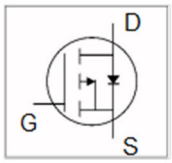
KGEY 金易半 Kingeavysemi

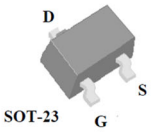
# KE2301T0U-L

*P-CHANNEL ENHANCEMENT MODE POWER MOSFET*

- **Simple Drive Requirement**
- **Small Package Outline**
- **Surface Mount Device**
- **RoHS Compliant & Halogen-Free**




| | |
|---|---|
| $BV_{DSS}$ | -20V |
| $R_{DS(ON)typ}$ | 95mΩ |
| $I_D$ | -2.5A |




## Description

KE2301 is from Kingeavy innovated design and silicon process technology to achieve the lowest possible on- resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

## Absolute Maximum Ratings@$T_j$=25°C(unless otherwise specified)

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | -20 | V |
| $V_{GS}$ | Gate-Source Voltage | ±8 | V |
| $I_D$@$T_A$=25℃ | Drain Current, $V_{GS}$ @ 4.5V | -2.5 | A |
| $I_D$@$T_A$=70℃ | Drain Current, $V_{GS}$ @ 4.5V | -2 | A |
| $P_D$@$T_A$=25℃ | Total Power Dissipation3 | 0.6 | W |
| $T_{STG}$ | Storage Temperature Range | -55 to 150 | ℃ |
| $T_J$ | Operating Junction Temperature Range | 150 | ℃ |

## Thermal Data

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| Rthj-a | Maximum Thermal Resistance, Junction-ambient3 | 150 | ℃/W |

## Electrical Characteristics@$T_j$=25 oC(unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | VGS=0V, ID=250uA | -20 | - | - | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | VGS=4.5V, ID=-2A | - | 95 | 130 | mΩ |
| | | VGS=-2.5V, ID=-2A | - | 130 | 175 | mΩ |
| $V_{GS(th)}$ | Gate Threshold Voltage | VDS=VGS, ID=250uA | -0.5 | - | -1 | V |
| $g_{fs}$ | Forward Transconductance | VDS=5V, ID=-2A | - | 4 | - | S |
| $I_{DSS}$ | Drain-Source Leakage Current | VDS=-20V, VGS=0V | - | - | -1 | uA |
| $I_{GSS}$ | Gate-Source Leakage | VGS=±8V, VDS=0V | - | - | ±100 | nA |
| $Q_g$ | Total Gate Charge | ID=-2A<br>VDS=-10V<br>VGS=-2.5V | - | 5.5 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 3.3 | - | nC |
| $Q_{gd}$ | Gate-Drain ("Miller") Charge | | - | 1.3 | - | nC |
| $t_{d(on)}$ | Turn-on Delay Time | VDS=-10V<br>ID=1A<br>RG=1Ω<br>VGS=-4.5V,RL=10Ω | - | 11 | 20 | ns |
| $t_r$ | Rise Time | | - | 35 | 60 | ns |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 30 | 50 | ns |
| $t_f$ | Fall Time | | - | 10 | 20 | ns |
| $C_{iss}$ | Input Capacitance | VGS=0V<br>VDS=-10V<br>f=1.0MHz | - | 405 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 75 | - | pF |
| Crss | Reverse Transfer Capacitance | | - | 55 | - | pF |

## Source-Drain Diode

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{SD}$ | Forward On Voltage² | IS=0.7A, VGS=0V | - | -0.8 | -1.2 | V |

**Notes:**

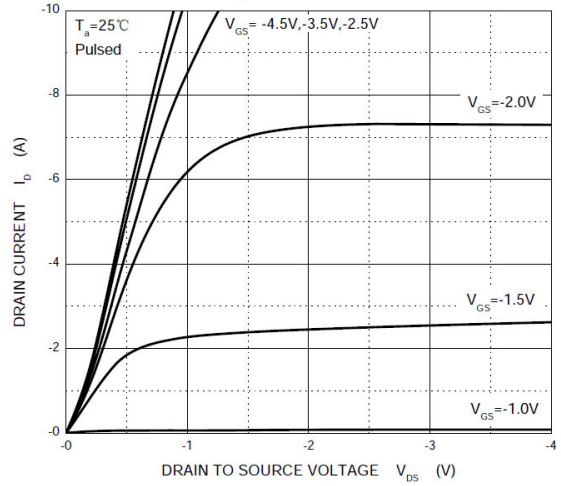
1.Pulse width limited by Max. junction temperature.

2.Pulse test

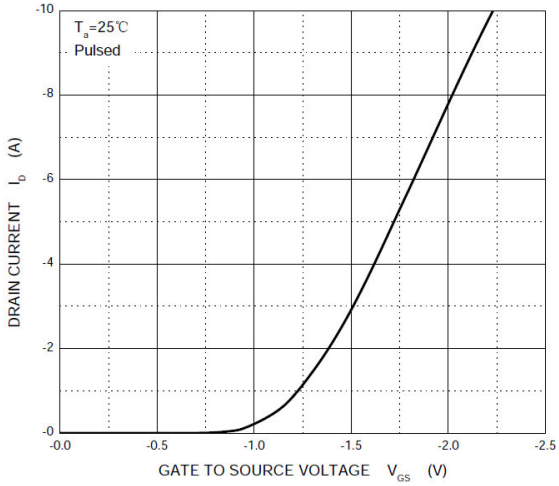
3.Surface mounted on 1 $in^2$ 2oz copper pad of FR4 board, t ≤10sec ; 300°C/W when mounted on min. copper pad.

## Typical Performance Characteristics

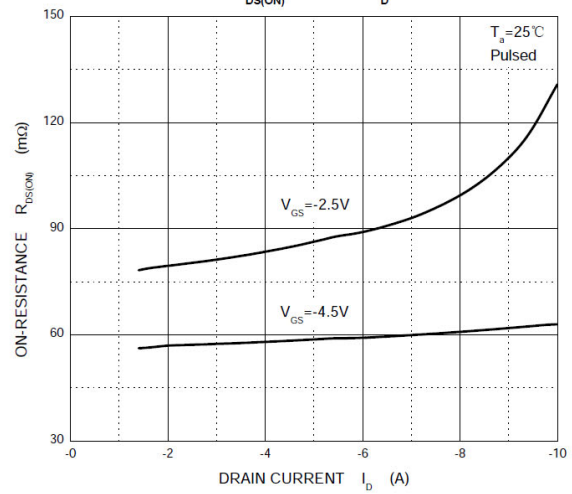
Output Characteristics



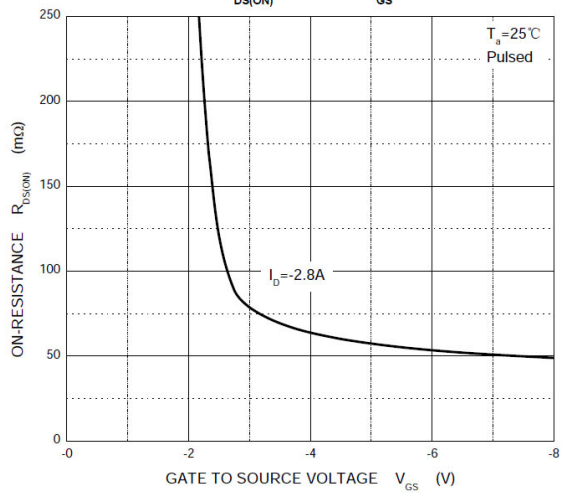

Transfer Characteristics



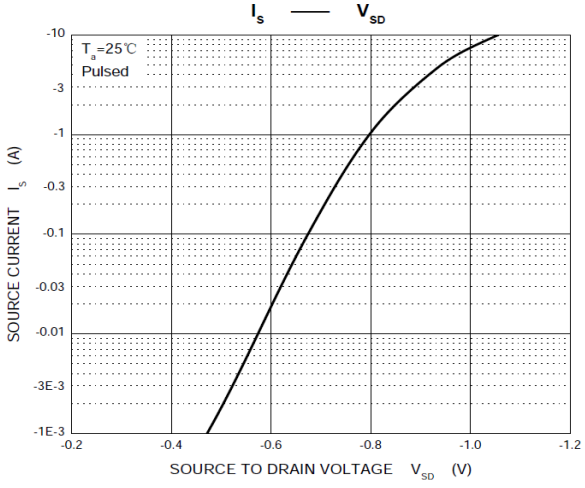

$R_{DS(ON)}$ —— $I_D$



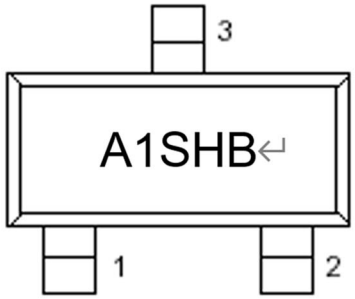

$R_{DS(ON)}$ —— $V_{GS}$



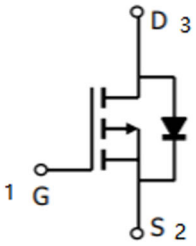

$I_S$ —— $V_{SD}$



## Marking Information

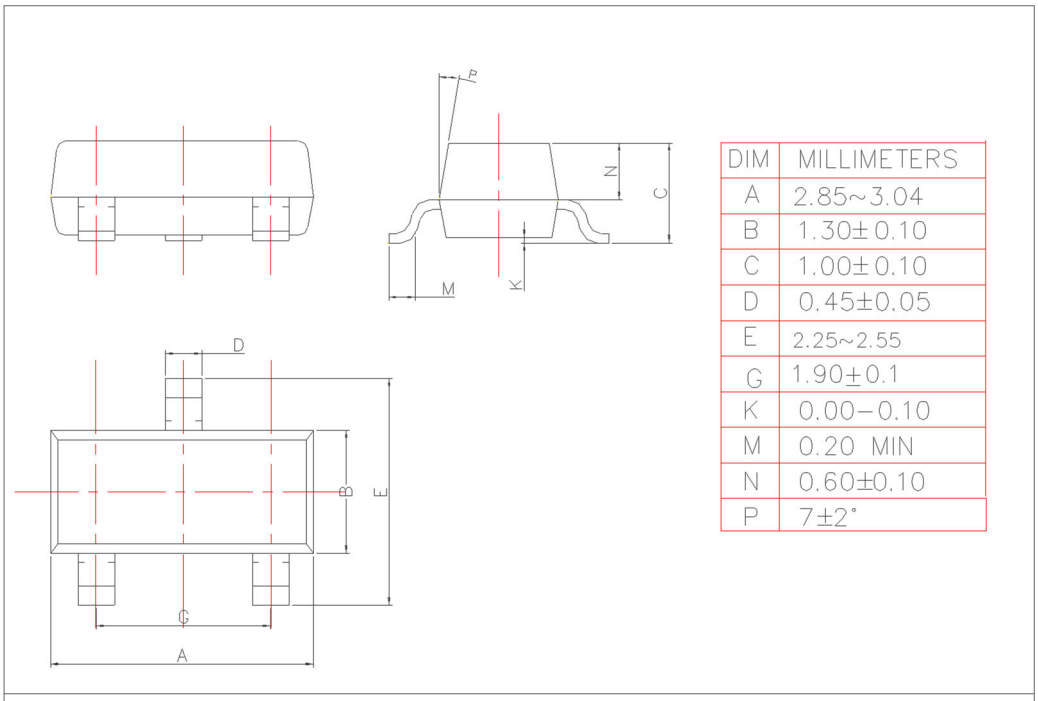



Top view




**印字 marking：A1SHB**

## Package Outline : SOT-23




| DIM | MILLIMETERS |
|---|---|
| A | 2.85~3.04 |
| B | 1.30±0.10 |
| C | 1.00±0.10 |
| D | 0.45±0.05 |
| E | 2.25~2.55 |
| G | 1.90±0.1 |
| K | 0.00−0.10 |
| M | 0.20 MIN |
| N | 0.60±0.10 |
| P | 7±2° |

SOT−23 Pacakge Outline Dimensions