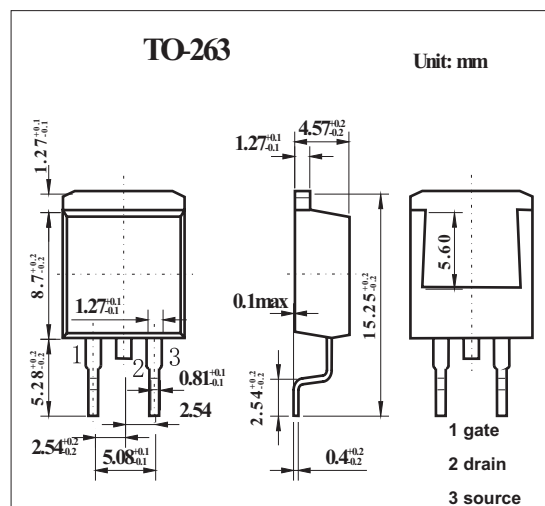
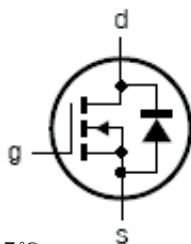


## TrenchMOS™ standard level FET

### KUK7607-30B

#### ■ Features

- Very low on-state resistance
- Q101 compliant
- 175°C rated
- Standard level compatible.



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

| Parameter                                                             | Symbol         | Rating     | Unit             |
|-----------------------------------------------------------------------|----------------|------------|------------------|
| Drain-source voltage                                                  | $V_{DS}$       | 30         | V                |
| Drain-gate voltage $R_{GS} = 20\text{ K}\Omega$                       | $V_{DGR}$      | 30         | V                |
| Gate-source voltage                                                   | $V_{GS}$       | $\pm 20$   | V                |
| Drain current (DC) $T_{mb} = 25^\circ\text{C}, V_{GS} = 10\text{ V}$  | $I_D$          | 108        | A                |
| Drain current (DC) $T_{mb} = 100^\circ\text{C}, V_{GS} = 10\text{ V}$ | $I_D$          | 75         | A                |
| Drain current (pulse peak value) *1                                   | $I_{DM}$       | 435        | A                |
| Total power dissipation $T_{mb} = 25^\circ\text{C}$                   | $P_{tot}$      | 157        | W                |
| Storage & operating temperature                                       | $T_{stg}, T_j$ | -55 to 175 | $^\circ\text{C}$ |
| reverse drain current (DC) $T_{mb} = 25^\circ\text{C}$                | $I_{DR}$       | 108        | A                |
|                                                                       |                | 75         | A                |
| pulsed reverse drain current *1                                       | $I_{DRM}$      | 435        | A                |
| non-repetitive avalanche energy *2                                    | $E_{DS(AL)S}$  | 329        | J                |
| Thermal resistance junction to mounting base                          | $R_{th\ j-mb}$ | 0.95       | K/W              |
| Thermal resistance junction to ambient                                | $R_{th\ j-a}$  | 50         | K/W              |

\* 1  $T_{mb} = 25^\circ\text{C}$ ; pulsed;  $t_p \leq 10\text{ }\mu\text{s}$ ;

\*2 unclamped inductive load;  $I_D = 75\text{ A}$ ;  $V_{DS} \leq 30\text{ V}$ ;  $V_{GS} = 10\text{ V}$ ;  $R_{GS} = 50\Omega$ ; starting  $T_{mb} = 25^\circ\text{C}$

**KUK7607-30B**

## ■ Electrical Characteristics Ta = 25°C

| Parameter                            | Symbol        | Testconditions                                                                | Min | Typ  | Max  | Unit          |
|--------------------------------------|---------------|-------------------------------------------------------------------------------|-----|------|------|---------------|
| drain-source breakdown voltage       | $V_{(BR)DSS}$ | $I_D = 0.25\text{ mA}; V_{GS} = 0\text{ V}; T_J = 25^\circ\text{C}$           | 30  |      |      | V             |
|                                      |               | $I_D = 0.25\text{ mA}; V_{GS} = 0\text{ V}; T_J = -55^\circ\text{C}$          | 27  |      |      | V             |
| gate-source threshold voltage        | $V_{GS(th)}$  | $I_D = 1\text{ mA}; V_{DS} = V_{GS}; T_J = 25^\circ\text{C}$                  | 2   | 3    | 4    | V             |
|                                      |               | $I_D = 1\text{ mA}; V_{DS} = V_{GS}; T_J = 175^\circ\text{C}$                 | 1   |      |      | V             |
|                                      |               | $I_D = 1\text{ mA}; V_{DS} = V_{GS}; T_J = -55^\circ\text{C}$                 |     |      | 4.4  | V             |
| Zero gate voltage drain current      | $I_{DSS}$     | $V_{DS} = 30\text{ V}; V_{GS} = 0\text{ V}; T_J = 25^\circ\text{C}$           |     | 0.02 | 1    | $\mu\text{A}$ |
|                                      |               | $V_{DS} = 30\text{ V}; V_{GS} = 0\text{ V}; T_J = 175^\circ\text{C}$          |     |      | 500  | $\mu\text{A}$ |
| gate-source leakage current          | $I_{GSS}$     | $V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$                               |     | 2    | 100  | nA            |
| drain-source on-state resistance     | $R_{DS(on)}$  | $V_{GS} = 10\text{ V}; I_D = 25\text{ A}; T_J = 25^\circ\text{C}$             | ..  | 5.9  | 7    | m $\Omega$    |
|                                      |               | $V_{GS} = 10\text{ V}; I_D = 25\text{ A}; T_J = 175^\circ\text{C}$            |     |      | 13.3 | m $\Omega$    |
| total gate charge                    | $Q_{g(tot)}$  | $V_{GS} = 10\text{ V}; V_{DD} = 24\text{ V}; I_D = 25\text{ A}$               |     | 36   |      | nC            |
| gate-to-source charge                | $Q_{gs}$      |                                                                               |     | 9    |      | nC            |
| gate-to-drain (Miller) charge        | $Q_{gd}$      |                                                                               |     | 12   |      | nC            |
| input capacitance                    | $C_{iss}$     | $V_{GS} = 0\text{ V}; V_{DS} = 25\text{ V}; f = 1\text{ MHz}$                 |     | 1820 | 7446 | pF            |
| output capacitance                   | $C_{oss}$     |                                                                               |     | 632  | 1014 | pF            |
| reverse transfer capacitance         | $C_{rss}$     |                                                                               |     | 256  | 360  | pF            |
| turn-on delay time                   | $t_{d(on)}$   | $V_{DD} = 25\text{ V}; R_L = 1.2\Omega; V_{GS} = 10\text{ V}; R_G = 10\Omega$ |     | 20   |      | ns            |
| rise time                            | $t_r$         |                                                                               |     | 51   |      | ns            |
| turn-off delay time                  | $t_{d(off)}$  |                                                                               |     | 51   |      | ns            |
| fall time                            | $t_f$         |                                                                               |     | 44   |      | ns            |
| internal drain inductance            | $L_d$         | from drain lead 6 mm from package to centre of die                            |     | 4.5  |      | nH            |
|                                      |               |                                                                               |     | 2.5  |      | nH            |
| internal source inductance           | $L_s$         | from source lead to source bond pad                                           |     | 7.5  |      | nH            |
| source-drain (diode forward) voltage | $V_{SD}$      | $I_S = 40\text{ A}; V_{GS} = 0\text{ V}$                                      |     | 0.85 | 1.2  | V             |
| reverse recovery time                | $t_{rr}$      | $I_S = 25\text{ A}; -di_F/dt = -100\text{ A}/\mu\text{s};$                    |     | 46   |      | ns            |
| recovered charge                     | $Q_r$         | $V_{GS} = -10\text{ V}; V_{DS} = 20\text{ V}$                                 |     | 28   |      | nC            |