

### General Description

The HSST3018 is the high cell density trenched N-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

The HSST3018 meets the RoHS and Green Product requirement with full function reliability approved.

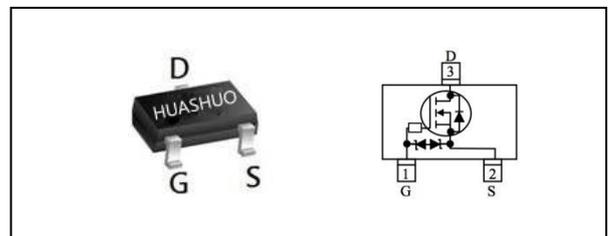
### Features

- Fast Switching Speed
- Super Low Gate Charge
- High-Side Switching
- Low Threshold
- ESD Protected up to 2KV

### Product Summary

|                  |     |            |
|------------------|-----|------------|
| $V_{DS}$         | 30  | V          |
| $R_{DS(ON),Max}$ | 600 | m $\Omega$ |
| $I_D$            | 0.5 | A          |

### SOT-523 Pin Configuration



### Absolute Maximum Ratings

| Symbol               | Parameter                                   | Rating     | Units      |
|----------------------|---|------------|------------|
| $V_{DS}$             | Drain-Source Voltage                        | 30         | V          |
| $V_{GS}$             | Gate-Source Voltage                         | $\pm 10$   | V          |
| $I_D@T_A=25^\circ C$ | Continuous Drain Current, $V_{GS} @ 4.5V^1$ | 0.5        | A          |
| $I_D@T_A=70^\circ C$ | Continuous Drain Current, $V_{GS} @ 4.5V^1$ | 0.4        | A          |
| $I_{DM}$             | Pulsed Drain Current <sup>2</sup>           | 4          | A          |
| $P_D@T_A=25^\circ C$ | Total Power Dissipation <sup>3</sup>        | 0.25       | W          |
| $T_{STG}$            | Storage Temperature Range                   | -55 to 150 | $^\circ C$ |
| $T_J$                | Operating Junction Temperature Range        | -55 to 150 | $^\circ C$ |

### Thermal Data

| Symbol          | Parameter  | Typ. | Max. | Unit         |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient <sup>1</sup> | ---  | 500  | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case <sup>1</sup>    | ---  | 300  | $^\circ C/W$ |



**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

| Symbol              | Parameter                                      | Conditions  | Min. | Typ. | Max. | Unit |
|---------------------|--|---|------|------|------|------|
| BV <sub>DSS</sub>   | Drain-Source Breakdown Voltage                 | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA  | 30   | ---  | ---  | V    |
| R <sub>DS(ON)</sub> | Static Drain-Source On-Resistance <sup>2</sup> | V <sub>GS</sub> =4.5V, I <sub>D</sub> =300mA  | ---  | 440  | 600  | mΩ   |
|                     |  | V <sub>GS</sub> =2.5V, I <sub>D</sub> =200mA  | ---  | 540  | 900  |      |
| V <sub>GS(th)</sub> | Gate Threshold Voltage                         | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA                                  | 0.5  | 0.7  | 1.2  | V    |
| I <sub>DSS</sub>    | Drain-Source Leakage Current                   | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C                           | ---  | ---  | 1    | uA   |
|                     |  | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C                           | ---  | ---  | 5    |      |
| I <sub>GSS</sub>    | Gate-Source Leakage Current                    | V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V  | ---  | ---  | ±10  | uA   |
| Q <sub>g</sub>      | Total Gate Charge (4.5V)                       | V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =300mA                        | ---  | 2    | ---  | nC   |
| Q <sub>gs</sub>     | Gate-Source Charge                             |   | ---  | 0.5  | ---  |      |
| Q <sub>gd</sub>     | Gate-Drain Charge                              |   | ---  | 0.8  | ---  |      |
| T <sub>d(on)</sub>  | Turn-On Delay Time                             | V <sub>DD</sub> =15V, V <sub>GS</sub> =4.5V, R <sub>G</sub> =10Ω<br>I <sub>D</sub> =300mA | ---  | 7    | ---  | ns   |
| T <sub>r</sub>      | Rise Time                                      |   | ---  | 19   | ---  |      |
| T <sub>d(off)</sub> | Turn-Off Delay Time                            |   | ---  | 7    | ---  |      |
| T <sub>f</sub>      | Fall Time                                      |   | ---  | 11   | ---  |      |
| C <sub>iss</sub>    | Input Capacitance                              | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz   | ---  | 31   | ---  | pF   |
| C <sub>oss</sub>    | Output Capacitance                             |   | ---  | 7    | ---  |      |
| C <sub>rss</sub>    | Reverse Transfer Capacitance                   |   | ---  | 4    | ---  |      |

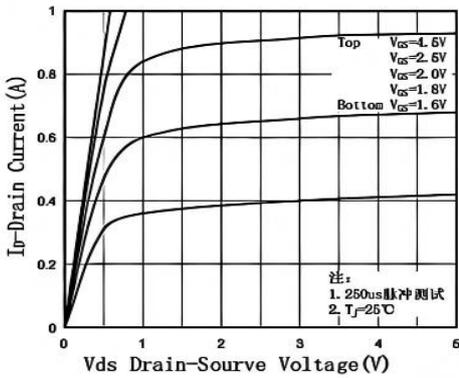
**Diode Characteristics**

| Symbol          | Parameter                                | Conditions  | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I <sub>S</sub>  | Continuous Source Current <sup>1,4</sup> | V <sub>G</sub> =V <sub>D</sub> =0V, Force Current             | ---  | ---  | 0.5  | A    |
| V <sub>SD</sub> | Diode Forward Voltage <sup>2</sup>       | V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C | ---  | ---  | 1.2  | V    |

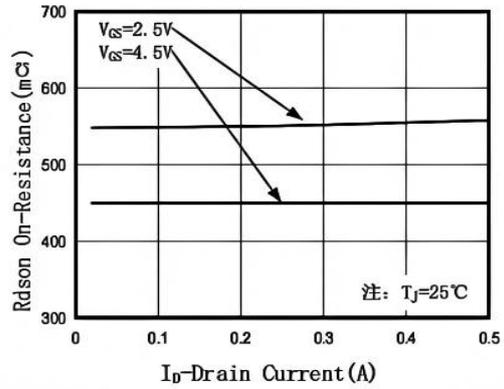
Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.

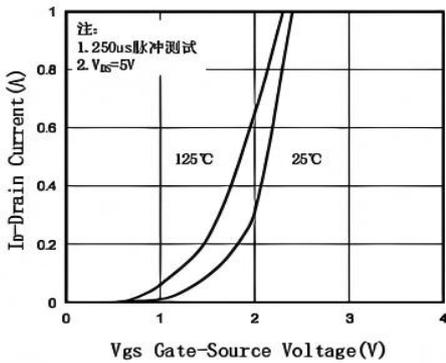
### Typical Characteristics



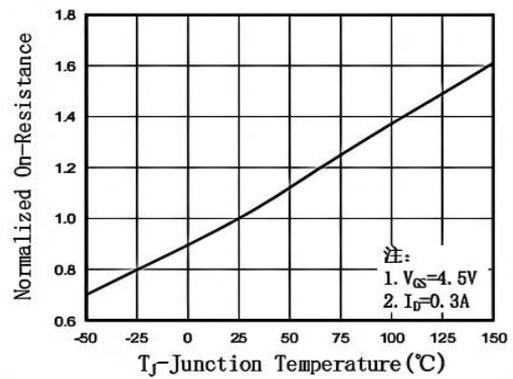
**Fig.1 Output Characteristic**



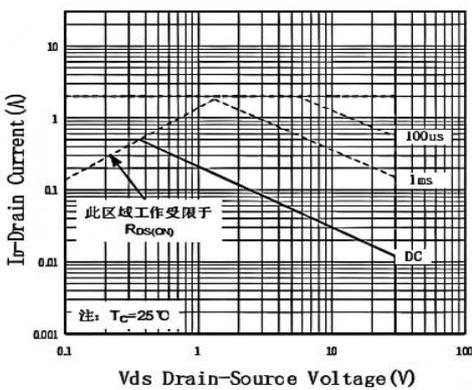
**Fig.2 On-Resistance vs. Drain Current**



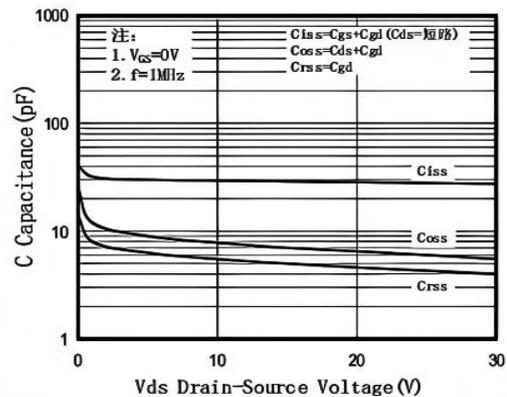
**Fig.3 Transfer Characteristic**



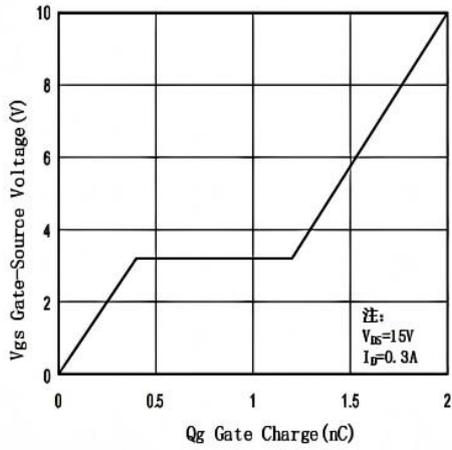
**Fig.4 On-Resistance vs. Junction Temperature**



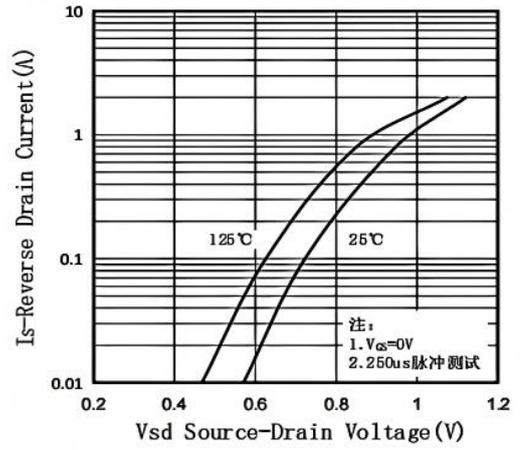
**Fig.5 Safe Operation Area**



**Fig.6 Capacitance Characteristic**



**Fig.7 Gate-Charge Characteristic**



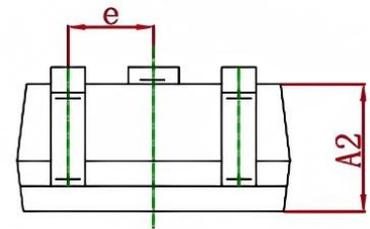
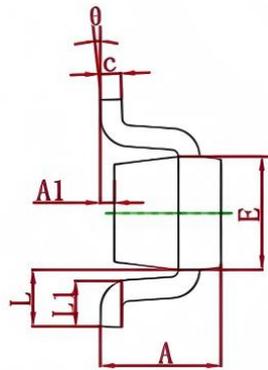
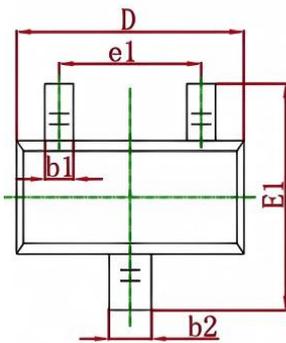
**Fig.8 Body Diode Characteristic**



## Ordering Information

|             |              |                |
|-------------|--------------|----------------|
| Part Number | Package code | Packaging      |
| HSST3018    | SOT-523      | 3000/Tape&Reel |

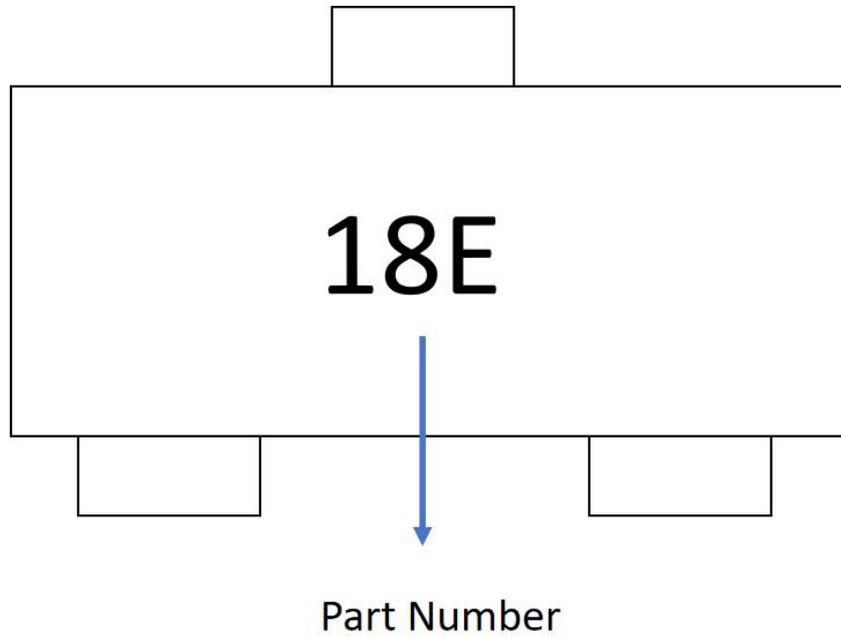
### SOT-523 Package Outline

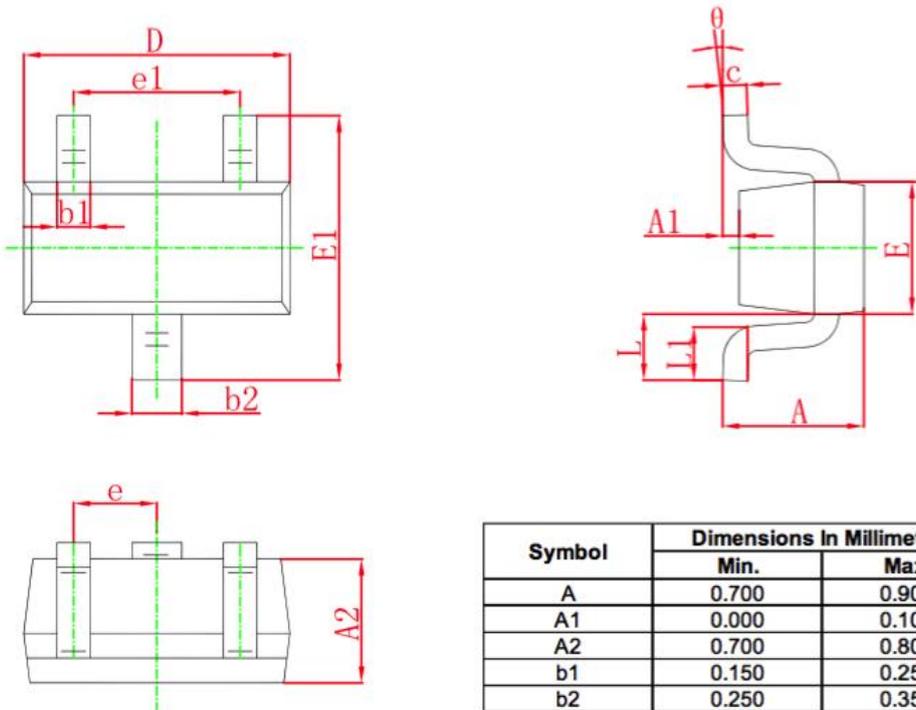


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| C      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |



## HSST3018 TOP Marking





| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.700                     | 0.900 | 0.028                | 0.035 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.700                     | 0.800 | 0.028                | 0.031 |
| b1     | 0.150                     | 0.250 | 0.006                | 0.010 |
| b2     | 0.250                     | 0.350 | 0.010                | 0.014 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 0.700                     | 0.900 | 0.028                | 0.035 |
| E1     | 1.450                     | 1.750 | 0.057                | 0.069 |
| e      | 0.500 TYP.                |       | 0.020 TYP.           |       |
| e1     | 0.900                     | 1.100 | 0.035                | 0.043 |
| L      | 0.400 REF.                |       | 0.016 REF.           |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |