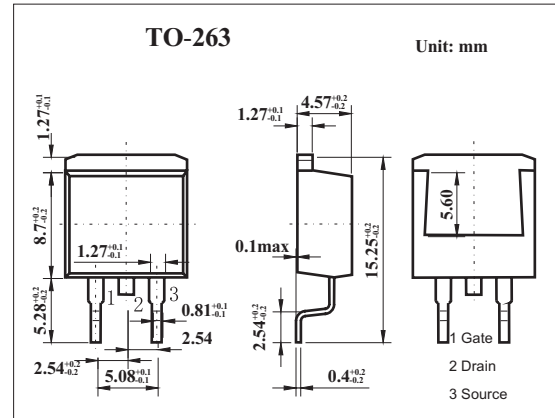
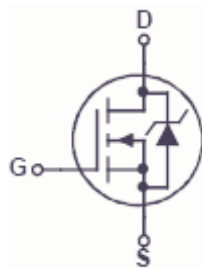


## N-Channel PowerTrench MOSFET

### KDB3632(FDB3632)

#### ■ Features

- $r_{DS(ON)} = 7.5m\ \Omega$  (Typ.),  $V_{GS} = 10V$ ,  $I_D = 80A$
- $Q_{g(tot)} = 84nC$  (Typ.),  $V_{GS} = 10V$
- Low Miller Charge
- Low QRR Body Diode
- UIS Capability (Single Pulse and Repetitive Pulse)



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

| Parameter                              | Symbol          | Rating                    | Unit         |
|--|-----------------|---------------------------|--------------|
| Drain to source voltage                | $V_{DSS}$       | 100                       | V            |
| Gate to source voltage                 | $V_{GSS}$       | $\pm 20$                  | V            |
| Drain current-Continuous               | $I_D$           | $T_c < 111^\circ C$       | 80           |
|  |                 | $T_A = 25^\circ C$        | 12           |
| Power dissipation                      | $P_D$           | 310                       | W            |
|  |                 | Derate above $25^\circ C$ | 2.07         |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 43                        | $^\circ C/W$ |
| Thermal Resistance, Junction-to-Case   | $R_{\theta JC}$ | 0.48                      | $^\circ C/W$ |
| Channel temperature                    | $T_{ch}$        | 175                       | $^\circ C$   |
| Storage temperature                    | $T_{stg}$       | -55 to +175               | $^\circ C$   |

**KDB3632(FDB3632)**

## ■ 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  | 100                  |        |       | V    |
| Drain cut-off current               | I <sub>DSS</sub>    | V <sub>Ds</sub> =80V, V <sub>GS</sub> =0  |                      |        | 1     | μA   |
|                                     |                     | V <sub>Ds</sub> =80V, V <sub>GS</sub> =0, T <sub>c</sub> =150°C                                   |                      |        | 250   | 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                  |        | 4.0   | V    |
| Drain to source on-state resistance | R <sub>Ds(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =80A   |                      | 0.0075 | 0.009 | Ω    |
|                                     |                     | V <sub>GS</sub> =6V, I <sub>D</sub> =40A  |                      | 0.009  | 0.015 |      |
|                                     |                     | V <sub>GS</sub> =10V, I <sub>D</sub> =80A, T <sub>c</sub> =175°C                                  |                      | 0.018  | 0.022 |      |
| Input capacitance                   | C <sub>iss</sub>    | V <sub>Ds</sub> =25V, V <sub>GS</sub> =0, f=1MHZ  |                      | 6000   |       | pF   |
| Output capacitance                  | C <sub>oss</sub>    |   |                      | 820    |       | pF   |
| Reverse transfer capacitance        | C <sub>rss</sub>    |   |                      | 200    |       | pF   |
| Total Gate Charge at 10V            | Q <sub>g(TOT)</sub> | V <sub>GS</sub> = 0V to 10V   |                      | 84     | 110   | nC   |
| Threshold Gate Charge               | Q <sub>g(TH)</sub>  | V <sub>GS</sub> = 0V to 2V  |                      | 11     | 14    | nC   |
| Gate to Source Gate Charge          | Q <sub>gs</sub>     | V <sub>Ds</sub> = 50 V, I <sub>D</sub> = 80A, I <sub>g</sub> =1.0mA                               |                      | 30     |       | nC   |
| Gate Charge Threshold to Plateau    | Q <sub>gs2</sub>    |   |                      | 20     |       | nC   |
| Gate to Drain "Miller" Charge       | Q <sub>gd</sub>     |   |                      | 20     |       | nC   |
| Turn-On Time                        | t <sub>ON</sub>     |   |                      |        | 102   | ns   |
| Turn-On Delay Time                  | t <sub>d(ON)</sub>  | V <sub>DD</sub> = 50 V, I <sub>D</sub> = 80A,<br>V <sub>GS</sub> = 10 V, R <sub>GEN</sub> = 3.6 Ω |                      | 30     |       | ns   |
| Rise Time                           | t <sub>r</sub>      |   |                      | 39     |       | ns   |
| Turn-Off Delay Time                 | t <sub>d(OFF)</sub> |   |                      | 96     |       | ns   |
| Fall Time                           | t <sub>f</sub>      |   |                      | 46     |       | ns   |
| Turn-Off Time                       | t <sub>OFF</sub>    |   |                      |        | 213   | ns   |
| Source to Drain Diode Voltage       | V <sub>SD</sub>     |   | I <sub>SD</sub> =80A |        |       | 1.25 |
|                                     |                     | I <sub>SD</sub> =40A  |                      |        | 1.0   | V    |
| Reverse Recovery Time               | t <sub>rr</sub>     | I <sub>SD</sub> = 75A, di <sub>SD</sub> /dt = 100A/μs   |                      |        | 64    | ns   |
| Reverse Recovered Charge            | Q <sub>RR</sub>     | I <sub>SD</sub> = 75A, di <sub>SD</sub> /dt = 100A/μs   |                      |        | 120   | nC   |