# AT3134EASB

N-Channel Enhancement Mode MOSFET

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---|---|---|
| 20V | 300mΩ@4.5V | 0.5A |
| | 400mΩ@2.5V | |
| | 700mΩ@1.8V | |

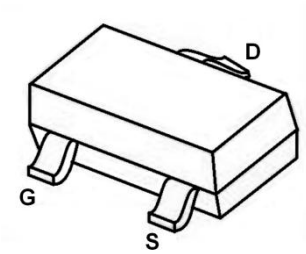
## Feature

- Trench power LV MOSFET technology
- High power and current handing capability
- ESD protected

## Application

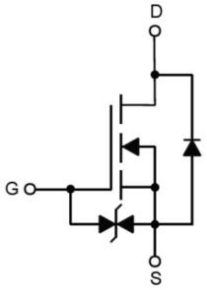
- PWM application
- Load switch

## Package

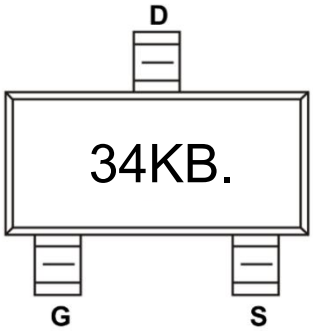



SOT-323

## Circuit diagram




## Marking



## Absolute maximum ratings ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current | $I_D$ | 0.5 | A |
| Continuous Drain Current ( $T_A$=70℃) | $I_D$ (70℃) | 0.4 | A |
| Pulsed Drain Current[1)] | $I_{DM}$ | 3.3 | A |
| Power Dissipation | $P_D$ | 0.15 | W |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 833 | ℃/W |
| Operating Junction Temperature | $T_J$ | -55 ~ +150 | ℃ |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | ℃ |

## Electrical characteristics ($T_J$=25 °C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ =0V, $I_D$ =250μA | 20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =20V, $V_{GS}$ =0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{DS}$ =0V, $V_{GS}$ =±10V | | | ±10 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 0.35 | 0.75 | 1.1 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =0.5A | | 220 | 300 | mΩ |
| | | $V_{GS}$ =2.5V, $I_D$ =0.4A | | 290 | 400 | |
| | | $V_{GS}$ =1.8V, $I_D$ =0.2A | | 420 | 700 | |
| **Dynamic characteristics[3)]** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =10V, $V_{GS}$ =0V, f =1MHz | | 33 | | pF |
| Output Capacitance | $C_{oss}$ | | | 20 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 10 | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ =10V, $V_{GS}$ =4.5V, $I_D$ =0.5A | | 0.8 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 0.3 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 0.15 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS}$ =10V, $V_{GS}$ =4.5V, $I_D$ =0.5A $R_G$ =10Ω | | 4 | | nS |
| Turn-on rise time | $t_r$ | | | 18.8 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 10 | | |
| Turn-off fall time | $t_f$ | | | 23 | | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward Current | $I_S$ | | | | 0.5 | A |
| Diode Forward voltage[2)] | $V_{SD}$ | $V_{GS}$ =0V, $I_S$ =0.5A | | | 1.2 | V |
| Reverse Recovery Time | $T_{rr}$ | $I_F$ =0.5A, di/dt =-20A/us | | 14.4 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 0.4 | | nC |

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2) Pulse Test: Pulse Width ≤300us, Duty Cycle ≤0.5%.

3) Guaranteed by design, not subject to production testing.

## Typical Characteristics

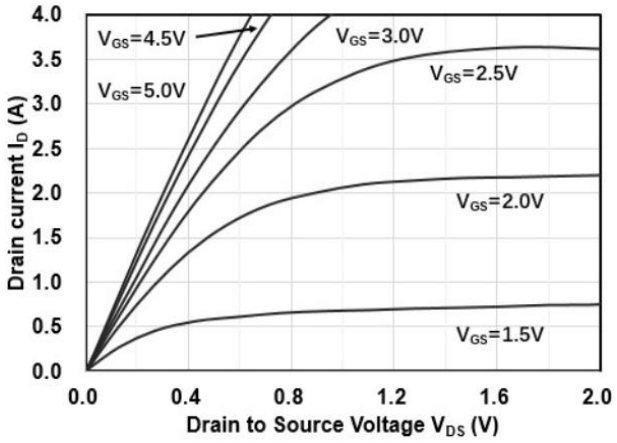



Figure1. Output Characteristics

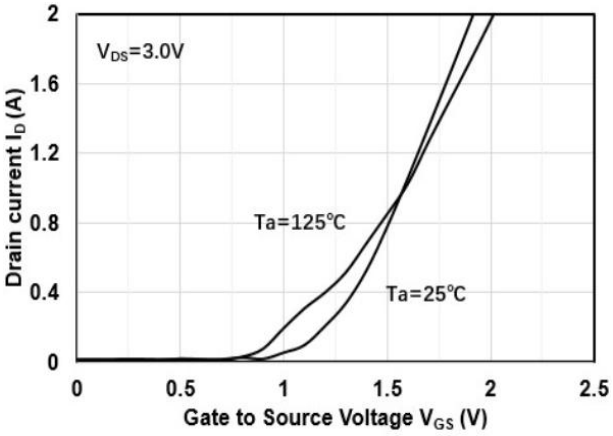



Figure2. Transfer Characteristics

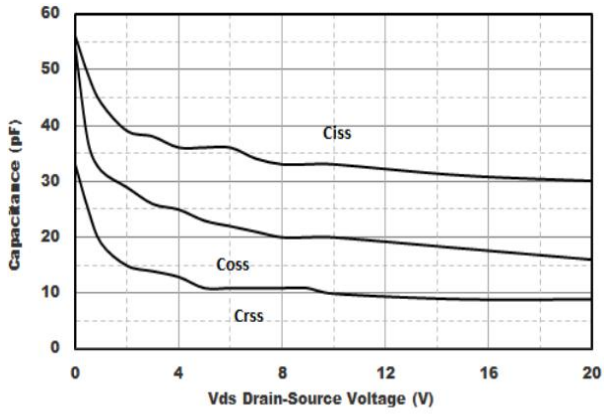



Figure3. Capacitance Characteristics

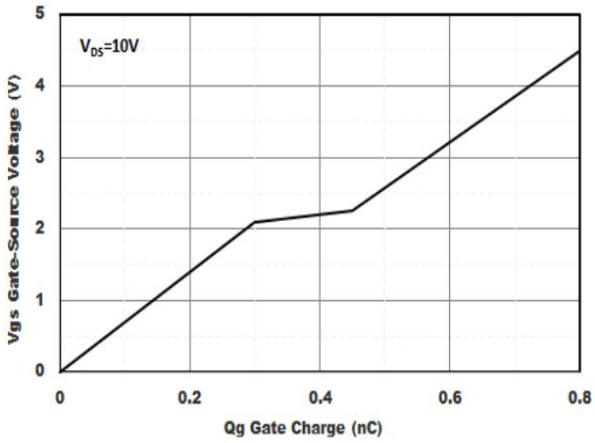



Figure4. Gate Charge

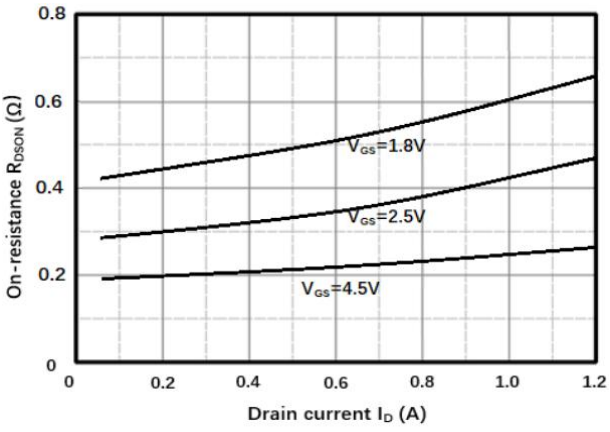



Figure5. Drain-Source on Resistance

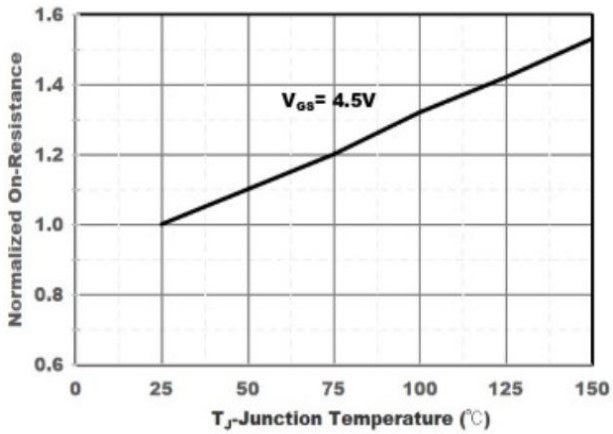



Figure6. Drain-Source on Resistance

## Typical Characteristics

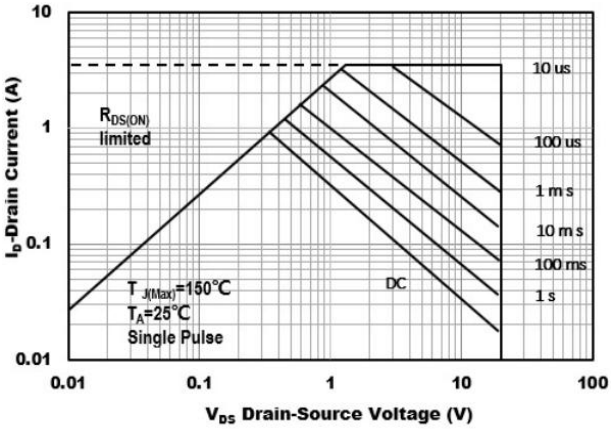



Figure7. Safe Operation Area

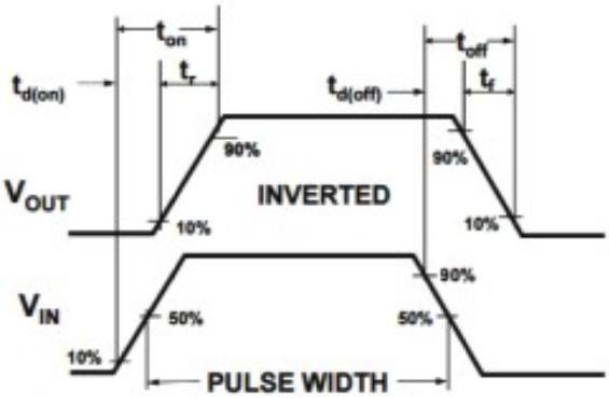
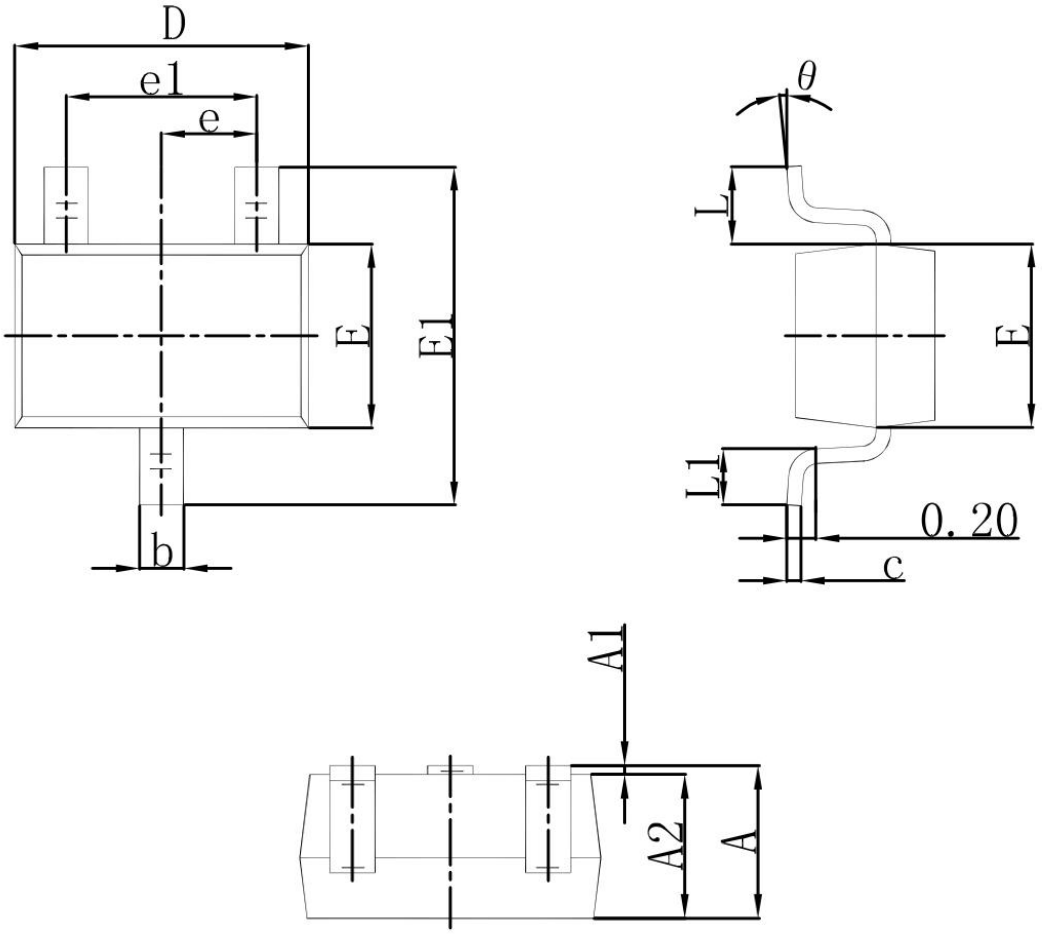



Figure8. Switching wave

## SOT-323 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.400 | 0.006 | 0.016 |
| c | 0.100 | 0.250 | 0.004 | 0.010 |
| D | 1.800 | 2.200 | 0.071 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.450 | 0.085 | 0.096 |
| e | 0.650 TYP. | | 0.026 TYP. | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF. | | 0.021 REF. | |
| L1 | 0.250 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |