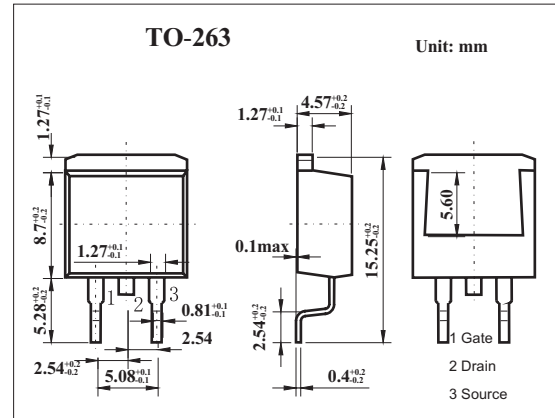
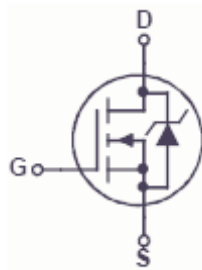


## 150V N-Channel PowerTrench MOSFET

### KDB2570(FDB2570)

#### ■ Features

- 22 A, 150 V.  $R_{DS(ON)} = 80 \text{ m}\Omega @ V_{GS} = 10 \text{ V}$   
 $R_{DS(ON)} = 90 \text{ m}\Omega @ V_{GS} = 6 \text{ V}$
- Low gate charge
- Fast switching speed
- High performance trench technology for extremely low  $R_{DS(ON)}$



#### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter                              | Symbol          | Rating      | Unit                      |
|--|-----------------|-------------|---------------------------|
| Drain to source voltage                | $V_{DS}$        | 150         | V                         |
| Gate to source voltage                 | $V_{GS}$        | $\pm 20$    | V                         |
| Drain current-Continuous               | $I_D$           | 22          | A                         |
| Drain current-Pulsed                   | $I_{DP}$        | 50          | A                         |
| Power dissipation                      | $P_D$           | 93          | W                         |
| Derate above $25^\circ\text{C}$        |                 | 0.63        | W/ $^\circ\text{C}$       |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 62.5        | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case   | $R_{\theta JC}$ | 1.6         | $^\circ\text{C}/\text{W}$ |
| Channel temperature                    | $T_{ch}$        | 175         | $^\circ\text{C}$          |
| Storage temperature                    | $T_{stg}$       | -55 to +175 | $^\circ\text{C}$          |

**KDB2570(FDB2570)**

## ■ Electrical Characteristics Ta = 25°C

| Parameter   | Symbol              | Testconditions   | Min | Typ  | Max  | Unit |
|---|---------------------|--|-----|------|------|------|
| Drain to source breakdown voltage                     | V <sub>DSS</sub>    | I <sub>D</sub> =250μA, V <sub>GS</sub> =0V   | 150 |      |      | V    |
| Drain cut-off current                                 | I <sub>DSS</sub>    | V <sub>DS</sub> =120V, V <sub>GS</sub> =0  |     |      | 1    | μA   |
| Gate leakage current                                  | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V  |     |      | ±100 | nA   |
| Gate threshold voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                       | 2.0 | 2.6  | 4.0  | V    |
| Drain to source on-state resistance                   | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =11A  |     | 61   | 80   | mΩ   |
|   |                     | V <sub>GS</sub> =6V, I <sub>D</sub> =10A   |     | 63   | 90   |      |
|   |                     | V <sub>GS</sub> =10V, I <sub>D</sub> =11A, T <sub>C</sub> =125°C                                 |     | 127  | 175  |      |
| On-State Drain Current                                | I <sub>D(on)</sub>  | V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 10 V   | 25  |      |      | A    |
| Forward Transconductance                              | g <sub>FS</sub>     | V <sub>DS</sub> = 10 V, I <sub>D</sub> = 11 A  |     | 39   |      | S    |
| Input capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> =75V, V <sub>GS</sub> =0, f=1MHZ   |     | 1911 |      | pF   |
| Output capacitance                                    | C <sub>oss</sub>    |  |     | 106  |      | pF   |
| Reverse transfer capacitance                          | C <sub>rss</sub>    |  |     | 33   |      | pF   |
| Total Gate Charge                                     | Q <sub>g</sub>      | V <sub>DS</sub> = 75 V, I <sub>D</sub> = 11 A, V <sub>GS</sub> = 10 V*                           |     | 40   | 56   | nC   |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |  |     | 7    |      | nC   |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |  |     | 12   |      | nC   |
| Turn-On Delay Time                                    | t <sub>d(ON)</sub>  | V <sub>DD</sub> = 75 V, I <sub>D</sub> = 1 A,<br>V <sub>GS</sub> = 10 V, R <sub>GEN</sub> = 6 Ω* |     | 12   | 22   | ns   |
| Rise Time   | t <sub>r</sub>      |  |     | 5    | 10   | ns   |
| Turn-Off Delay Time                                   | t <sub>d(OFF)</sub> |  |     | 33   | 53   | ns   |
| Fall Time   | t <sub>f</sub>      |  |     | 23   | 37   | ns   |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      |  |     |      | 22   | A    |
| Source to Drain Diode Voltage                         | V <sub>SD</sub>     | V <sub>GS</sub> = 0 V, I <sub>S</sub> = 11 A *   |     | 0.83 | 1.3  | V    |

\* Pulse Test: Pulse Width &lt; 300μs, Duty Cycle &lt; 2.0%