

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$  |
|---------------|-----------------|--------|
| -30V          | 470mΩ@-10V      | -0.45A |
|               | 680mΩ@-4.5V     |        |

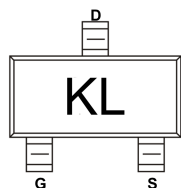
### Feature

- Trench Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge
- ESD Protected

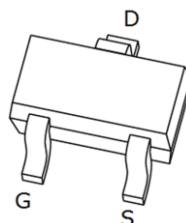
### Application

- Load Switch
- DC/DC Converter

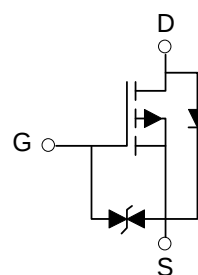
### MARKING:



SOT-323



Schematic diagram



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                |                          | Symbol          | Value     | Unit               |
|----------------------------------------------------------|--------------------------|-----------------|-----------|--------------------|
| Drain - Source Voltage                                   |                          | $V_{DS}$        | -30       | V                  |
| Gate - Source Voltage                                    |                          | $V_{GS}$        | ±12       | V                  |
| Continuous Drain Current <sup>1,5</sup>                  | $T_A = 25^\circ\text{C}$ | $I_D$           | -0.45     | A                  |
| Pulsed Drain Current <sup>2</sup>                        |                          | $I_{DM}$        | -1.8      | A                  |
| Power Dissipation <sup>4,5</sup>                         | $T_A = 25^\circ\text{C}$ | $P_D$           | 0.3       | W                  |
| Thermal Resistance from Junction to Ambient <sup>5</sup> |                          | $R_{\theta JA}$ | 416       | $^\circ\text{C/W}$ |
| Junction Temperature                                     |                          | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      |                          | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |

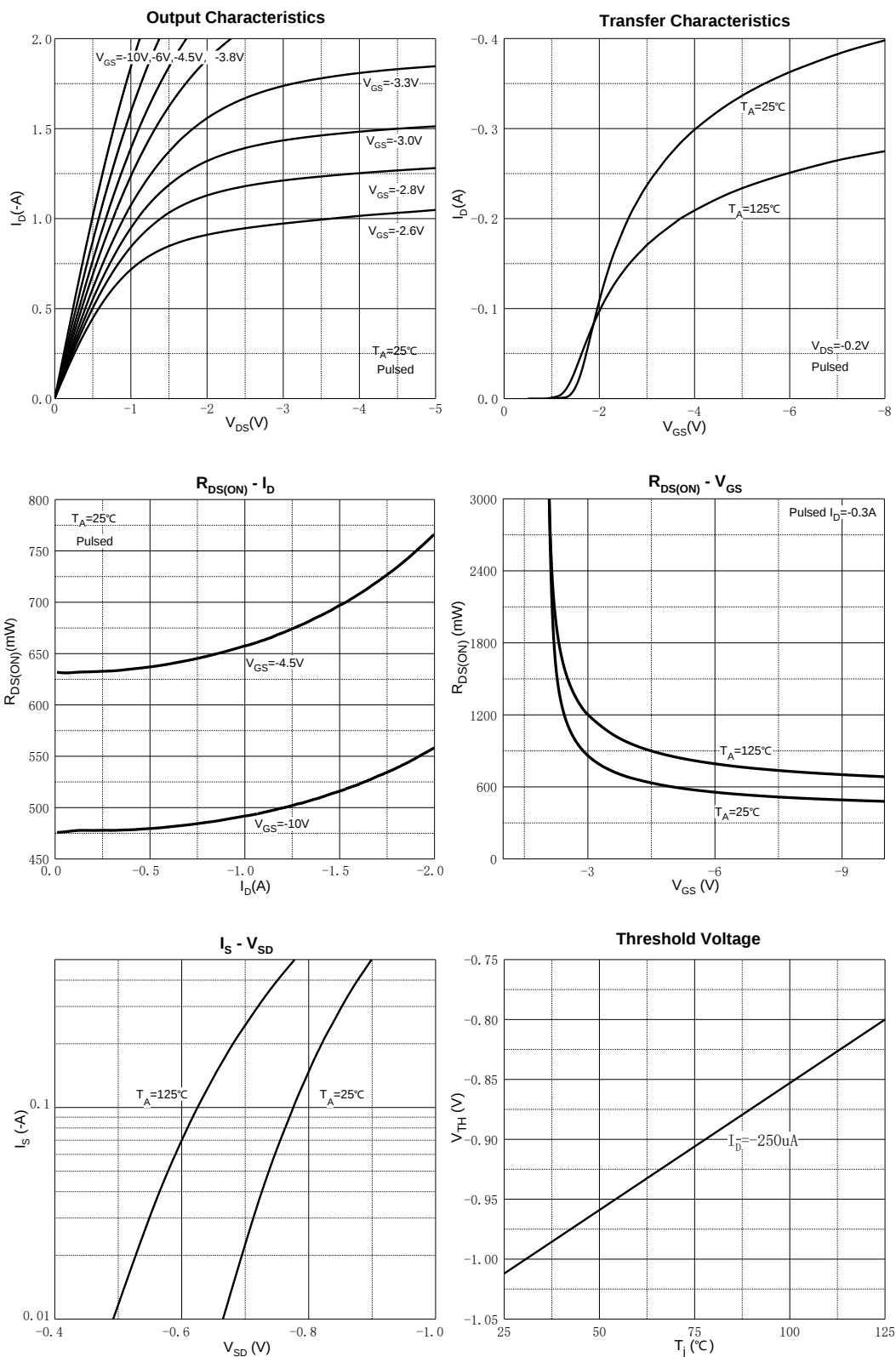
**MOSFET ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$  unless otherwise noted)**

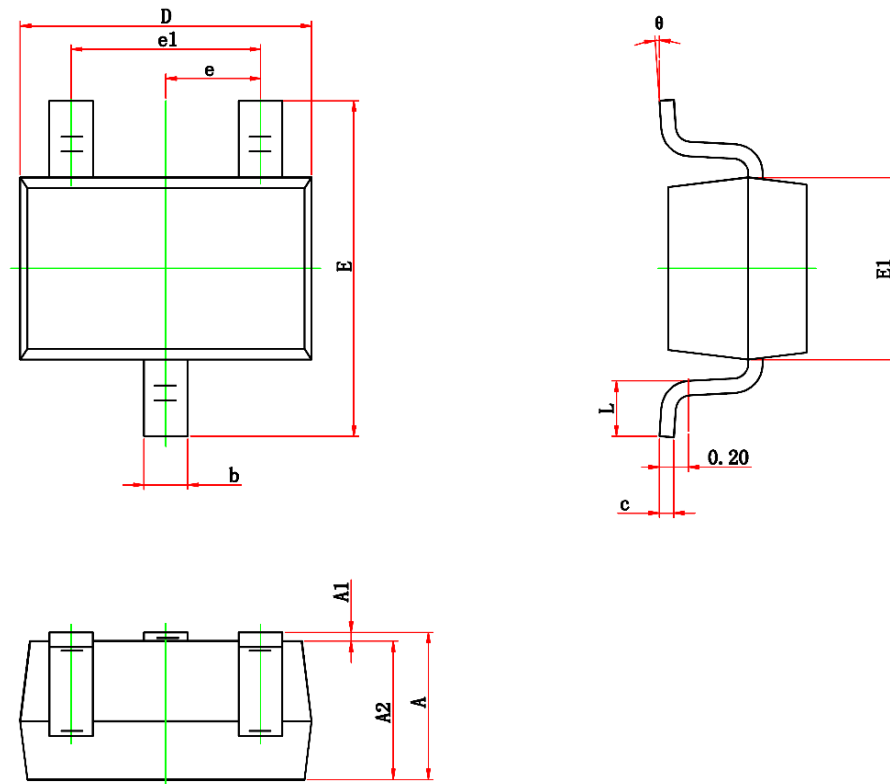
| Parameter                            | Symbol        | Test Condition                                                       | Min  | Type | Max      | Unit       |
|--------------------------------------|---------------|----------------------------------------------------------------------|------|------|----------|------------|
| Off Characteristics                  |               |                                                                      |      |      |          |            |
| Drain - Source Breakdown Voltage     | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                        | -30  |      |          | V          |
| Zero Gate Voltage Drain Current      | $I_{DSS}$     | $V_{DS} = -30V, V_{GS} = 0V$                                         |      |      | 1        | $\mu A$    |
| Gate - Body Leakage Current          | $I_{GSS}$     | $V_{GS} = \pm 10V, V_{DS} = 0V$                                      |      |      | $\pm 10$ | $\mu A$    |
| On Characteristics <sup>3</sup>      |               |                                                                      |      |      |          |            |
| Gate Threshold Voltage               | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                                    | -0.5 | -1   | -1.5     | V          |
| Drain-source On-resistance           | $R_{DS(on)}$  | $V_{GS} = -10V, I_D = -0.3A$                                         |      | 470  | 800      | m $\Omega$ |
|                                      |               | $V_{GS} = -4.5V, I_D = -0.3A$                                        |      | 680  | 900      |            |
| Dynamic Characteristics              |               |                                                                      |      |      |          |            |
| Input Capacitance                    | $C_{iss}$     | $V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$                               |      | 48.4 |          | pF         |
| Output Capacitance                   | $C_{oss}$     |                                                                      |      | 9.8  |          |            |
| Reverse Transfer Capacitance         | $C_{rss}$     |                                                                      |      | 5.2  |          |            |
| Gate Resistance                      | $R_g$         | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$                                 |      | 11.2 |          | $\Omega$   |
| Switching Characteristics            |               |                                                                      |      |      |          |            |
| Total Gate Charge                    | $Q_g$         | $V_{DS} = -15V, V_{GS} = -10V, I_D = -0.6A$                          |      | 1.94 |          | nC         |
| Gate-source Charge                   | $Q_{gs}$      |                                                                      |      | 0.65 |          |            |
| Gate-drain Charge                    | $Q_{gd}$      |                                                                      |      | 0.01 |          |            |
| Turn-on Delay Time                   | $t_{d(on)}$   | $V_{DD} = -15V, V_{GS} = -4.5V,$<br>$R_L = 47\Omega, R_G = 10\Omega$ |      | 6.5  |          | ns         |
| Turn-on Rise Time                    | $t_r$         |                                                                      |      | 6.5  |          |            |
| Turn-off Delay Ttime                 | $t_{d(off)}$  |                                                                      |      | 18.2 |          |            |
| Turn-off Fall Time                   | $t_f$         |                                                                      |      | 5.5  |          |            |
| Source - Drain Diode Characteristics |               |                                                                      |      |      |          |            |
| Diode Forward Voltage <sup>3</sup>   | $V_{SD}$      | $V_{GS} = 0V, I_S = -0.3A$                                           |      |      | -1.2     | V          |

Notes :

- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- 4.The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ\text{C}$ .
- 5.Device mounted on  $1in^2$  FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ .

## Typical Characteristics



**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        | 0.200                     | 0.400 | 0.008                | 0.016 |
| c        | 0.050                     | 0.150 | 0.002                | 0.006 |
| D        | 1.900                     | 2.200 | 0.075                | 0.087 |
| E        | 2.000                     | 2.450 | 0.079                | 0.096 |
| E1       | 1.150                     | 1.350 | 0.045                | 0.053 |
| e        | 0.650TYP.                 |       | 0.026TYP.            |       |
| e1       | 1.200                     | 1.400 | 0.047                | 0.055 |
| L        | 0.200                     | 0.460 | 0.008                | 0.018 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |