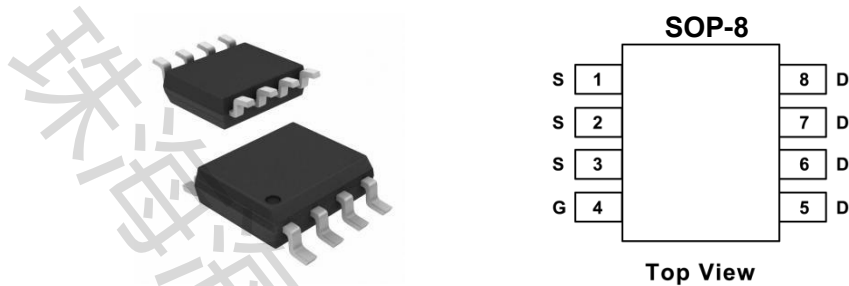


## FDS6675BZ-HX P-Channel 30-V (D-S) MOSFET

| PRODUCT SUMMARY     |                                     |                       |                                 |
|---------------------|-------------------------------------|-----------------------|---------------------------------|
| V <sub>DS</sub> (V) | R <sub>DS(on)</sub> (Ω)             | Q <sub>g</sub> (Typ.) | I <sub>D</sub> (A) <sup>d</sup> |
| -30                 | 0.0125 at V <sub>GS</sub> = - 10 V  | 22nC                  | - 11.6                          |
|                     | 0.0180 at V <sub>GS</sub> = - 4.5 V |                       | - 10                            |



## FEATURES

- TrenchFET® Power MOSFET
- 100 % R<sub>g</sub> Tested

## APPLICATIONS

- Load Switches
  - Notebook PCs
  - Desktop PCs

| MAXIMUM RATINGS (TA = 25 ° C unless otherwise noted) |  |                   |      |
|--|--|-------------------|------|
| Symbol   | Parameter  | Ratings           | Unit |
| V <sub>DS</sub>                                      | Drain to Source Voltage  | -30               | V    |
| V <sub>GS</sub>                                      | Gate to Source Voltage   | ±25               | V    |
| I <sub>D</sub>                                       | Drain Current <ul style="list-style-type: none"> <li>- Continuous</li> <li>- Pulsed</li> </ul> | - 11<br>-55       | A    |
| P <sub>D</sub>                                       | Power Dissipation for Single Operation   | 2.5<br>1.2<br>1.0 | W    |
| T <sub>J</sub> , T <sub>STG</sub>                    | Operating and Storage Junction Temperature Range   | -55 to +150       | ° C  |

| THERMAL CHARACTERISTICS |   |         |       |
|-------------------------|---|---------|-------|
| Symbol                  | Parameter                               | Ratings | Unit  |
| R <sub>θJC</sub>        | Thermal Resistance, Junction to Case    | 25      | ° C/W |
| R <sub>θJA</sub>        | Thermal Resistance, Junction to Ambient | 50      |       |

| ELECTRICAL CHARACTERISTICS (TA= 25°C) |  |   |     |      |       |       |
|---------------------------------------|--|---|-----|------|-------|-------|
| Symbol                                | Parameter  | Conditions                              | Min | Typ  | Max   | Unit  |
| OFF CHARACTERISTICS                   |  |   |     |      |       |       |
| BVDSS                                 | Drain to Source Breakdown Voltage                        | ID = -250 μ A, VGS = 0 V                | -30 |      |       | V     |
| ΔBVDSS<br>ΔTJ                         | Breakdown Voltage Temperature Coefficient                | ID = -250 μ A, referenced to 25°C       |     | -20  |       | mV/°C |
| IDSS                                  | Zero Gate Voltage Drain Current                          | VDS = -24 V, VGS = 0 V                  |     |      | - 1   | μ A   |
| IGSS                                  | Gate to Source Leakage Current                           | VGS = ±25 V, VDS = 0 V                  |     |      | ± 10  | μ A   |
| ON CHARACTERISTICS                    |  |   |     |      |       |       |
| VGS(th)                               | Gate to Source Threshold Voltage                         | VGS = VDS , ID = -250 μ A               | - 1 | -2   | -3    | V     |
| ΔVGS(th)<br>ΔTJ                       | Gate to Source Threshold Voltage Temperature Coefficient | ID = -250 μ A, referenced to 25°C       |     | 15.7 |       | mV/°C |
| RDS(on)                               | Static Drain to Source On Resistance                     | VGS = -10 V, ID = - 11 A                |     | 10.8 | 13.0  | mQ    |
|                                       |  | VGS = -4.5 V, ID = -9 A                 |     | 17.4 | 21.8  |       |
|                                       |  | VGS = -10 V, ID = -11 A, TJ = 125°C     |     | 15.0 | 18.8  |       |
| gFS                                   | Forward Transconductance                                 | VDS = -5 V, ID = - 11 A                 |     | 34   |       | S     |
| DYNAMIC CHARACTERISTICS               |  |   |     |      |       |       |
| Ciss                                  | Input Capacitance  | VDS = -15 V, VGS = 0 V, f = 1 MHz       |     | 1855 | 2470  | pF    |
| Coss                                  | Output Capacitance                                       |   |     | 335  | 450   | pF    |
| Crss                                  | Reverse Transfer Capacitance                             |   |     | 330  | 500   | pF    |
| SWITCHING CHARACTERISTICS             |  |   |     |      |       |       |
| td(on)                                | Turn-On Delay Time                                       | VDD = - 15 V,                           |     | 3.0  | 10    | ns    |
| tr                                    | Rise Time  | ID = - 11 A,                            |     | 7.8  | 16    | ns    |
| td(off)                               | Turn-Off Delay Time                                      | VGS = - 10 V,                           |     | 120  | 200   | ns    |
| tf                                    | Fall Time  | RGS = 6 Q                               |     | 60   | 100   | ns    |
| Qg                                    | Total Gate Charge  | VDS = - 15 V, VGS = - 10 V, ID = - 11 A |     | 44   | 62    | nC    |
| Qg                                    | Total Gate Charge  | VDS = - 15 V,                           |     | 25   | 35    | nC    |
| Qgs                                   | Gate to Source Charge                                    | VGS = -5 V, ID = - 11 A                 |     | 7.2  |       | nC    |
| Qgd                                   | Gate to Drain "Miller" Charge                            |   |     | 11.4 |       | nC    |
| DRAIN-SOURCE DIODE CHARACTERISTICS    |  |   |     |      |       |       |
| VSD                                   | Source to Drain Diode Forward Voltage                    | VGS = 0V, IS = -2.1 A                   |     | -0.7 | - 1.2 | V     |
| trr                                   | Reverse Recovery Time                                    | IF = -11 A, di/dt = 100 A/ μ s          |     |      | 42    | ns    |
| Qrr                                   | Reverse Recovery Charge                                  | IF = -11 A, di/dt = 100 A/ μ s          |     |      | 30    | nC    |

**Notes:**

- a. RQJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. RQJC is guaranteed by design while RQCA is determined by the user's board design.
- b. Pulse Test: Pulse Width < 300s, Duty cycle < 2.0%.
- c. The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.

## TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

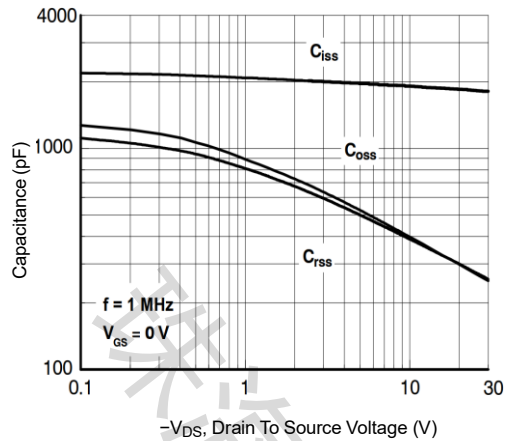


Fig 1. Capacitance vs Drain to Source Voltage

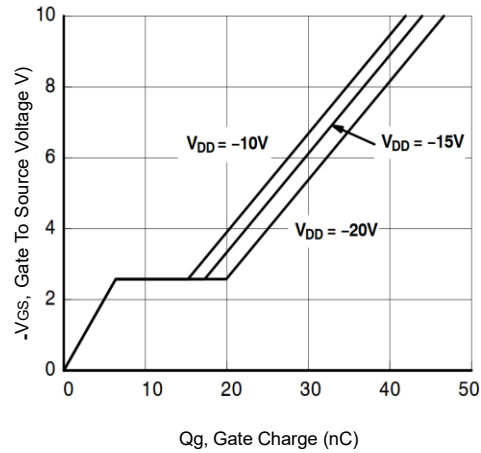


Fig 2. Gate Charge Characteristics

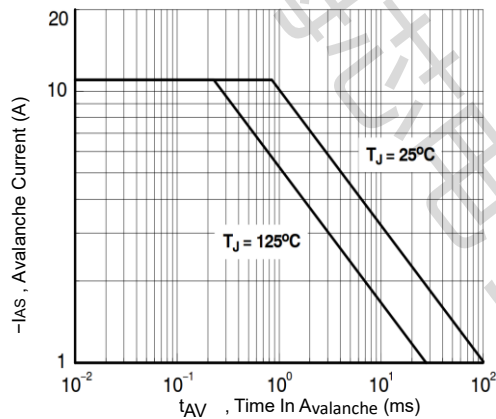


Fig 3. Unclamped Inductive Switching Capability

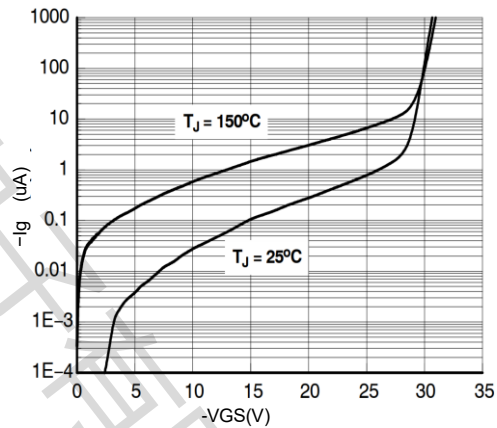


Fig 4. IGVS VGS

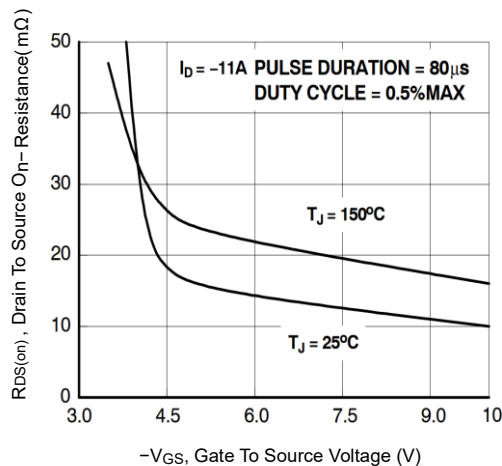


Fig 5. On-Resistance vs Gate to Source Voltage

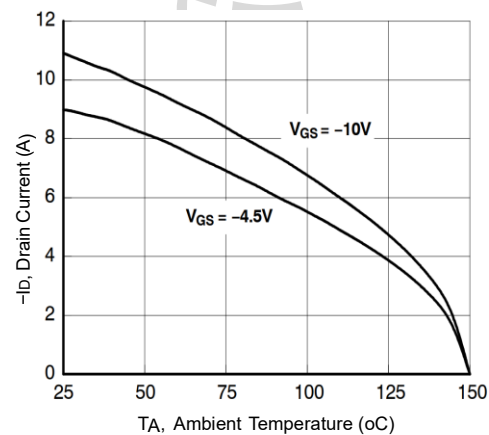
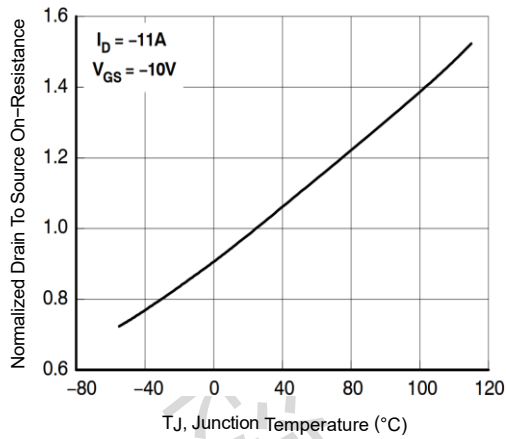
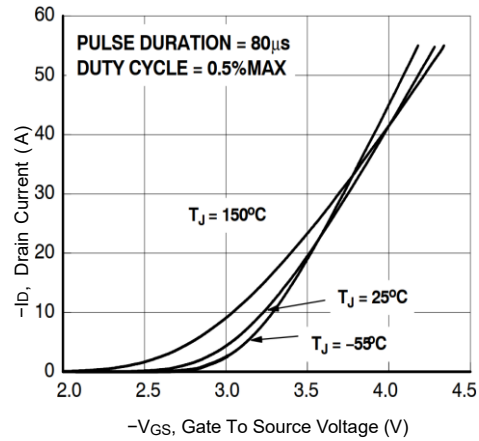


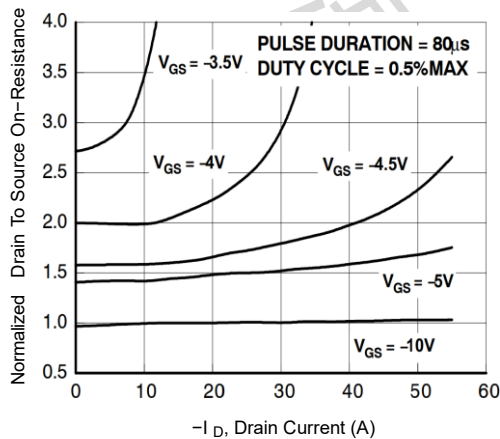
Fig 6. Maximum Continuous Drain Current vs Ambient Temperature



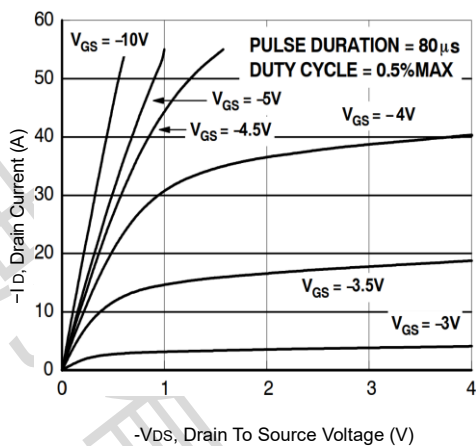
**Fig 7. Normalized On-Resistance  
vs Junction Temperature**



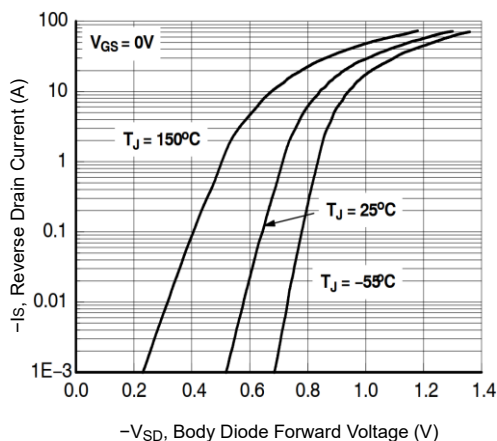
**Fig 8. Transfer Characteristics**



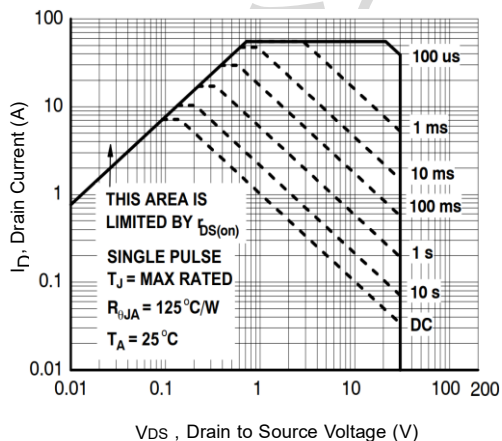
**Fig 9. Normalized On-Resistance  
vs Drain Current and Gate Voltage**



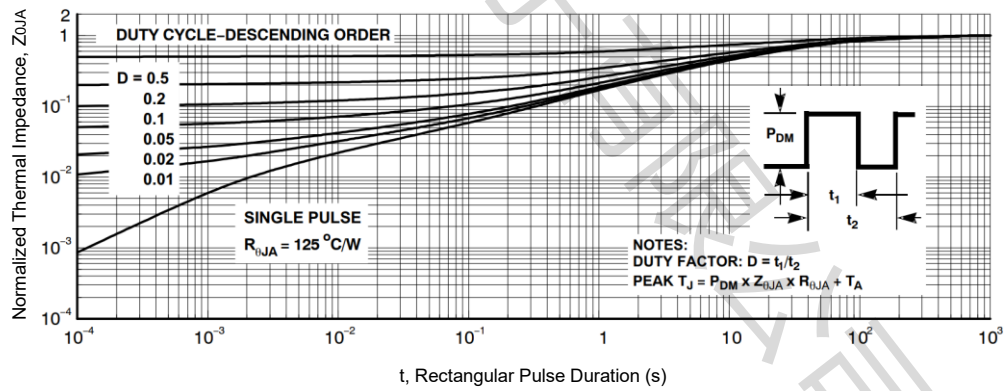
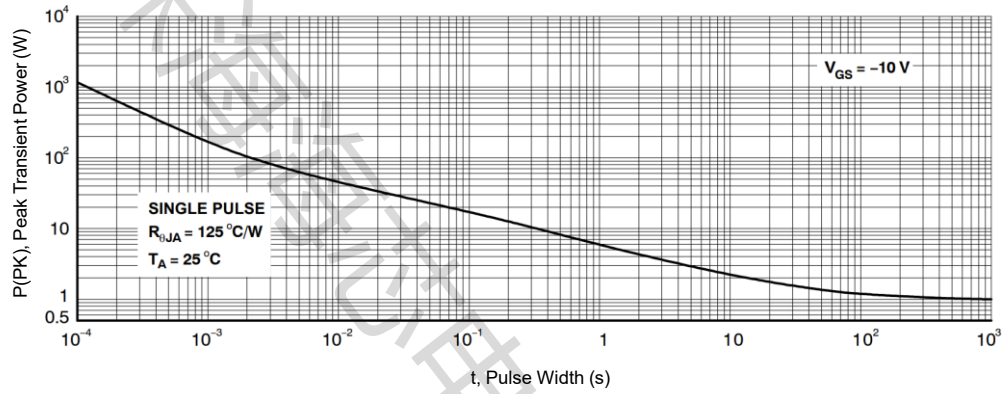
**Fig 10. On-Region Characteristics**



**Fig 11. Source to Drain Diode Forward  
Voltage vs Source Current**

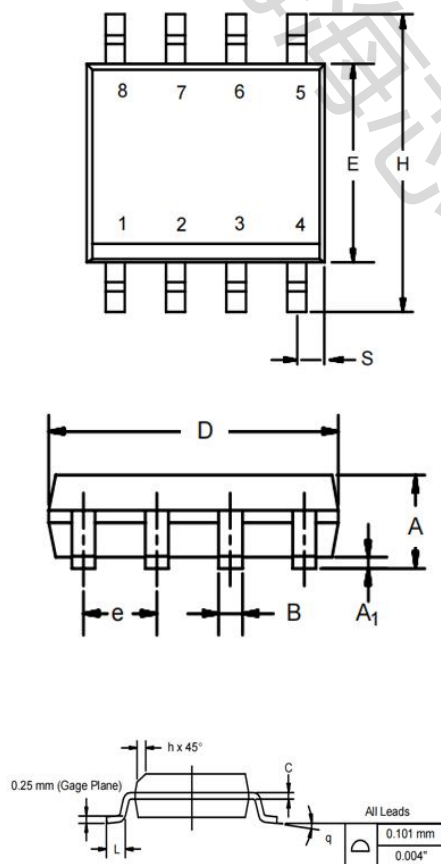


**Fig 12. Forward Bias Safe Operating Area**



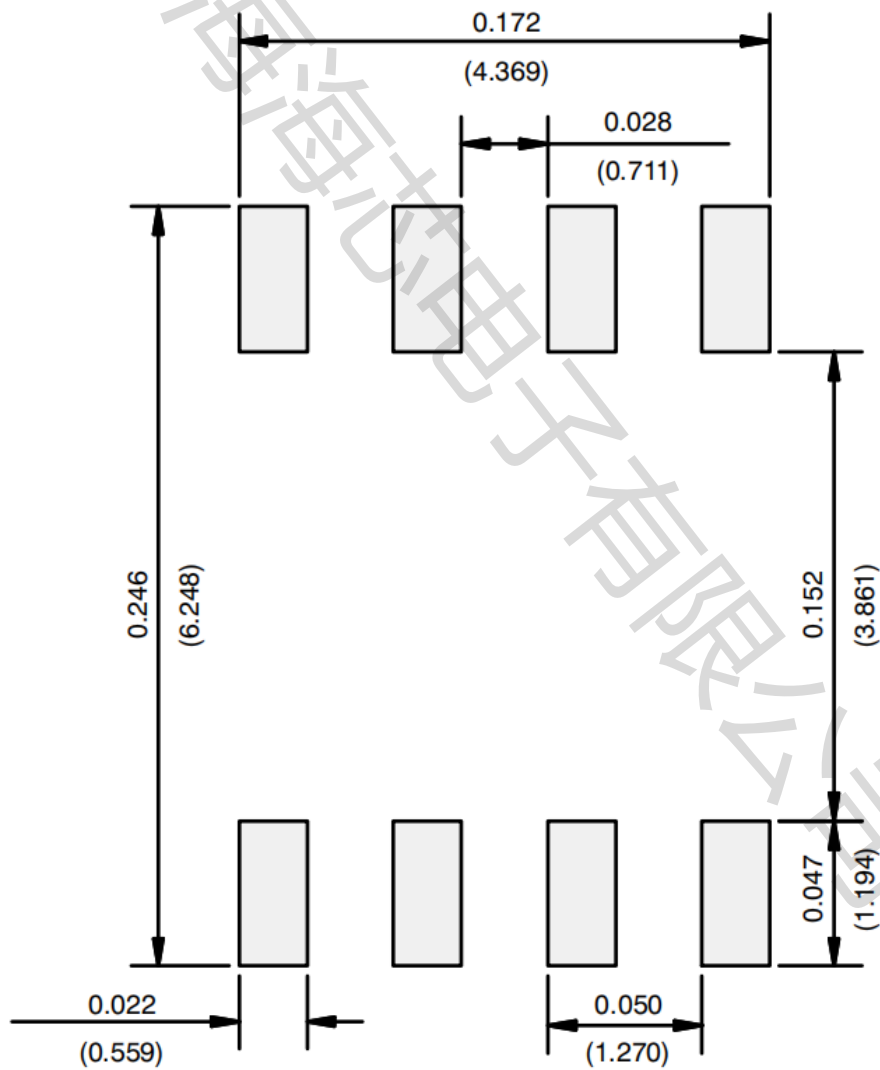
## SOP-8 Package Outline

Dimensions are shown in millimeters (inches)



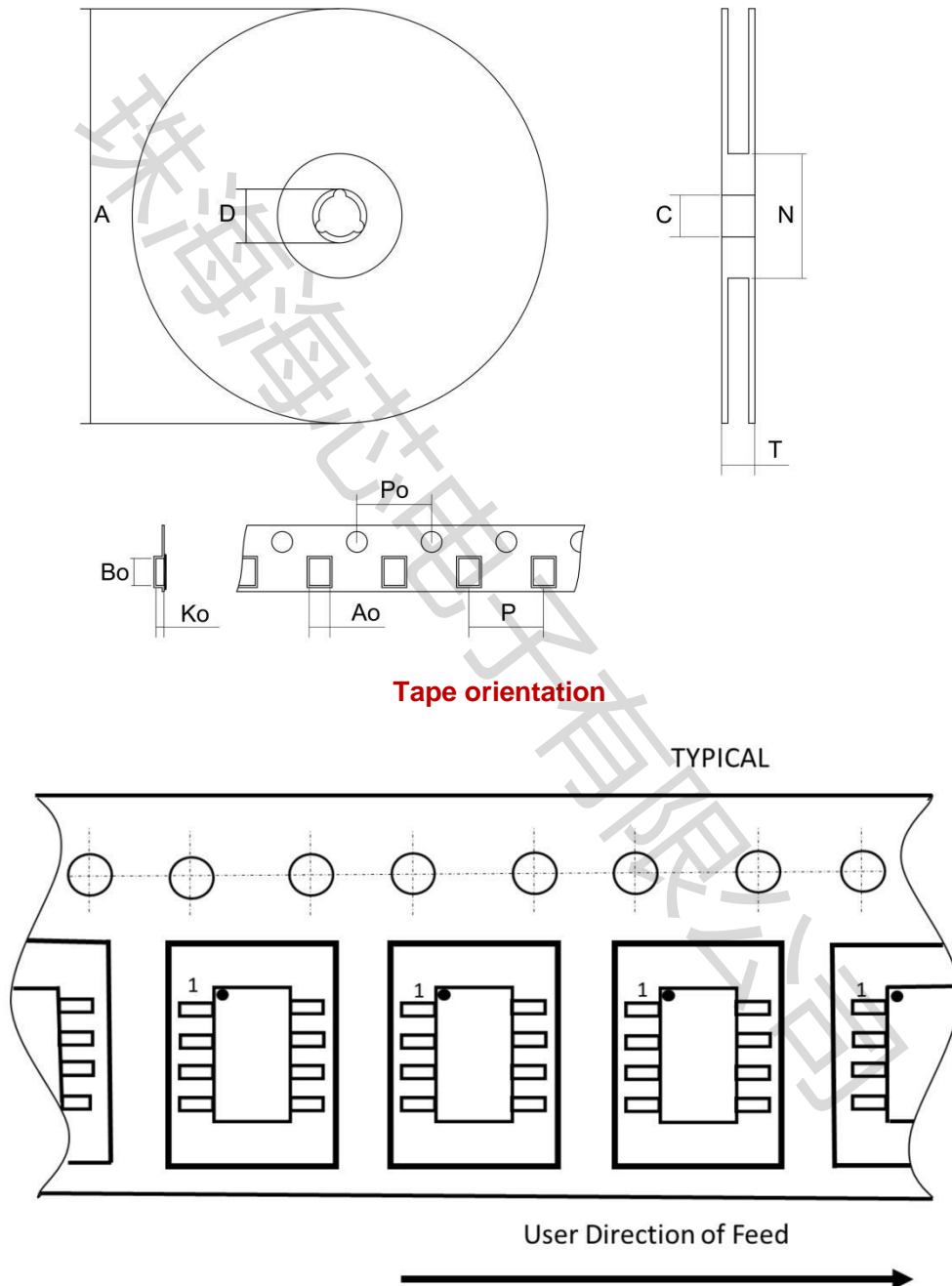
| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | Min         | Max  | Min       | Max   |
| A   | 1.35        | 1.75 | 0.053     | 0.069 |
| A1  | 0.10        | 0.20 | 0.004     | 0.008 |
| B   | 0.35        | 0.51 | 0.014     | 0.020 |
| C   | 0.19        | 0.25 | 0.0075    | 0.010 |
| D   | 4.80        | 5.00 | 0.189     | 0.196 |
| E   | 3.80        | 4.00 | 0.150     | 0.157 |
| e   | 1.27 BSC    |      | 0.050 BSC |       |
| H   | 5.80        | 6.20 | 0.228     | 0.244 |
| h   | 0.25        | 0.50 | 0.010     | 0.020 |
| L   | 0.50        | 0.93 | 0.020     | 0.037 |
| q   | 0°          | 8°   | 0°        | 8°    |
| S   | 0.44        | 0.64 | 0.018     | 0.026 |

**RECOMMENDED MINIMUM PADS FOR SOP-8**



## SOP-8 packing information

### SOP-8 tape and reel





## Disclaimer

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