

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

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|--------------|--|------|------|-----------|------------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 40 | --- | --- | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=40V, V_{GS}=0V, T_J=25^{\circ}\text{C}$ | --- | --- | 1 | μA |
| | | $V_{DS}=32V, V_{GS}=0V, T_J=125^{\circ}\text{C}$ | --- | --- | 10 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| On Characteristics | | | | | | |
| Static Drain-Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=8A$ | --- | 10 | 12 | m Ω |
| | | $V_{GS}=4.5V, I_D=6A$ | --- | 14 | 17 | m Ω |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 1.2 | 1.8 | 2.5 | V |
| Forward Transconductance | g_{fs} | $V_{DS}=10V, I_D=1A$ | --- | 5 | --- | S |
| Dynamic and Switching Characteristics | | | | | | |
| Total Gate Charge ^{3, 4} | Q_g | $V_{DS}=20V, V_{GS}=4.5V, I_D=10A$ | --- | 13 | 26 | nC |
| Gate-Source Charge ^{3, 4} | Q_{gs} | | --- | 4 | 8 | |
| Gate-Drain Charge ^{3, 4} | Q_{gd} | | --- | 5.3 | 10 | |
| Turn-On Delay Time ^{3, 4} | $T_{d(on)}$ | $V_{DD}=20V, V_{GS}=10V, R_G=6\Omega, I_D=1A$ | --- | 8 | 16 | nS |
| Rise Time ^{3, 4} | T_r | | --- | 3.2 | 8 | |
| Turn-Off Delay Time ^{3, 4} | $T_{d(off)}$ | | --- | 26.4 | 52 | |
| Fall Time ^{3, 4} | T_f | | --- | 3.8 | 8 | |
| Input Capacitance | C_{iss} | $V_{DS}=20V, V_{GS}=0V, F=1\text{MHz}$ | --- | 1088 | 2000 | pF |
| Output Capacitance | C_{oss} | | --- | 110 | 200 | |
| Reverse Transfer Capacitance | C_{rss} | | --- | 80 | 160 | |
| Gate Resistance | R_g | $V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$ | --- | 3 | 6 | Ω |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Continuous Source Current | I_S | $V_G=V_D=0V, \text{Force Current}$ | --- | --- | 13 | A |
| Pulsed Source Current | I_{SM} | | --- | --- | 26 | A |
| Diode Forward Voltage | V_{SD} | $V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$ | --- | --- | 1 | V |

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=39A, R_G=25\Omega, \text{Starting } T_J=25^{\circ}\text{C}.$
3. The data tested by pulsed, pulse width $\leq 300\mu\text{S}$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

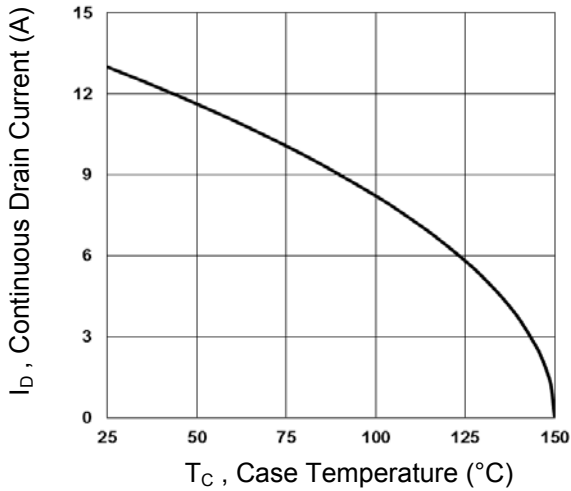


Fig.1 Continuous Drain Current vs. T_C

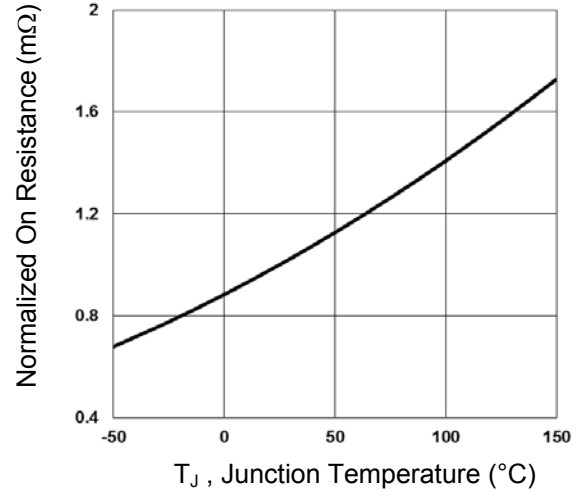


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

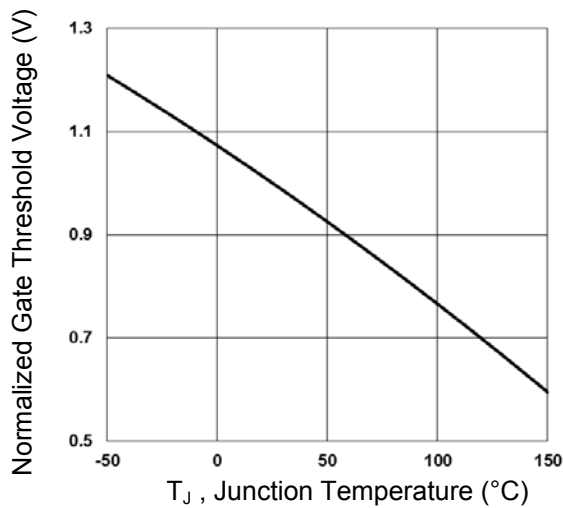


Fig.3 Normalized V_{th} vs. T_J

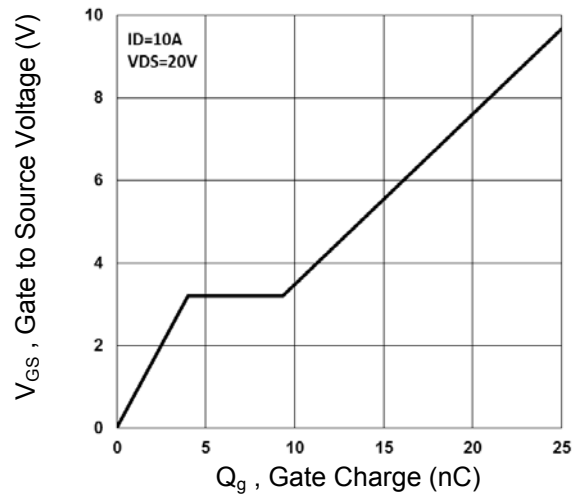


Fig.4 Gate Charge Waveform

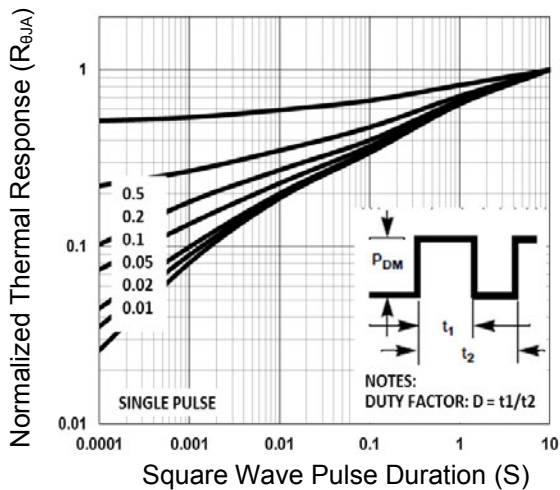


Fig.5 Normalized Transient Impedance

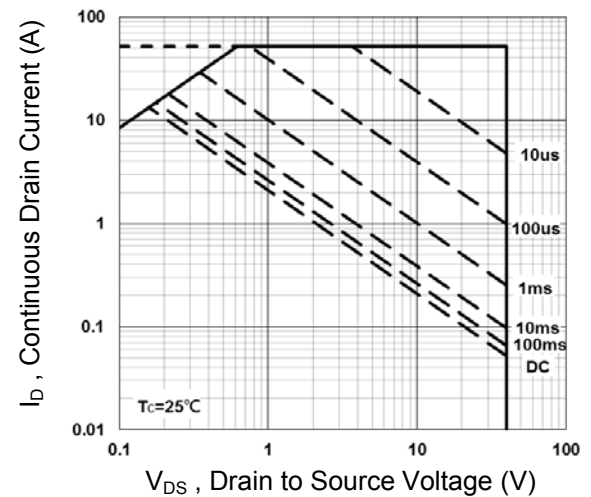


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

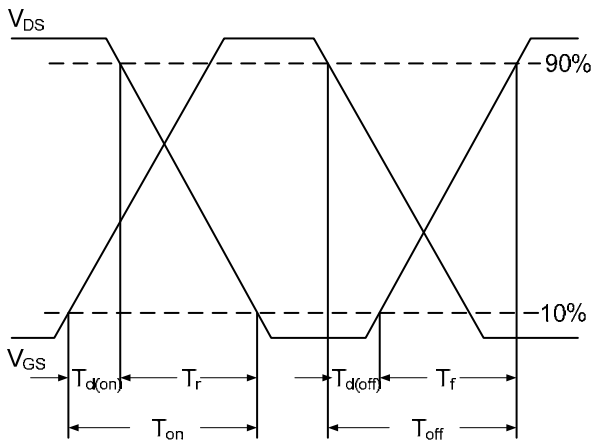


Fig.7 Switching Time Waveform

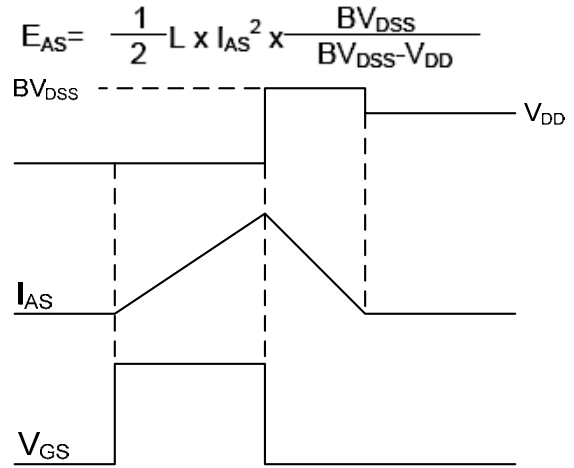
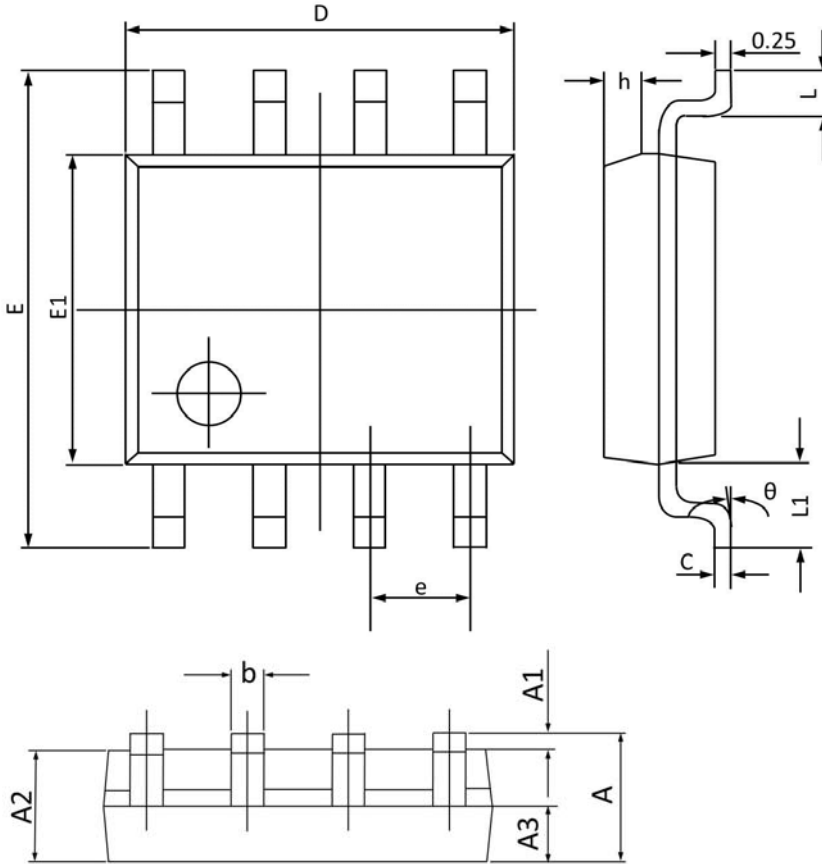


Fig.8 E_{AS} Waveform

Package Outline Dimensions

SOP-8



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.35 | 1.75 | 0.053 | 0.068 |
| A1 | 0.1 | 0.25 | 0.004 | 0.009 |
| A2 | 1.3 | 1.5 | 0.052 | 0.059 |
| A3 | 0.6 | 0.7 | 0.024 | 0.027 |
| b | 0.39 | 0.48 | 0.016 | 0.018 |
| c | 0.21 | 0.26 | 0.009 | 0.01 |
| D | 4.7 | 5.1 | 0.186 | 0.2 |
| E | 5.8 | 6.2 | 0.229 | 0.244 |
| E1 | 3.7 | 4.1 | 0.146 | 0.161 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| h | 0.25 | 0.5 | 0.01 | 0.019 |
| L | 0.5 | 0.8 | 0.019 | 0.031 |
| L1 | 1.050(BSC) | | 0.041(BSC) | |
| theta | 0° | 8° | 0° | 8° |