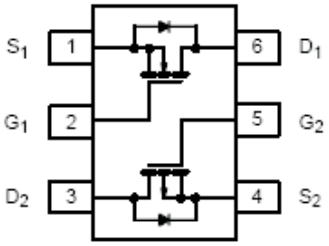
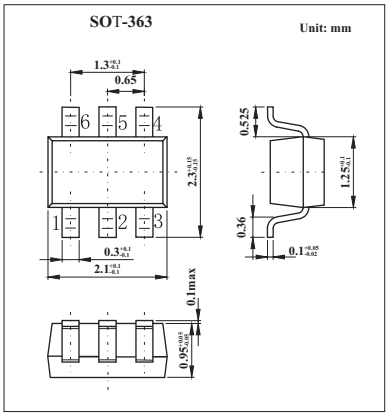
TY Semicondutor®

**Product specification**

# KI1553DL

■ PIN Configuration




■ Absolute Maximum Ratings $T_A$ = 25℃

| Parameter | Symbol | N-Channel | | P-Channel | | Unit |
|---|---|---|---|---|---|---|
| | | 5 secs | Steady State | 5 secs | Steady State | |
| Drain-Source Voltage | $V_{DS}$ | 20 | | -20 | | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | | | | V |
| Continuous Drain Current ($T_J$ = 150℃)* $T_A$ = 25℃ | $I_D$ | ±0.7 | ±0.66 | ±0.44 | ±0.41 | A |
| $T_A$ = 85℃ | | ±0.5 | ±0.48 | ±0.31 | ±0.3 | A |
| Pulsed Drain Current | $I_{DM}$ | ±1.0 | | | | A |
| Continuous Source Current (Diode Conduction)a | $I_S$ | 0.25 | 0.23 | -0.25 | -0.23 | A |
| Maximum Power Dissipation* $T_A$ = 25℃ | $P_D$ | 0.3 | 0.27 | 0.3 | 0.27 | W |
| $T_A$ = 85℃ | | 0.16 | 0.14 | 0.16 | 0.14 | W |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{stg}$ | -55 to 150 | | | | ℃ |

*Surface Mounted on 1" X 1" FR4 Board.

■ Thermal Resistance Ratings $T_A$ = 25℃

| Parameter | | Symbol | Typical | Maximum | Unit |
|---|---|---|---|---|---|
| Maximum Junction-to-Ambient* | t ≤5 sec | $R_{thJA}$ | 360 | 415 | ℃/W |
| | Steady State | | 400 | 460 | |
| Maximum Junction-to-Foot (Drain) | Steady State | $R_{thJF}$ | 300 | 350 | |

*Surface Mounted on 1" X 1" FR4 Board.

■ Electrical Characteristics $T_J$ = 25℃

| Parameter | Symbol | Testconditons | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | N-Ch | 0.6 | | | V |
| | | $V_{DS}$ = $V_{GS}$, $I_D$ = -250 μA | P-Ch | -0.6 | | | |
| Gate Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0 V $V_{GS}$ = ±12V | N-Ch | | | ±100 | nA |
| | | | P-Ch | | | ±100 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 16 V, $V_{GS}$ = 0 V | N-Ch | | | 1 | |
| | | $V_{DS}$ = -16 V, $V_{GS}$ = 0 V | P-Ch | | | -1 | |
| | | $V_{DS}$ = 16 V, $V_{GS}$ = 0 V, $T_J$ = 85℃ | N-Ch | | | 5 | μA |
| | | $V_{DS}$ = -16 V, $V_{GS}$ = 0 V, $T_J$ = 85℃ | P-Ch | | | -5 | |
| On State Drain Currenta | $I_{D(on)}$ | $V_{DS}$ ≥5 V, $V_{GS}$ = 4.5 V | N-Ch | 0.6 | | | A |
| | | $V_{DS}$ ≤-5 V, $V_{GS}$ = -4.5 V | P-Ch | -1.0 | | | |
| Drain Source On State Resistance* | $r_{DS(on)}$ | $V_{GS}$ = 4.5 V, $I_D$ = 0.66A | N-Ch | | 0.320 | 0.385 | Ω |
| | | $V_{GS}$ = -4.5 V, $I_D$ = -0.41A | P-Ch | | 0.850 | 0.995 | |
| | | $V_{GS}$ = 2.5 V, $I_D$ = 0.40A | N-Ch | | 0.560 | 0.630 | |
| | | $V_{GS}$ = -2.5 V, $I_D$ = -0.25A | P-Ch | | 1.4 | 1.800 | |
| Forward Transconductance* | $g_{fs}$ | $V_{DS}$ = 10 V, $I_D$ = 0.66A | N-Ch | | 1.5 | | mS |
| | | $V_{DS}$ = -10 V, $I_D$ = - 0.41A | P-Ch | | 0.8 | | |
| Diode Forward Voltage* | $V_{SD}$ | $I_S$ = 0.23A, $V_{GS}$ = 0 V | N-Ch | | 0.8 | 1.2 | V |
| | | $I_S$ = -0.23A, $V_{GS}$ = 0 V | P-Ch | | -0.8 | -1.2 | |
| Total Gate Charge | $Q_g$ | N-Channel | N-Ch | | 0.8 | 1.2 | pC |
| | | $V_{DS}$ = 10 V, $V_{GS}$ = 4.5 V, $I_D$ = 0.66A | P-Ch | | 1.2 | 1.8 | |
| Gate Source Charge | $Q_{gs}$ | | N-Ch | | 0.06 | | |
| | | P-Channel | P-Ch | | 0.45 | | |
| Gate Drain Charge | $Q_{gd}$ | $V_{DS}$ = -10 V, $V_{GS}$ = -4.5 V, $I_D$ =- 0.41A | N-Ch | | 0.30 | | |
| | | | P-Ch | | 0.25 | | |
| Turn On Time | $t_{d(on)}$ | N Channel | N-Ch | | 10 | 20 | ns |
| | | $V_{DD}$ = 10 V, $R_L$ = 20Ω | P-Ch | | 7.5 | 15 | |
| Rise Time | $t_r$ | $I_D$= 0.5 A, $V_{GEN}$ = 4.5V, $R_g$ = 6 Ω | N-Ch | | 16 | 30 | |
| | | | P-Ch | | 20 | 40 | |
| Turn Off Delay Time | $t_{d(off)}$ | P-Channel | N-Ch | | 10 | 20 | |
| | | $V_{DD}$ = -10 V, $R_L$ = 20Ω | P-Ch | | 8.5 | 17 | |
| Fall Time | $t_f$ | $I_D$= -0.5 A, $V_{GEN}$ = -4.5 V, $R_g$ = 6 Ω | N-Ch | | 10 | 20 | |
| | | | P-Ch | | 12 | 24 | |
| Source-Drain Reverse Recovery Time | $t_{rr}$ | $I_F$ = 0.23 A, $di/dt$ = 100 A/μs | N-Ch | | 20 | 40 | |
| | | $I_F$ = -0.23 A, $di/dt$ = 100 A/μs | P-Ch | | 25 | 40 | |

* Pulse test; pulse width ≤300μs, duty cycle≤2%.