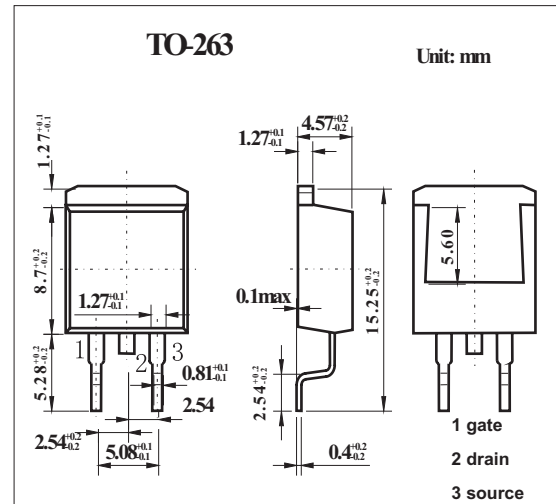
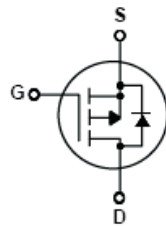


200V P-Channel MOSFET

KQB12P20

■ Features

- -11.5A, -200V, $R_{DS(on)} = 0.47 \Omega$ @ $V_{GS} = -10V$
- Low gate charge (typical 31 nC)
- Low C_{rss} (typical 30pF)
- 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	-11.5	A
Drain Current Continuous $T_c=100^\circ\text{C}$		-7.27	A
Drain Current - Pulsed (Note 1)	I_{DM}	-46	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	810	mJ
Avalanche Current (Note 1)	I_{AR}	-11.5	A
Repetitive Avalanche Energy (Note 1)	E_{AR}	12	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	-5.5	V/ns
Power dissipation @ $T_a=25^\circ\text{C}$	P_D	3.13	W
Power dissipation @ $T_c=25^\circ\text{C}$		120	W
Derate above 25°C		0.96	W/ $^\circ\text{C}$
Operating and Storage Temperature Range	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	$R_{\theta JC}$	1.04	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient *	$R_{\theta JA}$	40	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

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

KQB12P20

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = -250 μA	-200			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_J}$	I _D = -250 μA, Referenced to 25°C				V/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -200 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -160V, T _C =125°C			-10	μA
Gate-Body Leakage, Forward	I _{GSSF}	V _{GS} = -30 V, V _{DS} = 0 V			-100	nA
Gate-Body Leakage, Reverse	I _{GSSR}	V _{GS} = 30V, 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 = -5.75A		0.36	0.47	Ω
Forward Transconductance	g _{FS}	V _{DS} = -40 V, I _D = -5.75A		6.4		S
Input Capacitance	C _{iss}	V _{DS} = -25 V, V _{GS} = 0 V, f = 1.0 MHz		920	1200	pF
Output Capacitance	C _{oss}			190	250	pF
Reverse Transfer Capacitance	C _{rss}			30	40	pF
Turn-On Delay Time	t _{d(on)}			20	50	ns
Turn-On Rise Time	t _r	V _{DD} = -100V, I _D = -11.5 A, R _G = 25 Ω (Note4,5)		195	400	ns
Turn-Off Delay Time	t _{d(off)}			40	90	ns
Turn-Off Fall Time	t _f			60	130	ns
Total Gate Charge	Q _g			31	40	nC
Gate-Source Charge	Q _{gs}	V _{DS} = -160 V, I _D = -11.5 A, V _{GS} = -10 V (Note4,5)		8.1		nC
Gate-Drain Charge	Q _{gd}			16		nC
Maximum Continuous Drain-Source Diode Forward Current	I _S				-11.5	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				-46	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = -11.5 A			-5.0	V
Reverse Recovery Time	t _{rr}	V _{GS} = 0 V, I _S = -11.5 A,		180		ns
Reverse Recovery Charge	Q _{rr}	di _F / dt = 100 A/μs (Note 4)		1.44		μC

Note:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 9.2mH, I_{AS} = -11.5A, V_{DD} = -50V, R_G = 25 Ω, Starting T_J = 25°C
3. I_{SD} ≤ -11.5A, di/dt ≤ 300A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C
4. Pulse Test : Pulse width ≤ 300 μs, Duty cycle ≤ 2%
5. Essentially independent of operating temperature