

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

Advanced trench technology
Excellent $R_{DS(ON)}$
Low gate charge

Applications

PWM applications
Load switch

Quick reference

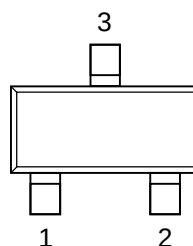
$V_{DS} = 60\text{ V}$
 $I_D = 3.0\text{ A}$
 $R_{DS(ON)} \leq 110\text{ m}\Omega @ V_{GS} = 4.5\text{ V}$ (Type: 90 m Ω)
 $R_{DS(ON)} \leq 95\text{ m}\Omega @ V_{GS} = 10\text{ V}$ (Type: 75 m Ω)

Pin Description

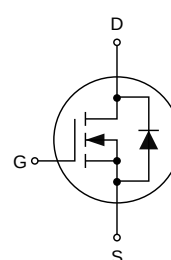
Pin	Description
1	Gate(G)
2	Source(S)
3	Drain(D)

Simplified Outline

Symbol



Top View
SOT23



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ3N06S	SOT-23	3N06	-	-	3000

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

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current ($T_J=150^\circ\text{C}$) ^a	$T_A=25^\circ\text{C}$	I_D	3	A
	$T_A=70^\circ\text{C}$		2.4	
Pulsed drain current ^b		I_{DM}	12	
Power dissipation ^a	$T_A=25^\circ\text{C}$	P_D	0.72	W
	$T_A=70^\circ\text{C}$		0.46	
Operating junction and storage temperature range		T_J, T_{stg}	-55~150	$^\circ\text{C}$

3. Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum junction-to-ambient ^a	≤ 10 s	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

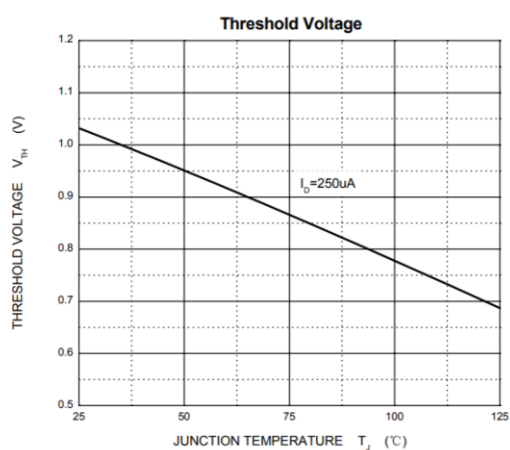
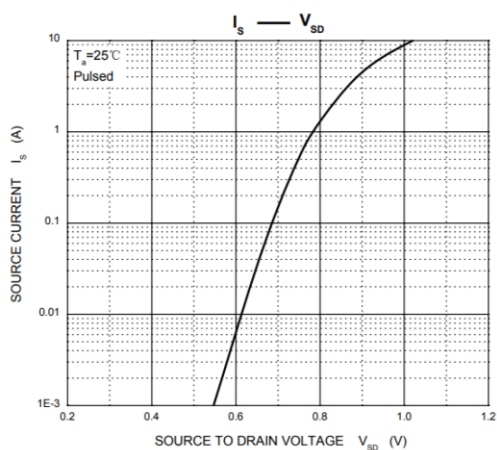
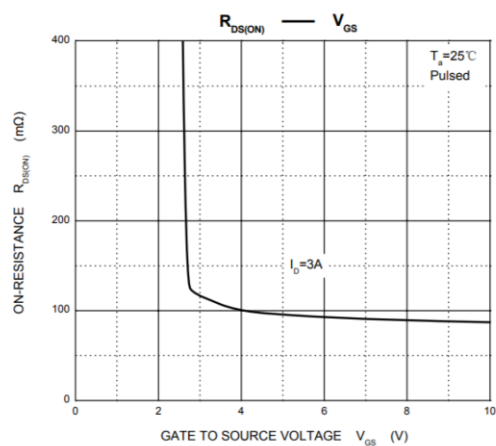
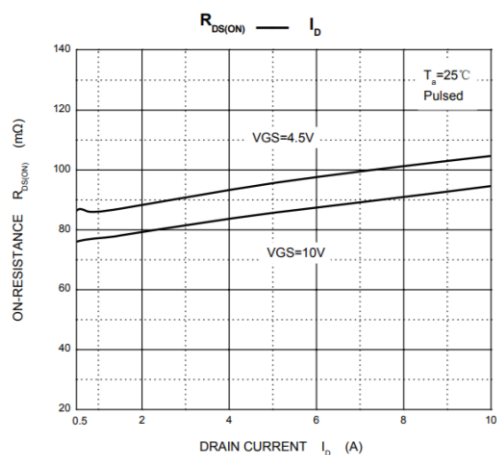
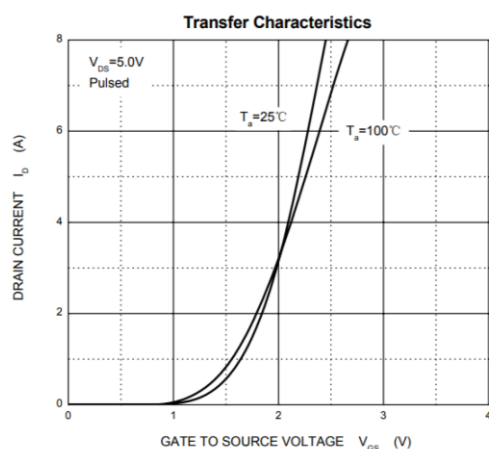
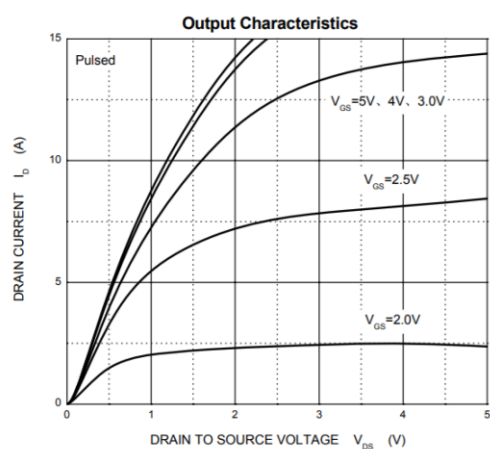
4. Electrical Characteristics (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	B _{VDSS}	V _{GS} =0 V, I _D =250 μA	60	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =60 V, V _{GS} =0 V	-	-	1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0 V, V _{GS} =±20 V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	1.0	1.6	2.5	V
Drain-source on-state resistance ^a	R _{DS(ON)}	V _{GS} =10 V, I _D =3 A	-	75	95	mΩ
		V _{GS} =4.5 V, I _D =2 A	-	90	110	
Forward transconductance ^a	g _{fs}	V _{DS} =5 V, I _D =1 A	-	33	-	S
Dynamic Characteristics ^b						
Input capacitance	C _{iss}	V _{DS} =30 V, V _{GS} =0 V F=1.0 MHz	-	255	-	pF
Output capacitance	C _{oss}		-	29	-	
Reverse transfer capacitance	C _{rss}		-	11	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DS} =30 V, V _{GS} =10 V R _L =30 Ω, R _{GEN} =6 Ω	-	5	-	ns
Turn-on Rise Time	t _r		-	7.2	-	
Turn-off Delay Time	t _{d(off)}		-	11	-	
Turn-off Fall Time	t _f		-	3	-	
Total Gate Charge	Q _g	V _{DS} =30 V, I _D =2 A V _{GS} =10 V	-	5.6	-	nC
Gate-Source Charge	Q _{gs}		-	1.2	-	
Gate-Drain Charge	Q _{gd}		-	1	-	
Drain-source Diode Characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0 V, I _S =1 A	-	0.72	1.2	V

Notes:

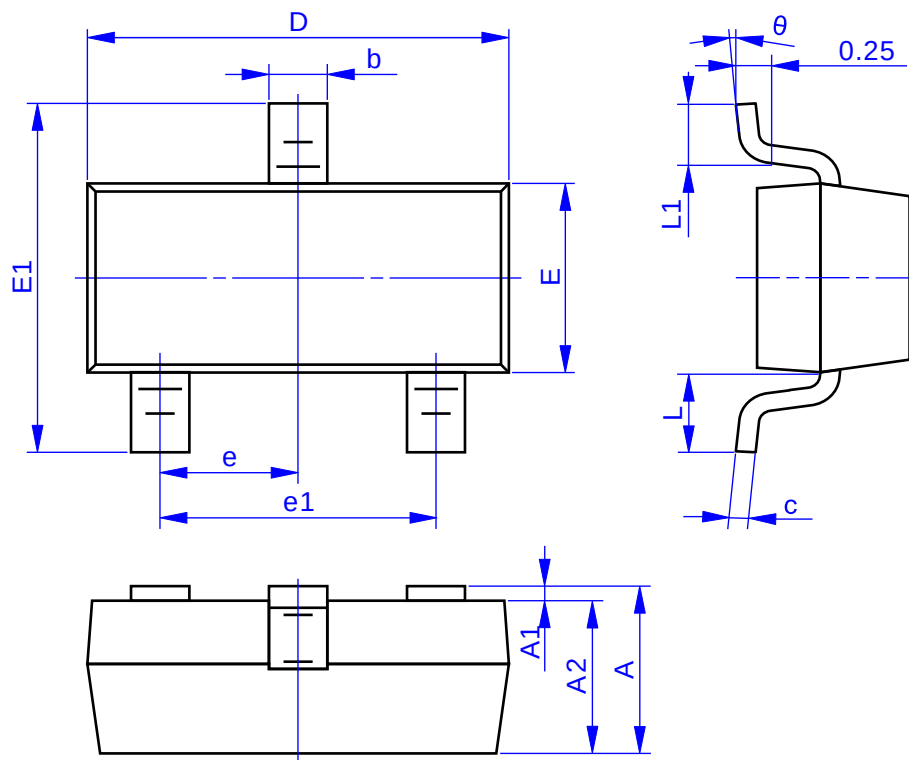
- Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2%
- Guaranteed by design, not subject to production testing

5. Typical Characteristics



6. Package Mechanical Data

SOT-23 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	2.25	2.55	0.089	0.100
E1	1.20	1.40	0.047	0.055
e	0.95 TYP.		0.037 TYP.	
e1	1.80	2.00	0.071	0.079
L	0.30	0.50	0.012	0.020
L1	0.55 REF.		0.022 REF.	
θ	0°	8°	0°	8°