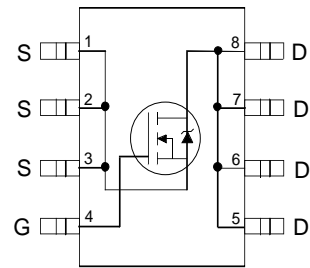


Features

- $V_{DS} (V) = 30V$
- $R_{DS(ON)} < 13.8m\Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 18.2m\Omega$ ($V_{GS} = 4.5V$)

Applications

- Control FET for Notebook Processor Power
- Synchronous Rectifier MOSFET for Graphics Cards and POL Converters in Networking and Telecommunication Systems



Top View

Absolute Maximum Ratings

| | Parameter | Max. | Units |
|--------------------------|--|--------------|-------|
| V_{DS} | Drain-to-Source Voltage | 30 | V |
| V_{GS} | Gate-to-Source Voltage | ± 20 | |
| $I_D @ T_A = 25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 11 | A |
| $I_D @ T_A = 70^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 8.7 | |
| I_{DM} | Pulsed Drain Current ① | 88 | |
| $P_D @ T_A = 25^\circ C$ | Power Dissipation ④ | 2.5 | W |
| $P_D @ T_A = 70^\circ C$ | Power Dissipation ④ | 1.6 | |
| | Linear Derating Factor | 0.02 | W/°C |
| T_J | Operating Junction and | -55 to + 150 | °C |
| T_{STG} | Storage Temperature Range | | |

Thermal Resistance

| | Parameter | Typ. | Max. | Units |
|-----------------|------------------------|------|------|-------|
| $R_{\theta JL}$ | Junction-to-Drain Lead | — | 20 | °C/W |
| $R_{\theta JA}$ | Junction-to-Ambient ④ | — | 50 | |

Notes:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Starting $T_J = 25^\circ C$, $L = 1.6mH$
 $R_G = 25\Omega$, $I_{AS} = 8.8A$.
- ③ Pulse width $\leq 400\mu s$; duty cycle $\leq 2\%$.
- ④ When mounted on 1 inch square copper board

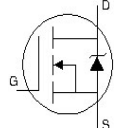
Static @ T_J = 25°C (unless otherwise specified)

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-------------------------------------|---|------|-------|------|-------|--|
| BV _{DSS} | Drain-to-Source Breakdown Voltage | 30 | — | — | V | V _{GS} = 0V, I _D = 250μA |
| ΔBV _{DSS} /ΔT _J | Breakdown Voltage Temp. Coefficient | — | 0.023 | — | V/°C | Reference to 25°C, I _D = 1mA |
| R _{DS(on)} | Static Drain-to-Source On-Resistance | — | 11 | 13.8 | mΩ | V _{GS} = 10V, I _D = 11A ② |
| | | — | 14.5 | 18.2 | | V _{GS} = 4.5V, I _D = 8.8A ② |
| V _{GS(th)} | Gate Threshold Voltage | 1.35 | 1.8 | 2.25 | V | V _{DS} = V _{GS} , I _D = 250μA |
| ΔV _{GS(th)} | Gate Threshold Voltage Coefficient | — | - 4.7 | — | mV/°C | |
| I _{DSS} | Drain-to-Source Leakage Current | — | — | 1.0 | μA | V _{DS} = 24V, V _{GS} = 0V |
| | | — | — | 150 | | V _{DS} = 24V, V _{GS} = 0V, T _J = 125°C |
| I _{GSS} | Gate-to-Source Forward Leakage | — | — | 100 | nA | V _{GS} = 20V |
| | Gate-to-Source Reverse Leakage | — | — | -100 | | V _{GS} = -20V |
| g _{fs} | Forward Transconductance | 22 | — | — | S | V _{DS} = 15V, I _D = 8.8A |
| Q _g | Total Gate Charge | — | 7.2 | 11 | nC | V _{DS} = 15V V _{GS} = 4.5V I _D = 8.8A See Fig. 16 |
| Q _{gs1} | Pre-V _{th} Gate-to-Source Charge | — | 2.1 | — | | |
| Q _{gs2} | Post-V _{th} Gate-to-Source Charge | — | 0.7 | — | | |
| Q _{gd} | Gate-to-Drain Charge | — | 2.7 | — | | |
| Q _{godr} | Gate Charge Overdrive | — | 1.7 | — | | |
| Q _{sw} | Switch Charge (Q _{gs2} + Q _{gd}) | — | 3.4 | — | | |
| Q _{oss} | Output Charge | — | 2.8 | — | nC | V _{DS} = 15V, V _{GS} = 0V |
| R _G | Gate Resistance | — | 2.5 | 4.8 | Ω | |
| t _{d(on)} | Turn-On Delay Time | — | 6.9 | — | ns | V _{DD} = 15V, V _{GS} = 4.5V ③ I _D = 8.8A Clamped Inductive Load |
| t _r | Rise Time | — | 6.2 | — | | |
| t _{d(off)} | Turn-Off Delay Time | — | 10 | — | | |
| t _f | Fall Time | — | 3.1 | — | | |
| C _{iss} | Input Capacitance | — | 770 | — | pF | V _{GS} = 0V V _{DS} = 15V f = 1.0MHz |
| C _{oss} | Output Capacitance | — | 190 | — | | |
| C _{rss} | Reverse Transfer Capacitance | — | 100 | — | | |

Avalanche Characteristics

| | Parameter | Typ. | Max. | Units |
|-----------------|---------------------------------|------|------|-------|
| E _{AS} | Single Pulse Avalanche Energy ② | — | 63 | mJ |
| I _{AR} | Avalanche Current ① | — | 8.8 | A |

Diode Characteristics

| | Parameter | Min. | Typ. | Max. | Units | Conditions |
|-----------------|---|------|------|------|-------|--|
| I _S | Continuous Source Current (Body Diode) | — | — | 3.1 | A | MOSFET symbol showing the integral reverse p-n junction diode.  |
| I _{SM} | Pulsed Source Current (Body Diode) ① | — | — | 88 | | |
| V _{SD} | Diode Forward Voltage | — | — | 1.0 | V | T _J = 25°C, I _S = 8.8A, V _{GS} = 0V ③ |
| t _{rr} | Reverse Recovery Time | — | 31 | 46 | ns | T _J = 25°C, I _F = 8.8A, V _{DD} = 15V |
| Q _{rr} | Reverse Recovery Charge | — | 17 | 26 | nC | di/dt = 100A/μs ③ |

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

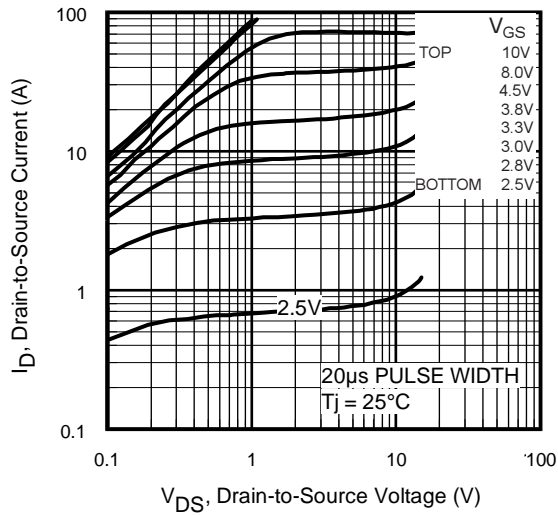


Fig 1. Typical Output Characteristics

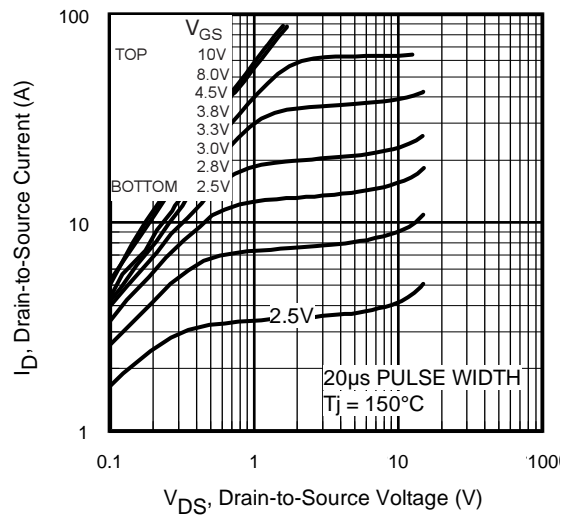


Fig 2. Typical Output Characteristics

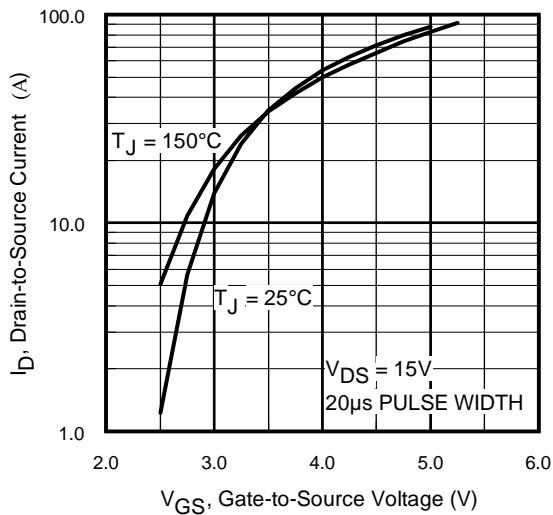


Fig 3. Typical Transfer Characteristics

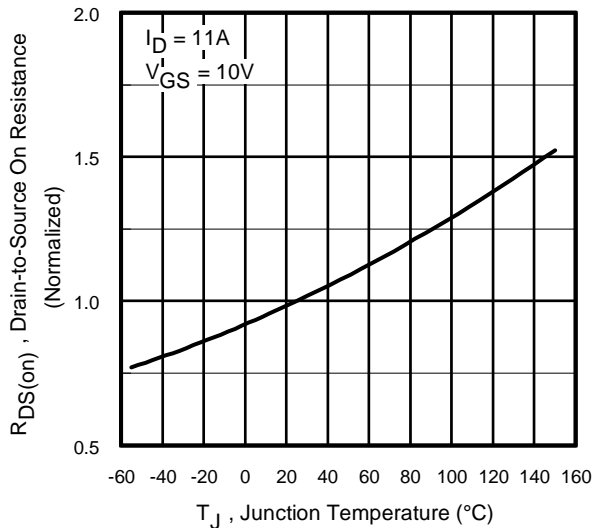


Fig 4. Normalized On-Resistance Vs. Temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

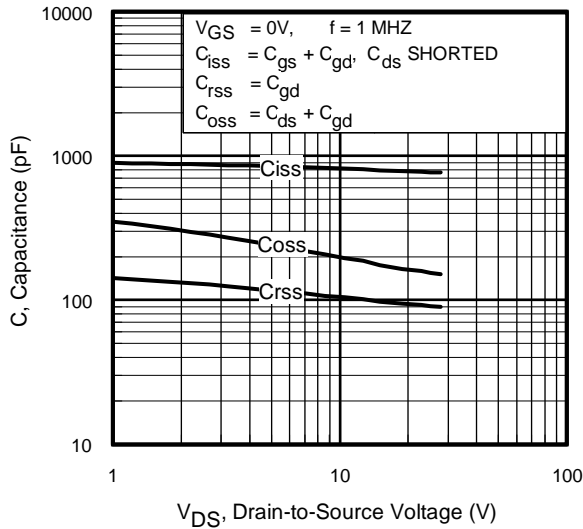


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

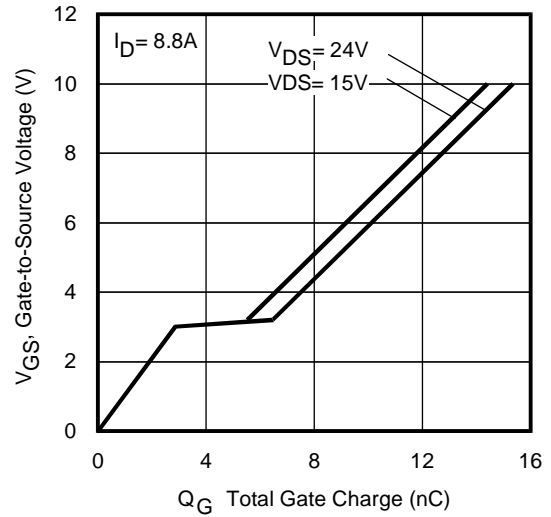


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

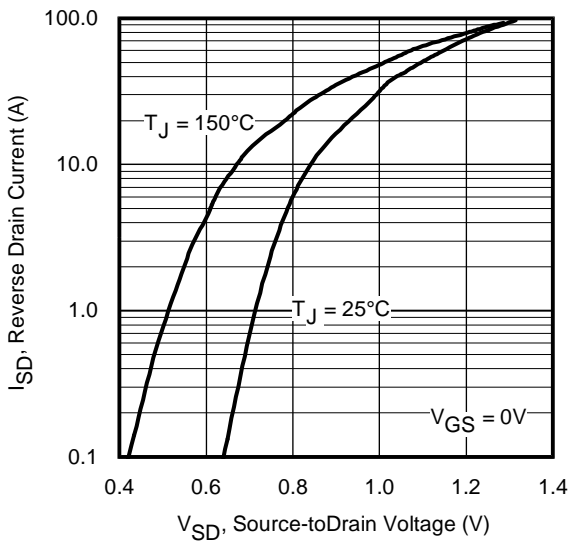


Fig 7. Typical Source-Drain Diode Forward Voltage

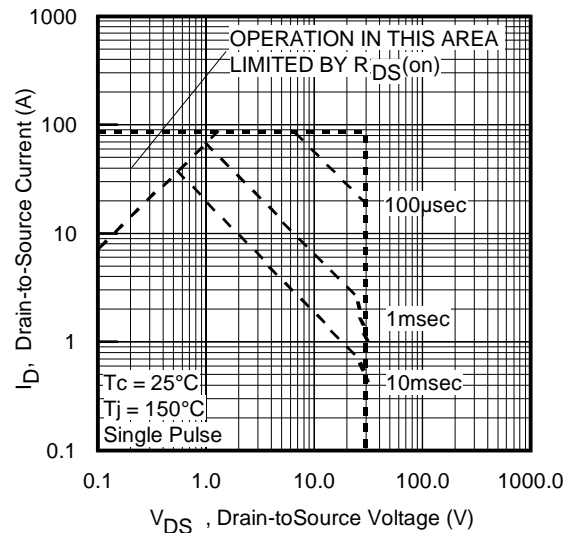


Fig 8. Maximum Safe Operating Area

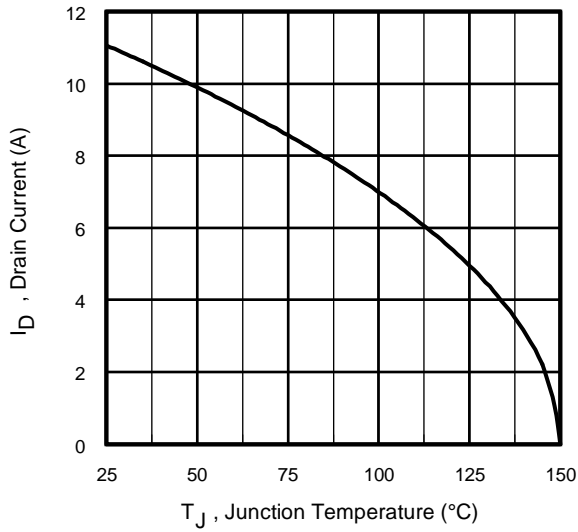


Fig 9. Maximum Drain Current Vs. Case Temperature

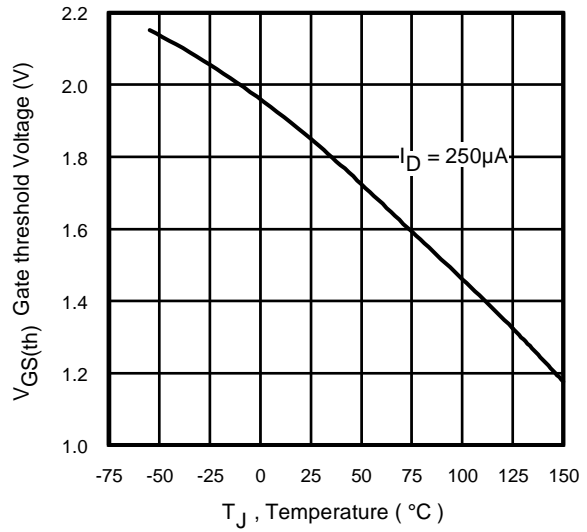


Fig 10. Threshold Voltage Vs. Temperature

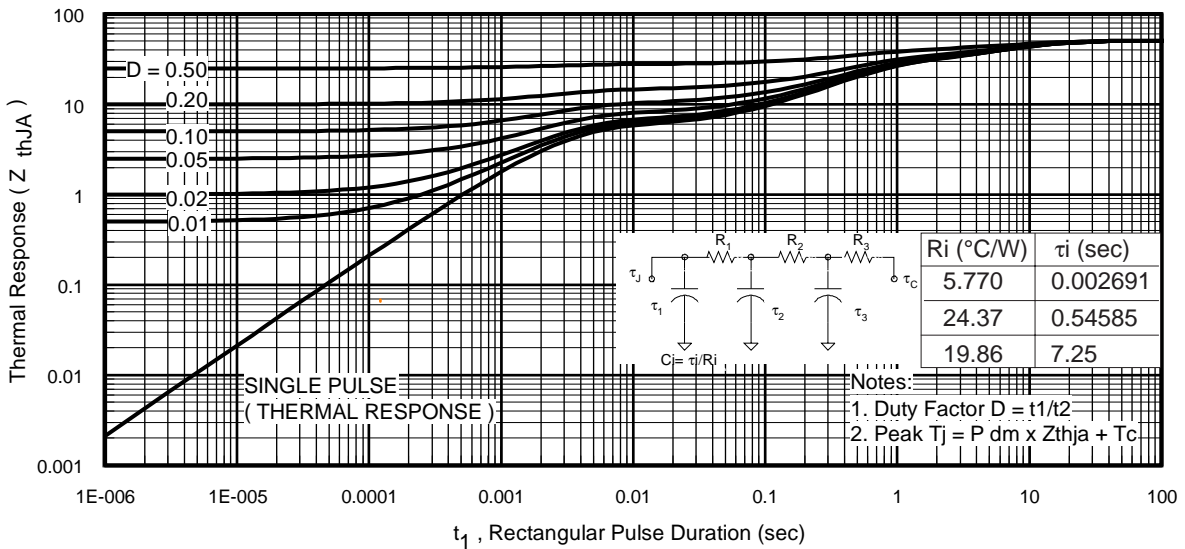


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

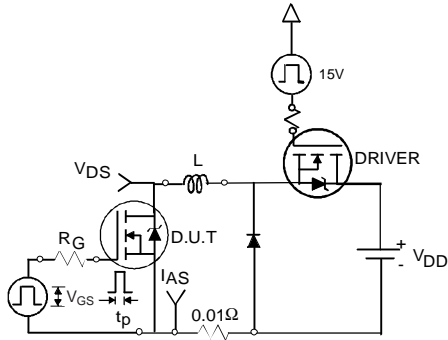


Fig 12a. Unclamped Inductive Test Circuit

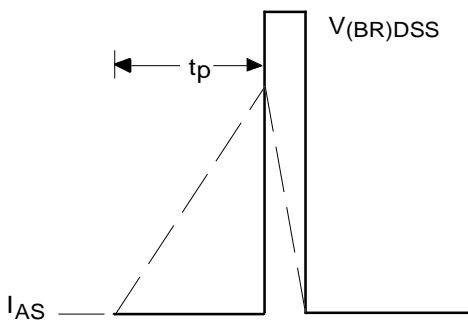


Fig 12b. Unclamped Inductive Waveforms

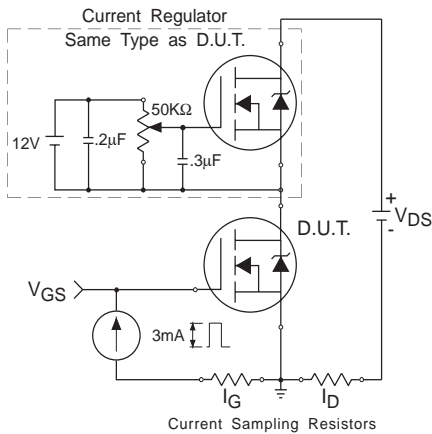


Fig 13. Gate Charge Test Circuit

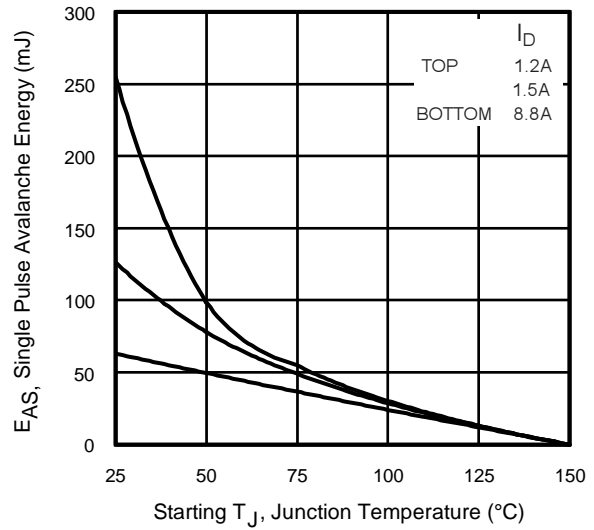


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

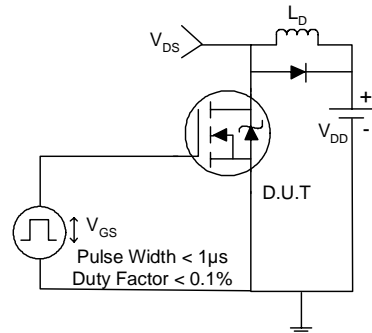


Fig 14a. Switching Time Test Circuit

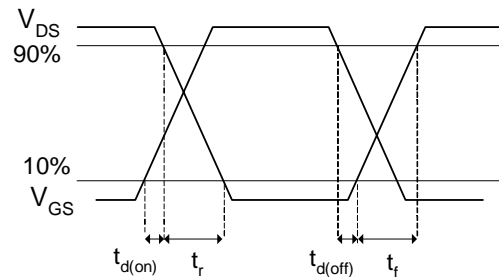
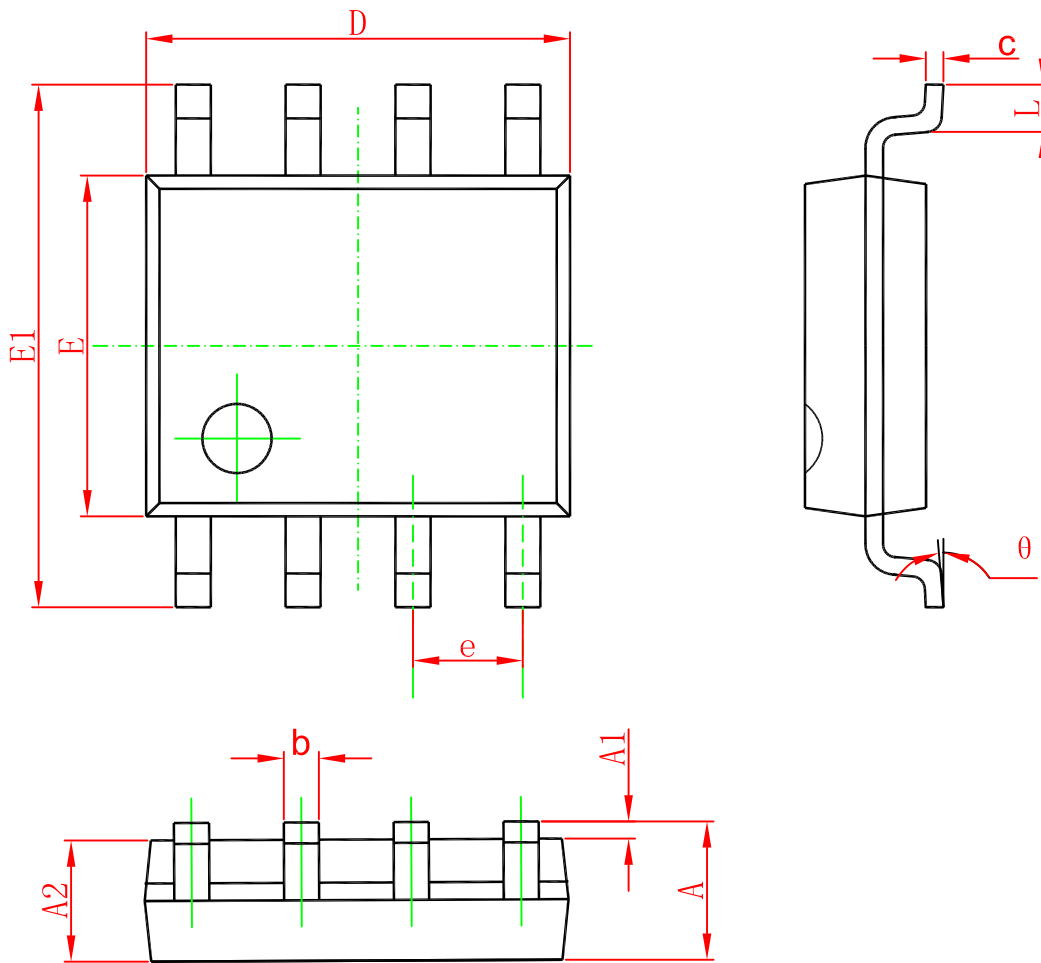


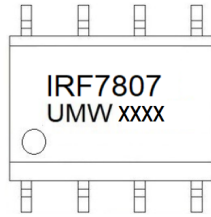
Fig 14b. Switching Time Waveforms

SOP-8



| 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° |

Marking



Ordering information

| Order code | Package | Baseqty | Deliverymode |
|---------------|---------|---------|---------------|
| UMW IRF7807TR | SOP-8 | 3000 | Tape and reel |

单击下面可查看定价，库存，交付和生命周期等信息

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