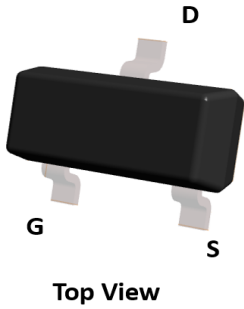
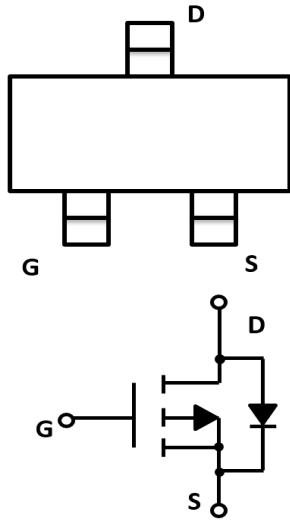


P-Channel Enhancement Mode Field Effect Transistor



Top View

SOT-23



Product Summary

- V_{DS} -15V
- I_D -2A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) < 100 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) < 130 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) < 180 mohm

General Description

- Trench Power LV MOSFET technology
- Low $R_{DS(ON)}$
- Low Gate Charge

Applications

- Video monitor
- Power management

■ Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

| Parameter | Symbol | Maximum | Unit |
|---|-----------------|---------------------------------|--------------|
| Drain-source Voltage | V_{DS} | -15 | V |
| Gate-source Voltage | V_{GS} | ± 10 | V |
| Drain Current | I_D | $T_A=25^\circ C$ @ Steady State | -2 |
| | | $T_A=70^\circ C$ @ Steady State | -1.6 |
| Pulsed Drain Current ^A | I_{DM} | -8 | A |
| Total Power Dissipation @ $T_A=25^\circ C$ | P_D | 0.7 | W |
| Thermal Resistance Junction-to-Ambient ^B | $R_{\theta JA}$ | 178 | $^\circ C/W$ |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55~+150 | $^\circ C$ |

■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | Marking | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|---------|----------------------|-------------------------|----------------------------|---------------|
| YJL2301G | F2 | 3415. | 3000 | 30000 | 120000 | 7" reel |



YJL2301G

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---------------------------------------|---------------------|--|------|-------|------|-------|
| Static Parameter | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D =-250μA | -15 | | | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-15V, V _{GS} =0V, T _C =25°C | | | -1 | μA |
| Gate-Body Leakage Current | I _{GSS} | V _{GS} = ±10V, V _{DS} =0V | | | ±100 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D =-250μA | -0.4 | -0.62 | -1.0 | V |
| Static Drain-Source On-Resistance | R _{DS(ON)} | V _{GS} = -4.5V, I _D =-2A | | 82 | 100 | mΩ |
| | | V _{GS} = -2.5V, I _D =-1.6A | | 105 | 130 | |
| | | V _{GS} = -1.8V, I _D =-1.5A | | 140 | 180 | |
| Diode Forward Voltage | V _{SD} | I _S =-2A, V _{GS} =0V | | -0.8 | -1.2 | V |
| Maximum Body-Diode Continuous Current | I _S | | | | -2 | A |
| Dynamic Parameters | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =-10V, V _{GS} =0V, f=1MHZ | | 260 | | pF |
| Output Capacitance | C _{oss} | | | 44 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 29 | | |
| Switching Parameters | | | | | | |
| Total Gate Charge | Q _g | V _{GS} =-4.5V, V _{DS} =-10V, I _D =-2A | | 3.9 | | nC |
| Gate Source Charge | Q _{gs} | | | 0.7 | | |
| Gate Drain Charge | Q _{gd} | | | 0.9 | | |
| Turn-on Delay Time | t _{D(on)} | V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A, R _{GEN} =2.5Ω | | 12 | | ns |
| Turn-on Rise Time | t _r | | | 54 | | |
| Turn-off Delay Time | t _{D(off)} | | | 15 | | |
| Turn-off Fall Time | t _f | | | 9 | | |

A. Pulse Test: Pulse Width ≤ 300μs, Duty cycle ≤ 2%.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.



■ Typical Performance Characteristics

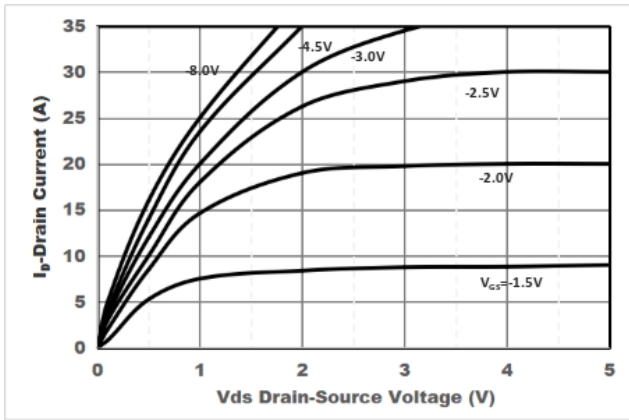


Figure1. Output Characteristics

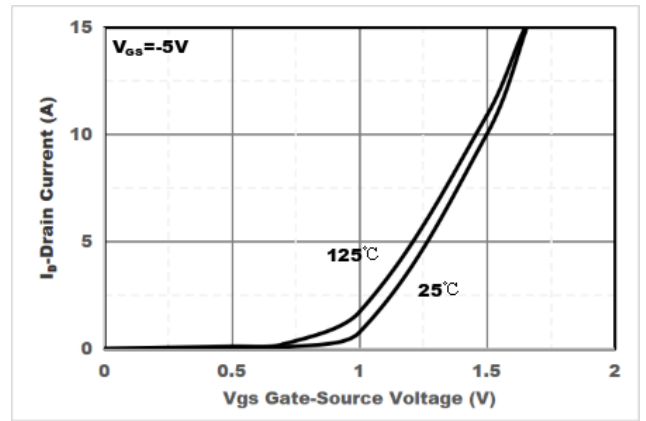


Figure2. Transfer Characteristics

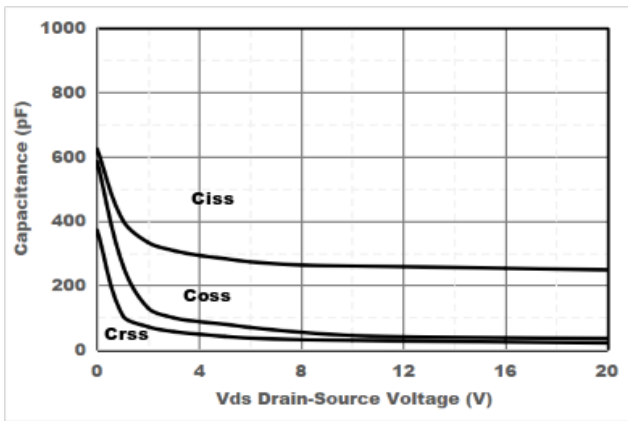


Figure3. Capacitance Characteristics

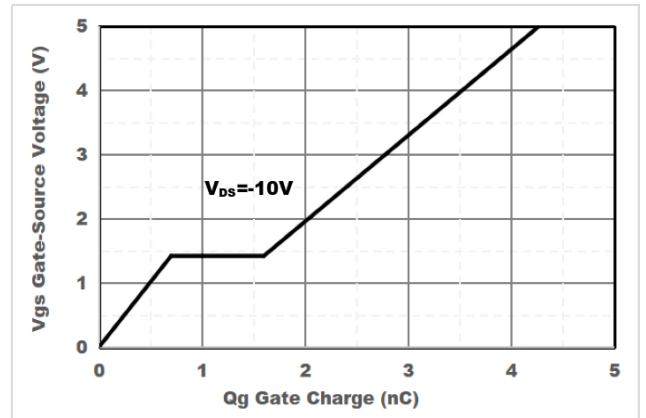


Figure4. Gate Charge

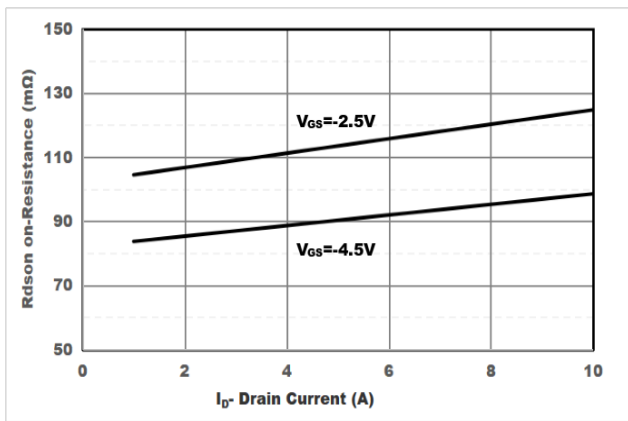


Figure5. Drain-Source on Resistance

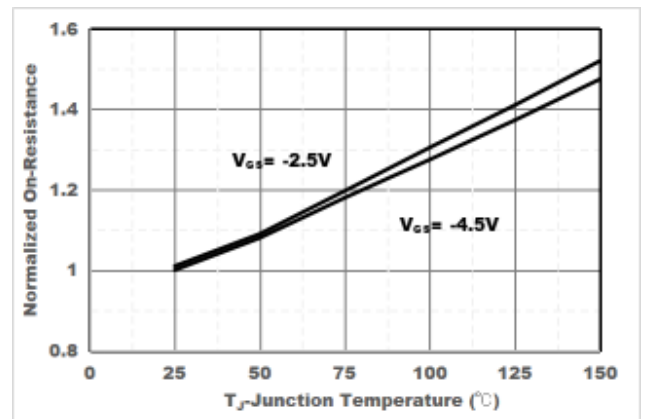
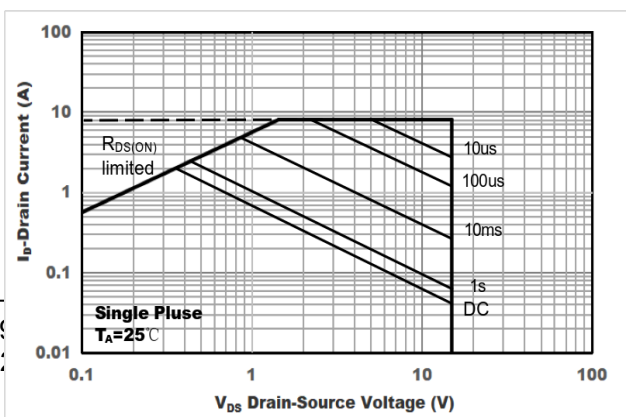


Figure6. Drain-Source on Resistance



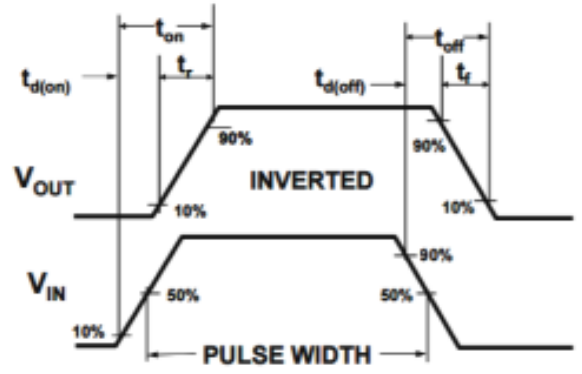
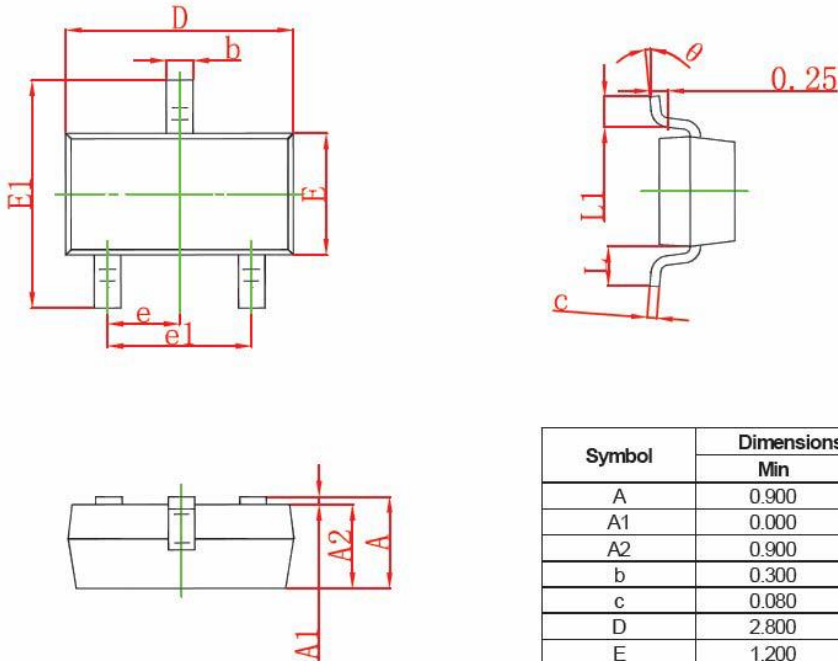


Figure7. Safe Operation Area

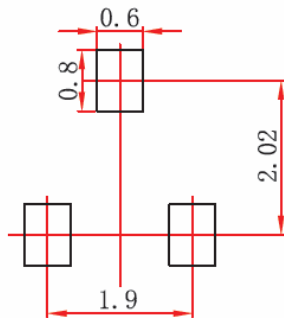
Figure8. Switching wave

■ SOT-23 Package information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP | | 0.037 TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF | | 0.022 REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

■ SOT-23 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.



YJL2301G

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