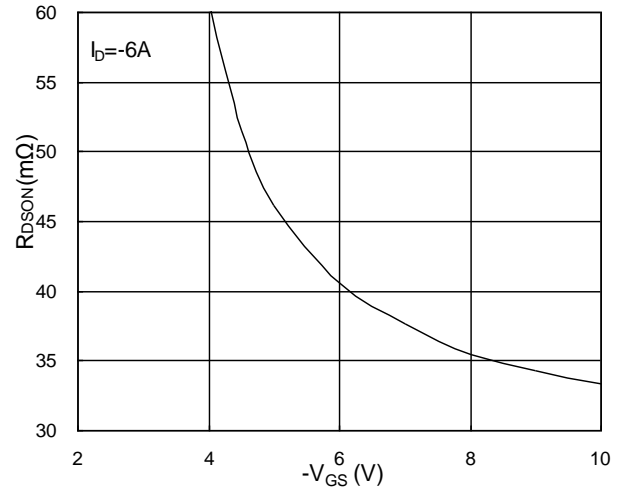


Fig.2 On-Resistance v.s Gate-Source

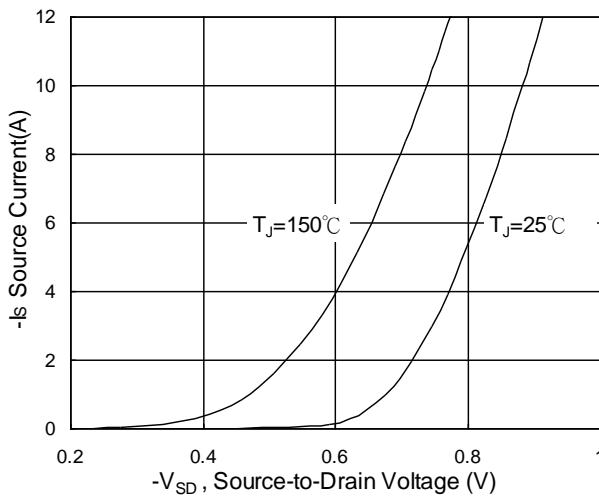


Fig.3 Forward Characteristics of Reverse

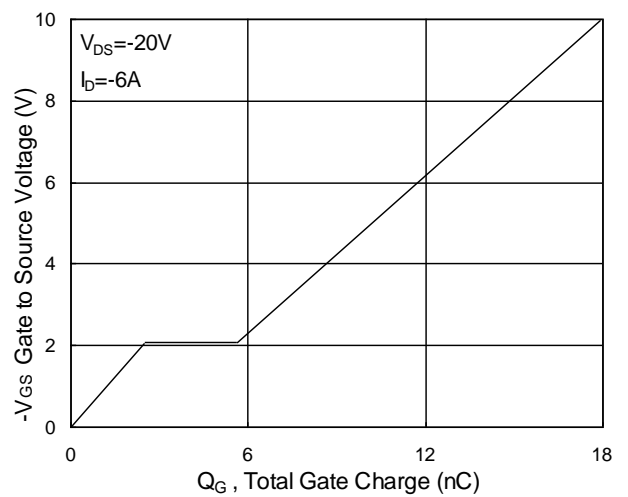


Fig.4 Gate-Charge Characteristics

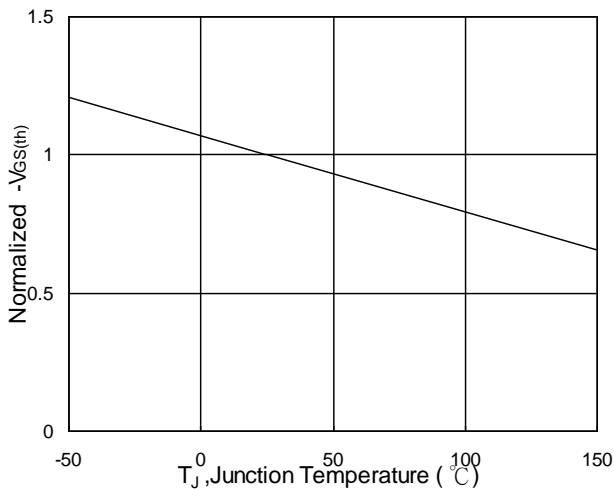


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

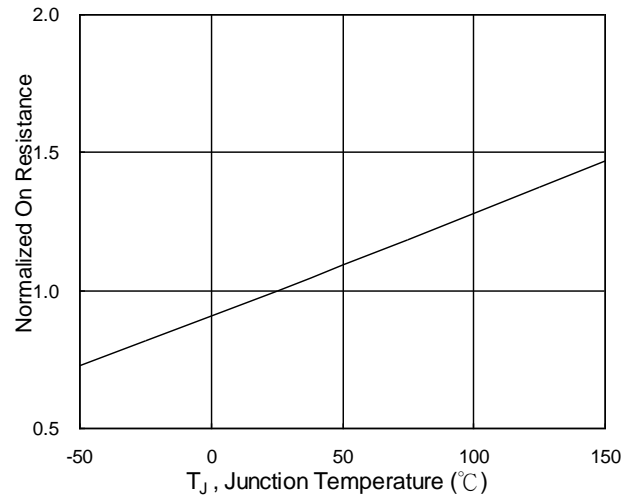


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

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P-Channel Enhancement Mosfet

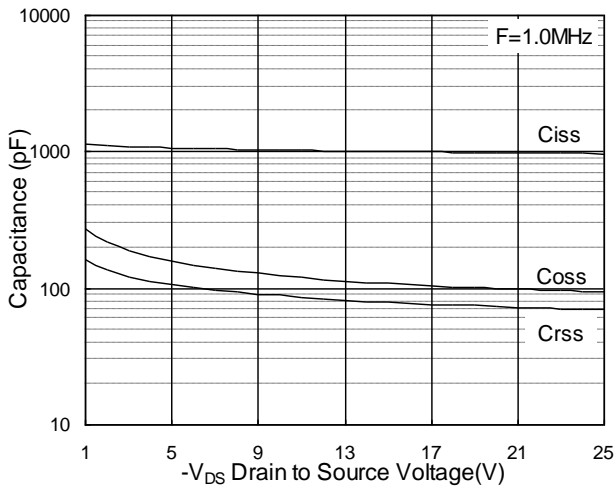


Fig.7 Capacitance

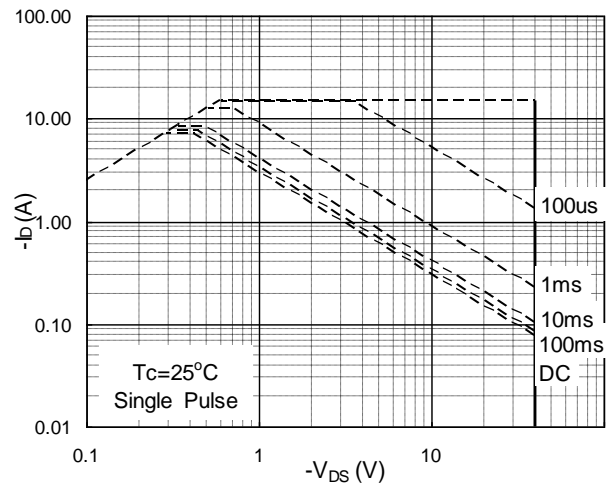


Fig.8 Safe Operating Area

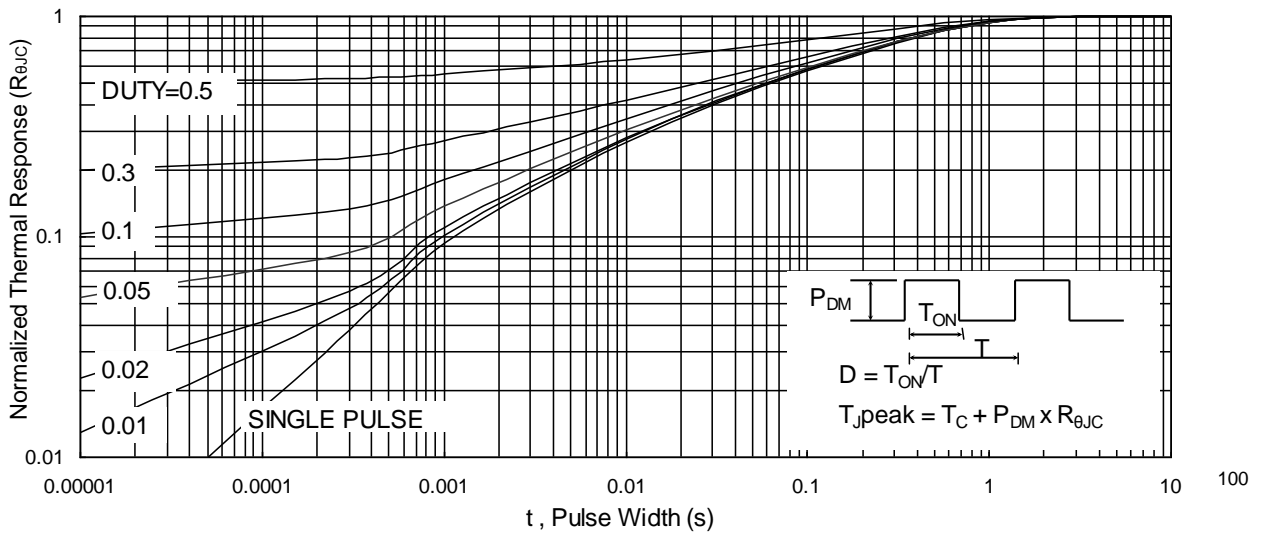


Fig.9 Normalized Maximum Transient Thermal Impedance

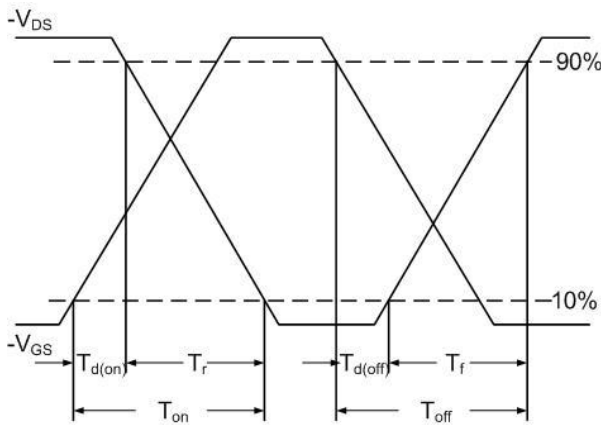


Fig.10 Switching Time Waveform

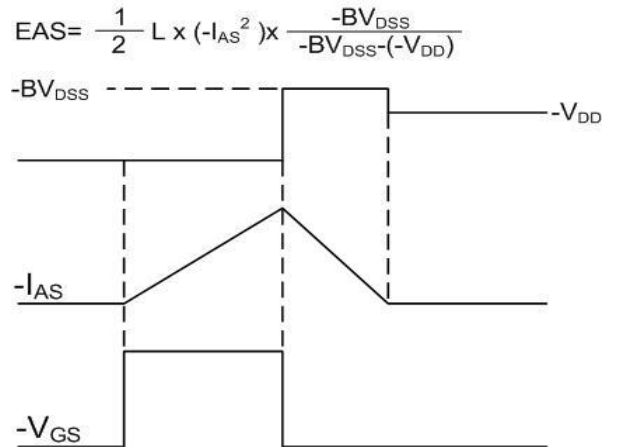
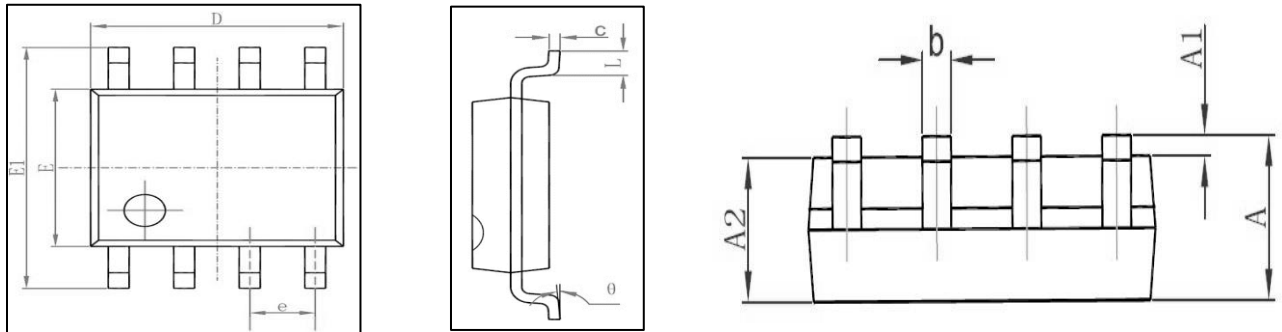
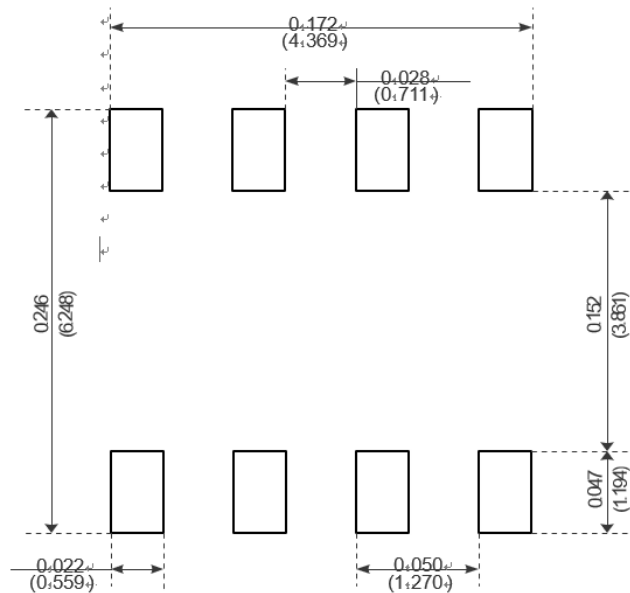


Fig.11 Unclamped Inductive Waveform

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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