

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

- Shield Gate Trench technology
- Extremely low combination of $R_{DS(ON)}$ and Q_g
- Good stability and uniformity with high E_{AS}

Applications

- PWM applications
- Load switch

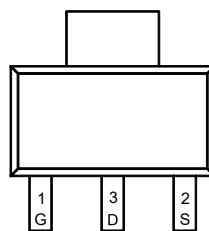
Quick reference

- $V_{DS} = 100\text{ V}$
- $I_D = 3.5\text{ A}$
- $R_{DS(ON)} \leq 125\text{ m}\Omega$ @ $V_{GS}=10\text{ V}$ (Type: 105 m Ω)
- $R_{DS(ON)} \leq 155\text{ m}\Omega$ @ $V_{GS}=4.5\text{ V}$ (Type: 135 m Ω)

Pin Description

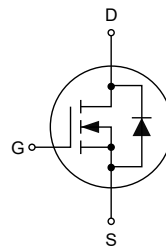
Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

Simplified Outline



SOT-223

Symbol



Package Marking and Ordering Information

Product Name	Package	Marking	Reel size	Tape width	Quantity (pcs)
KJ3N10SA	SOT-223	3N10	13"	12 mm	2500

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

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	100	V
Gate-source voltage		V_{GS}	± 20	V
Continuous drain current ($T_J = 150^\circ\text{C}$) ^a	$T_A=25^\circ\text{C}$	I_D	3.5	A
	$T_A=70^\circ\text{C}$		2.8	
Pulsed drain current		I_{DM}	14	
Power dissipation	$T_A=25^\circ\text{C}$	P_D	2.5	W
	$T_A=70^\circ\text{C}$		1.6	
Operating junction and storage temperature range		T_J, T_{stg}	-55~150	$^\circ\text{C}$
Maximum Junction to Ambient		$R_{\theta JA}$	60	$^\circ\text{C/W}$
Maximum Junction to Foot		$R_{\theta JC}$	50	$^\circ\text{C/W}$

3. 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} =0 V, I _D =250 μA	100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100 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	1.2	1.7	2.5	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =3.5 A	-	105	125	mΩ
		V _{GS} =4.5 V, I _D =2.5 A	-	135	155	
Forward transconductance	g _{fs}	V _{DS} =10 V, I _D =2.6 A	-	10	-	S
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0 V V _{DS} =50 V f=1.0 MHz	-	175	-	pF
Output capacitance	C _{oss}		-	25	-	
Reverse transfer capacitance	C _{rss}		-	1	-	
Gate Resistance	R _G		4	7.5	12	Ω
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =50 V I _D =1 A V _{GS} =10 V R _{GEN} =6 Ω	-	1.1	-	ns
Turn-on Rise Time	t _r		-	5.6	-	
Turn-off Delay Time	t _{d(off)}		-	11	-	
Turn-off Fall Time	t _f		-	10	-	
Total Gate Charge	Q _g	V _{DS} =50 V I _D =1 A V _{GS} =10 V	-	6.5	-	nC
Gate-Source Charge	Q _{gs}		-	1.2	-	
Gate-Drain Charge	Q _{gd}		-	0.98	-	
Drain-source Diode Characteristics						
Drain-Source Diode Forward Current	I _S		-	-	1.3	A
Diode forward voltage	V _{SD}	I _{SD} =1.3 A, V _{GS} =0 V	-	0.76	1.2	V
Reverse Recovery Time	t _{rr}	I _F =3 A, dI _F /dt=100 A/μs	-	40	-	ns
Reverse Recovery Charge	Q _{rr}		-	22	-	nC

4. Package Mechanical Data

SOT-223 Package

