

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

- Surface mount package
- Excellent $R_{DS(ON)}$, low gate charge
- High power and current handing capability

Applications

- PWM applications
- Load switch

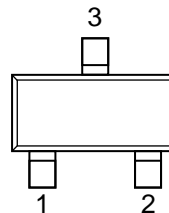
Quick reference

- $V_{DS} = 100V$
- $I_D = 2.0A$
- $R_{DS(ON)} \leq 200m\Omega @ V_{GS}=10V$ (Type: 180m Ω)
- $R_{DS(ON)} \leq 215m\Omega @ V_{GS}=4.5V$ (Type: 190m Ω)

Pin Description

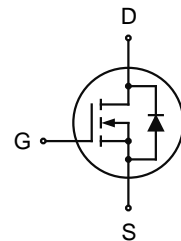
Pin	Description
1	Gate(G)
2	Source(S)
3	Drain(D)

Simplified Outline



Top View
SOT-23

Symbol



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ2N10S	SOT-23	2N10	-	-	3000

2. Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current ($T_J = 150^\circ C$) ^a	$T_A = 25^\circ C$	2.0	A
	$T_A = 70^\circ C$	1.6	
Pulsed drain current ^b	I_{DM}	8	
Power dissipation ^a	$T_A = 25^\circ C$	0.72	W
	$T_A = 70^\circ C$	0.46	
Operating junction and storage temperature range	T_J, T_{stg}	-55~150	$^\circ C$

3. Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient ^a	t ≤ 10s	R _{θJA}	120	145	°C/W
	Steady-State		140	175	
Maximum Junction-to-Foot	Steady-State	R _{θJC}	62	78	

Notes

- Surface mounted on 1" x 1" FR4 board
- Pulse width limited by maximum junction temperature

4. Electrical Characteristics (T_A=25°C, unless otherwise noted)

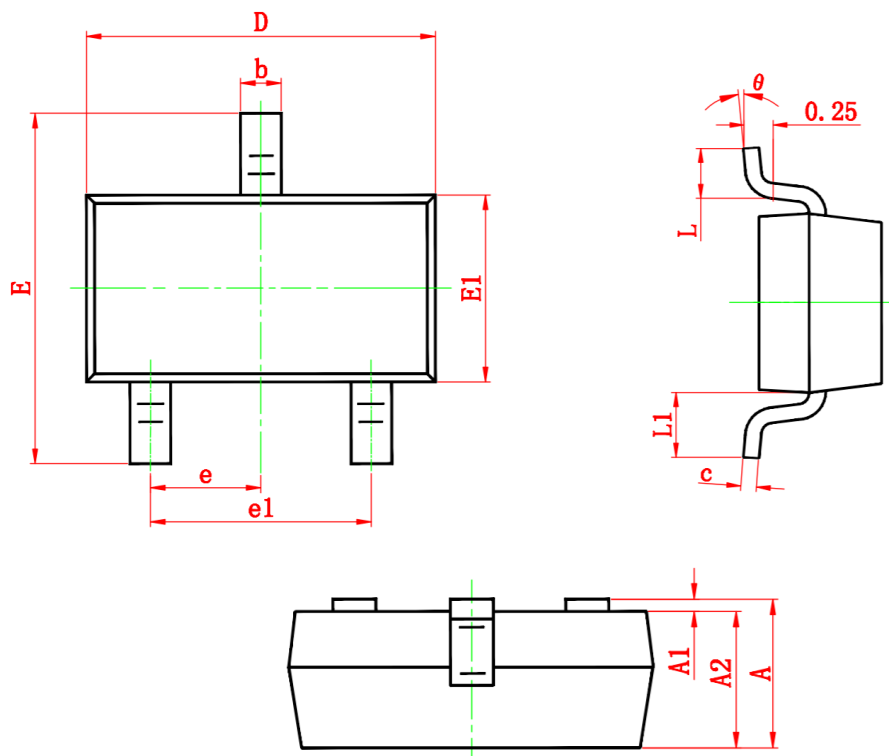
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-source on-state resistance ^a	R _{DS(ON)}	V _{GS} =10V, I _D =2A	-	180	200	mΩ
		V _{GS} =4.5V, I _D =1.6A	-	190	215	
Forward transconductance ^a	g _{fs}	V _{DS} =5V, I _D =1A	-	33	-	S
Dynamic Characteristics ^b						
Input capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V F=1.0MHz	-	265	-	pF
Output capacitance	C _{oss}		-	31	-	
Reverse transfer capacitance	C _{rss}		-	12	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V V _{GS} =10V R _L =30Ω R _{GEN} =6Ω	-	6	-	nS
Turn-on Rise Time	t _r		-	7.2	-	
Turn-off Delay Time	t _{d(off)}		-	12	-	
Turn-off Fall Time	t _f		-	4	-	
Total Gate Charge	Q _g	V _{DS} =30V, I _D =2A V _{GS} =10V	-	5.8	-	nC
Gate-Source Charge	Q _{gs}		-	1.3	-	
Gate-Drain Charge	Q _{gd}		-	1.1	-	
Drain-source Diode Characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0V, I _S =1A	-	0.72	1.2	V

Notes

- Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2 %
- Guaranteed by design, not subject to production testing

5. Package Mechanical Data

SOT-23 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	2.250	2.550	0.089	0.100
E1	1.200	1.400	0.047	0.055
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.300	0.500	0.012	0.020
L1	0.550 REF.		0.022 REF.	
θ	0°	8°	0°	8°