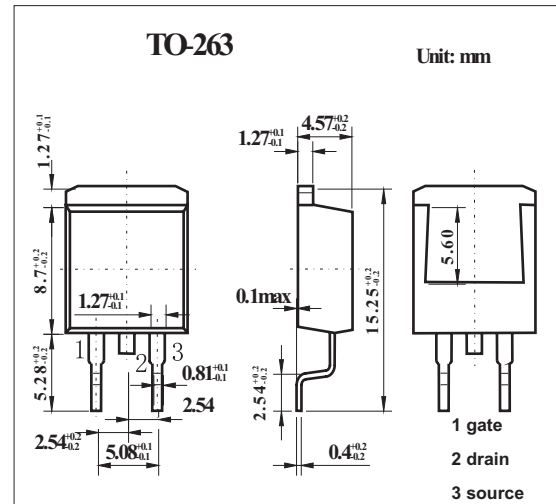
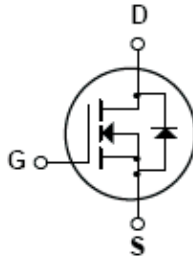


600V N-Channel MOSFET KQB2N60

■ Features

- 2.4A, 600 V. $R_{DS(ON)} = 4.7 \Omega$ @ $V_{GS} = 10$ V
- Low gate charge (typical 9.0nC)
- Low C_{rss} (typical 5.0pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability



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

| Parameter | Symbol | Rating | Unit |
|---|-----------------|------------|---------------------------|
| Drain to Source Voltage | V_{DSS} | 600 | V |
| Drain Current Continuous ($T_c=25^\circ\text{C}$) | I_D | 2.4 | A |
| Drain Current Continuous ($T_c=100^\circ\text{C}$) | | 1.5 | A |
| Drain Current Pulsed *1 | I_{DM} | 9.6 | A |
| Gate-Source Voltage | V_{GSS} | ± 30 | V |
| Single Pulsed Avalanche Energy*2 | EAS | 140 | mJ |
| Avalanche Current *1 | I_{AR} | 2.4 | A |
| Repetitive Avalanche Energy *1 | EAR | 6.4 | mJ |
| Peak Diode Recovery dv/dt *3 | dv/dt | 4.5 | V/ns |
| Power dissipation @ $T_A=25^\circ\text{C}$ | P_D | 3.13 | W |
| Power dissipation @ $T_c=25^\circ\text{C}$ Derate above 25°C | | 64 | W |
| | | 0.51 | W/ $^\circ\text{C}$ |
| Operating and Storage Temperature | T_J, T_{STG} | -55 to 150 | $^\circ\text{C}$ |
| Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds | T_L | 300 | $^\circ\text{C}$ |
| Thermal Resistance Junction to Case | $R_{\theta JC}$ | 1.95 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction to Ambient *4 | $R_{\theta JA}$ | 40 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 62.5 | $^\circ\text{C}/\text{W}$ |

*1 Repetitive Rating: Pulse width limited by maximum junction temperature

*2 $I = 45\text{mA}$, $I_{AS} = 2.4\text{A}$, $V_{DD} = 50\text{V}$, $R_G = 25 \Omega$, Startion $T_J = 25^\circ\text{C}$

*3 $I_{SD} \leq 2.4\text{A}$, $di/dt \leq 200\text{A}/\mu\text{S}$, $V_{DD} \leq BV_{DSS}$, Startiong $T_J = 25^\circ\text{C}$

*4 When mounted on the minimum pad size recommended (PCB Mount)

KQB2N60

■ Electrical Characteristics Ta = 25°C

| Parameter | Symbol | Testconditions | Min | Typ | Max | Unit |
|---|-----------------------------------|--|-----|------|------|-------|
| Drain-Source Breakdown Voltage | BVDSS | V _{GS} = 0 V, I _D = 250 μA | 600 | | | V |
| Breakdown Voltage Temperature Coefficient | $\frac{\Delta BVDSS}{\Delta T_J}$ | I _D = 250 μA, Referenced to 25°C | | 0.4 | | mV/°C |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 600 V, V _{GS} = 0 V | | | 10 | μA |
| | | V _{DS} = 480 V, T _C = 125°C | | | 100 | μA |
| Gate-Body Leakage Current, Forward | I _{GSSF} | V _{GS} = 30 V, V _{DS} = 0 V | | | 100 | nA |
| Gate-Body Leakage Current, Reverse | I _{GSSR} | V _{GS} = -30 V, V _{DS} = 0 V | | | -100 | nA |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250 μA | 3.0 | | 5.0 | V |
| Static Drain-Source On-Resistance | R _{DS(on)} | V _{GS} = 10 V, I _D = 1.2A | | 3.7 | 4.7 | Ω |
| Forward Transconductance | g _{FS} | V _{DS} = 50 V, I _D = 1.2A * | | 2.45 | | S |
| Input Capacitance | C _{iss} | V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz | | 270 | 350 | pF |
| Output Capacitance | C _{oss} | | | 40 | 50 | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 5 | 7 | pF |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 300 V, I _D = 2.4A, R _G = 25 Ω * | | 10 | 30 | ns |
| Turn-On Rise Time | t _r | | | 25 | 60 | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 20 | 50 | ns |
| Turn-Off Fall Time | t _f | | | 25 | 60 | ns |
| Total Gate Charge | Q _g | | | | 9.0 | 11 |
| Gate-Source Charge | Q _{gs} | V _{DS} = 480 V, I _D = 2.4A, V _{GS} = 10 V * | | 1.6 | | nC |
| Gate-Drain Charge | Q _{gd} | | | 4.3 | | nC |
| Maximum Continuous Drain-Source Diode Forward Current | I _S | | | | 2.4 | A |
| Maximum Pulsed Drain-Source Diode Forward Current | I _{SM} | | | | 9.6 | A |
| Drain-Source Diode Forward Voltage | V _{SD} | V _{GS} = 0 V, I _S = 2.4 A * | | | 1.4 | V |
| Diode Reverse Recovery Time | t _{rr} | V _{GS} = 0 V, dI _F /dt = 100 A/μs, I _S = 2.4A | | 180 | | ns |
| Diode Reverse Recovery Current | Q _{rr} | | | 0.72 | | μC |

* Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%