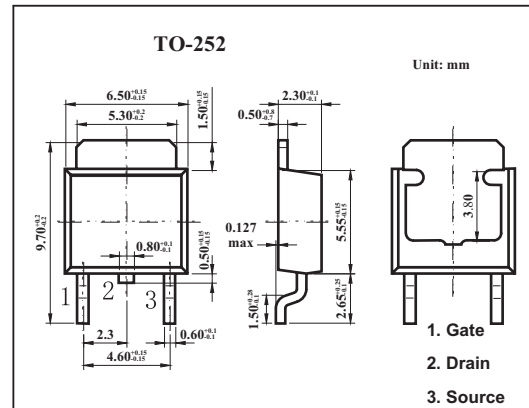
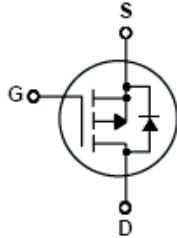


500V P-Channel MOSFET KQD1P50

■ Features

- -1.2A, -500V, $R_{DS(on)} = 10.5 \Omega$ @ $V_{GS} = -10$ V
- Low gate charge (typical 11 nC)
- Low C_{rss} (typical 6.0 pF)
- 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}	-500	V
Drain Current Continuous ($T_c=25^\circ\text{C}$)	I_D	-1.2	A
Drain Current Continuous ($T_c=100^\circ\text{C}$)		-0.76	A
Drain Current Pulsed *1	I_{DM}	-4.8	A
Gate-Source Voltage	V_{GSS}	± 30	V
Single Pulsed Avalanche Energy*2	EAS	110	mJ
Avalanche Current *1	I_{AR}	-1.2	A
Repetitive Avalanche Energy *1	EAR	3.8	mJ
Peak Diode Recovery dv/dt *3	dv/dt	-4.5	V/ns
Power dissipation @ $T_A=25^\circ\text{C}$	P_D	2.5	W
Power dissipation @ $T_c=25^\circ\text{C}$		38	W
Derate above 25°C		0.3	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	$R_{\theta JC}$	3.29	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient *4	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$

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

*2 $I = 138\text{mA}$, $I_{AS} = -1.2\text{A}$, $V_{DD} = -50\text{V}$, $R_G = 25 \Omega$, Startion $T_J = 25^\circ\text{C}$

*3 $I_{SD} \leq -1.5\text{A}$, $di/dt \leq 200\text{A}/\mu\text{S}$, $V_{DD} \leq B_{VDS}$, Startiong $T_J = 25^\circ\text{C}$

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

KQD1P50

■ 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 μ A	-400			V
Breakdown Voltage Temperature Coefficient	$\frac{\Delta B_{VDS}}{\Delta T_J}$	I _D = -250 μ A, Referenced to 25°C				mV/°C
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -500 V, V _{GS} = 0 V			-1	μ A
		V _{DS} = -400 V, T _C =125°C			-10	μ A
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 μ A	-3.0		-5.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10 V, I _D = -0.6A		8.0	10.5	Ω
Forward Transconductance	g _{FS}	V _{DS} = -50 V, I _D = -0.6A *		1.12		S
Input Capacitance	C _{iss}	V _{DS} = -25 V, V _{GS} = 0 V, f = 1.0 MHz		270	230	pF
Output Capacitance	C _{oss}			40	50	pF
Reverse Transfer Capacitance	C _{rss}			6.0	8.0	pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = -250 V, I _D = -1.5A, R _G =25 Ω *		9.0	30	ns
Turn-On Rise Time	t _r			25	60	ns
Turn-Off Delay Time	t _{d(off)}			27	65	ns
Turn-Off Fall Time	t _f			30	70	ns
Total Gate Charge	Q _g			11	14	nC
Gate-Source Charge	Q _{gs}	V _{DS} = -400 V, I _D = -1.5A, V _{GS} = -10 V *		2.0		nC
Gate-Drain Charge	Q _{gd}			5.6		nC
Maximum Continuous Drain-Source Diode Forward Current	I _S				-1.2	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				-4.8	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = -1.2 A			-5.0	V
Diode Reverse Recovery Time	t _{rr}	V _{GS} = 0 V, dI _F /dt = 100 A/μ s, I _S = -1.5A*		200		ns
Diode Reverse Recovery Current	Q _{rr}			0.7		μ C

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