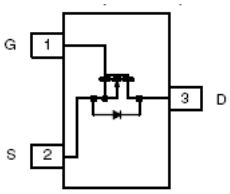
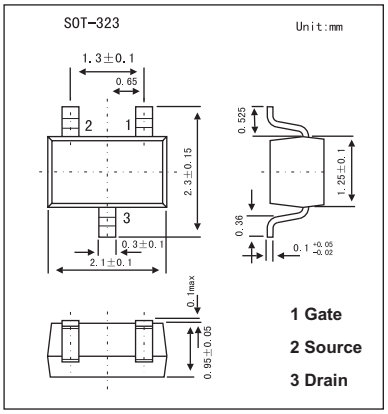
N-Channel 30-V (D-S) MOSFET

KI1304BDL

■ Features

- TrenchFET Power MOSFET
- 100% Rg Tested





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	30	V
Gate-source voltage	V_{GS}	±12	V
Continuous drain current (T_J = 150℃) T_c=25℃ T_c=70℃	I_D	0.90 0.71	A
Continuous drain current (T_J = 150℃) T_a=25℃ T_a=70℃	I_D	0.85*1,2 0.68*1,2	A
Pulsed drain current	I_{DM}	4	A
Continuous Source Drain Diode Current Tc=25℃	I_S	0.31	A
Ta=25℃		0.28	
Power dissipation T_c=25℃ T_c=70℃	P_D	0.37 0.24	W
Power dissipation T_a=25℃ T_a=70℃	P_D	0.34*1,2 0.22*1,2	W
Operating junction and storage temperature range	T_j,T_{stg}	-55 to +150	℃

*1 Surface Mounted on 1" X 1" FR4 Board.

*2 t = 5 sec

■ Thermal Resistance Ratings Ta = 25℃

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient*1,2	t≤5 sec	R_{thJA}	315	375	℃/W
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	285	340	

*1 Surface Mounted on 1" X 1" FR4 Board.

*2 Maximum under steady state conditions is 360 ℃/W.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 μ A	30			V
VDS Temperature Coefficient	$\triangle V_{DS}/T_J$	I_D= 250 μ A		27.3		mv/℃
VGS(th) Temperature Coefficient	$\triangle V_{GS(th)}/T_J$			3		
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D =250 μ A	0.6		1.3	V
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} =30 V, V_{GS} = 0 V			1	μ A
		V_{DS} =30 V, V_{GS} = 0 V, T_J = 70 ℃			5	
On-state drain current	$I_{D(on)}$	V_{DS} ⩾5 V, V_{GS} = 4.5 V	4			A
Drain-source on-state resistance	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D =0.9		0.216	0.270	Ω
		V_{GS} = 2.5V, I_D =0.75		0.308	0.385	
Forward transconductance	g_{fs}	V_{DS} =15 V, I_D =0.9		2		S
Input Capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		100		pF
Output Capacitance	C_{oss}			30		
Reverse Transfer Capacitance	C_{rss}			20		
Total gate charge *	Q_g	V_{DS} =15V ,V_{GS} = 4.5 V , I_D=0.9		1.8	2.7	nC
Total gate charge *	Q_g	V_{DS} =15V ,V_{GS} =2.5 V , I_D=0.9		1.1	1.7	
Gate-source charge *	Q_{gs}			0.4		
Gate-drain charge *	Q_{gd}			0.6		
Gate Resistance	R_g	f=1MHz		1.5	2.3	Ω
Turn-on time	$t_{d(on)}$	V_{DD} = 15V , R_L = 22Ω , I_D =0.68A , V_{GEN} =4.5V , R_G = 1Ω		10	15	ns
	t_r			30	45	
Turn-off time	$t_{d(off)}$			5	25	
	t_f			10	15	
Continuous Source-Drain Diode Current	I_S	TC = 25℃			0.31	A
Pulse Diode Forward Current*	I_{SM}				4	
Body Diode Voltage	V_{SD}	I_S = 0.28 A		0.8	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=0.28A,di/dt=100A/ μ s,T_J=25℃		50	75	ns
Body Diode Reverse Recovery Charge	Q_{rr}			105	160	nC
Reverse Recovery Fall Time	t_a			34		ns
Reverse Recovery Rise Time	t_b			16		ns

* Pulse test: PW ⩽ 300 μs duty cycle ⩽ 2%.

■ Marking

Marking	KF