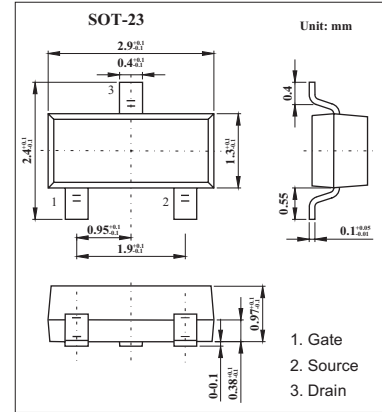
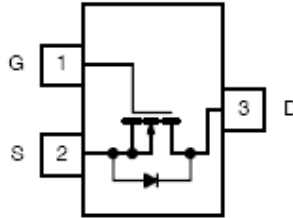


N-Channel 20 -V (D-S) MOSFET

KI2312DS

■ Features

- 1.8-V Rated
- RoHS Compliant

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

Parameter	Symbol	5 sec	Steady State	Unit
Drain-Source Voltage	V_{DS}	20		V
Gate-Source Voltage	V_{GS}	± 8		V
Continuous Drain Current ($T_J=150^\circ\text{C}$)*2 $T_A=25^\circ\text{C}$ $T_A=70^\circ\text{C}$	I_D	4.9 3.9	3.77 3.0	A
Pulsed Drain Current *2	I_{DM}	15		A
Avalanche Current*2 $L = 0.1 \text{ mH}$	I_{AS}	15		A
Single Avalanche Energy $L = 0.1 \text{ mH}$	E_{AS}	11.25		mJ
Continuous Source Current (diode conduction) *2	I_S	1.0		A
Power Dissipation *2 $T_A=25^\circ\text{C}$ $T_A=70^\circ\text{C}$	P_D	1.25 0.8	0.75 0.48	W
Junction Temperature and Storage Temperature	T_j, T_{stg}	-55 to 150		$^\circ\text{C}$

*1 Surface Mounted on 1□x 1□FR4 Board.

*2 Pulse width limited by maximum junction temperature

■ Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient * $t \leq 5 \text{ sec}$	R_{thJA}	75	100	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Ambient * Steady State		120	166	
Maximum Junction-to-Foot Steady State	R_{thJF}	40	50	

* Surface Mounted on 1□x 1□FR4 Board.

KI2312DS

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	0.45	0.65	0.85	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$			1	μA
		$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^\circ\text{C}$			75	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 10\text{ V}, V_{GS} = 4.5\text{ V}$	15			A
Drain-Source On-State Resistance *	$r_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 5.0\text{ A}$		0.027	0.033	Ω
		$V_{GS} = 2.5\text{ V}, I_D = 4.5\text{ A}$		0.033	0.040	
		$V_{DS} = 1.8\text{ V}, I_D = 4.0\text{ A}$		0.042	0.051	
Forward Transconductance *	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 5.0\text{ A}$		40		S
Diode Forward Voltage *	V_{SD}	$I_S = 1.0\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Total Gate Charge	Q_g	$V_{DS} = 10\text{ V}, V_{GS} = 4.5\text{ V}, I_D = 5.0\text{ A}$		11.2	14	nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			2.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\text{ V}, R_L = 10\ \Omega,$ $I_D = 1\text{ A}, V_{GEN} = -4.5\text{ V}, R_G = 6\ \Omega$		15	25	ns
Rise Time	t_r			40	60	
Turn-Off Delay Time	$t_{d(off)}$			48	70	
Fall-Time	t_f			31	45	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.0\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		13	25	

*Pulse test: $PW \leq 300\ \mu\text{s}$ duty cycle $\leq 2\%$.

■ Marking

Marking	C2
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