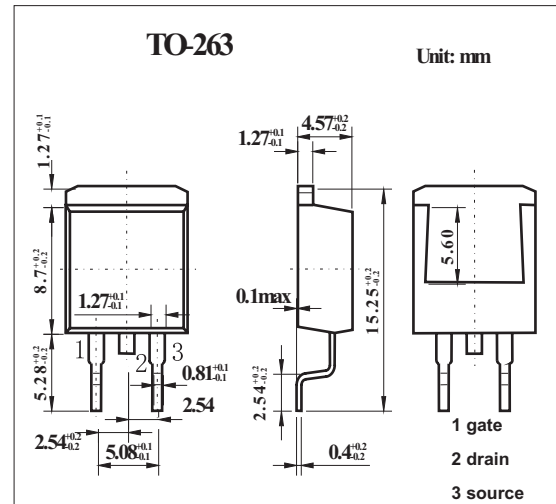
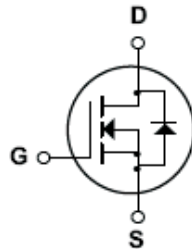


200V N-Channel MOSFET KQB5N20

■ Features

- 4.5A, 200 V. $R_{DS(ON)} = 1.2 \Omega$ @ $V_{GS} = 10 \text{ V}$
- Low gate charge (typical 6.0nC)
- Low C_{rss} (typical 6.0pF)
- 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}	200	V
Drain Current Continuous ($T_c=25^\circ\text{C}$)	I_D	4.5	A
Drain Current Continuous ($T_c=100^\circ\text{C}$)		2.8	A
Drain Current Pulsed *1	I_{DM}	18	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy*2	E_{AS}	60	mJ
Avalanche Current *1	I_{AR}	4.5	A
Repetitive Avalanche Energy *1	E_{AR}	5.2	mJ
Peak Diode Recovery dv/dt *3	dv/dt	5.5	V/ns
Power dissipation @ $T_A=25^\circ\text{C}$	P_D	3.13	W
Power dissipation @ $T_c=25^\circ\text{C}$		52	W
Derate above 25°C		0.42	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	$R_{\theta JC}$	2.4	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient *4	$R_{\theta JA}$	40	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

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

*2 $I = 4.5 \text{ mA}$, $I_{AS} = 4.5 \text{ A}$, $V_{DD} = 50 \text{ V}$, $R_G = 25 \Omega$, Startiong $T_J = 25^\circ\text{C}$

*3 $I_{SD} \leq 4.5 \text{ A}$, $di/dt \leq 300 \text{ A}/\mu\text{S}$, $V_{DD} \leq V_{DSS}$, Startiong $T_J = 25^\circ\text{C}$

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

KQB5N20

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	B _{VDS}	V _{GS} = 0 V, I _D = 250 μA	200			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta B_{VDS}}{\Delta T_J}$	I _D = 250 μA, Referenced to 25°C		0.2		mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 200 V, V _{GS} = 0 V			1	μA
		V _{DS} = 160 V, T _C = 125°C			10	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 = 2.25A		0.96	1.2	Ω
Forward Transconductance	g _{FS}	V _{DS} = 40 V, I _D = 2.25A *		3.0		S
Input Capacitance	C _{iss}	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz		210	270	pF
Output Capacitance	C _{oss}			40	50	pF
Reverse Transfer Capacitance	C _{rss}			6	8	pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 100 V, I _D = 4.5A, R _G = 25 Ω *		7	25	ns
Turn-On Rise Time	t _r			55	120	ns
Turn-Off Delay Time	t _{d(off)}			9	30	ns
Turn-Off Fall Time	t _f			25	60	ns
Total Gate Charge	Q _g	V _{DS} = 160 V, I _D = 4.5A, V _{GS} = 10 V *		6.0	7.5	nC
Gate-Source Charge	Q _{gs}			1.5		nC
Gate-Drain Charge	Q _{gd}			2.2		nC
Maximum Continuous Drain-Source Diode Forward Current	I _S				4.5	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				18	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 4.5 A *			1.5	V
Diode Reverse Recovery Time	t _{rr}	V _{GS} = 0 V, dI _F /dt = 100 A/μs, I _S = 4.5A		95		ns
Diode Reverse Recovery Current	Q _{rr}			0.3		μC

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