

P-Channel Enhancement Mode MOSFET

1. Product Information

Features

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

Applications

PWM applications
Load switch

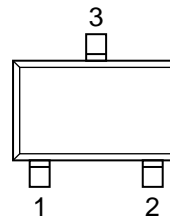
Quick reference

$V_{DS} = -20\text{ V}$
 $I_D = -6\text{ A}$
 $R_{DS(ON)} \leq 30\text{ m}\Omega$ @ $V_{GS} = -4.5\text{ V}$ (Type: 22 m Ω)
 $R_{DS(ON)} \leq 40\text{ m}\Omega$ @ $V_{GS} = -2.5\text{ V}$ (Type: 28 m Ω)

Pin Description

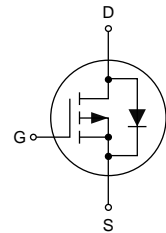
Pin	Description
1	Gate(G)
2	Source(S)
3	Drain(D)

Simplified Outline



Top View
SOT23-3L

Symbol



Package Marking and Ordering Information

Product Name	Package	Marking	Reel size	Tape width	Quantity (pcs)
KJ2305A	SOT23-3L	2305A	7"	8 mm	3000

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

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	-20	V
Gate-source voltage	V_{GS}	± 12	V
Continuous drain current ($T_J=150^\circ\text{C}$) ^[1]	$T_A=25^\circ\text{C}$	-6	A
	$T_A=70^\circ\text{C}$	-5	
Pulsed drain current ^[2]	I_{DM}	-24	
Power dissipation ^[1]	$T_A=25^\circ\text{C}$	1.4	W
	$T_A=70^\circ\text{C}$	0.9	
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Maximum Junction-to-Ambient ^[1]	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Maximum Junction-to-Foot	$R_{\theta JC}$	80	$^\circ\text{C/W}$

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

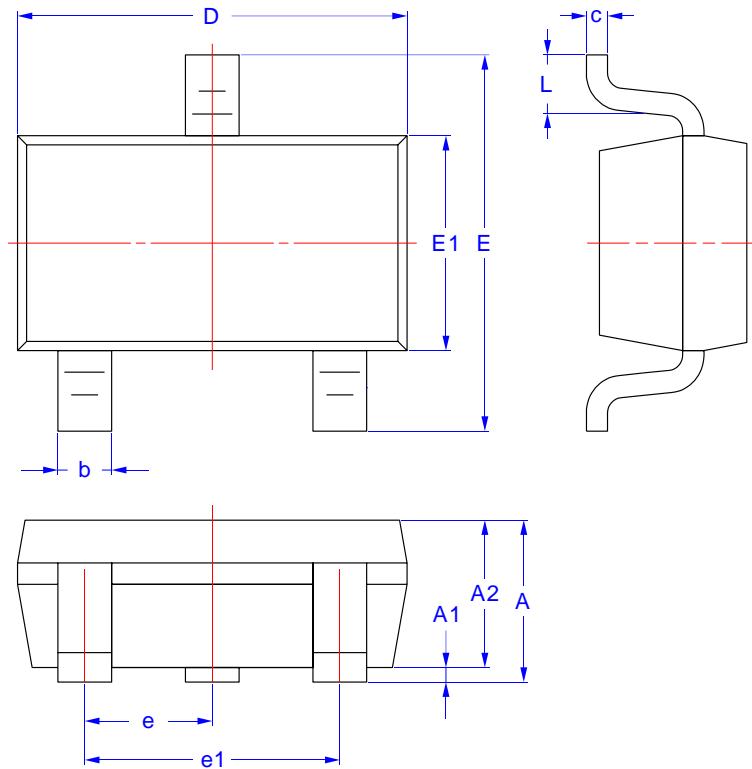
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0 V, I _D =-250 μA	-20	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-20 V, V _{GS} =0 V	-	-	-1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0 V, V _{GS} =±12 V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250 μA	-0.45	-0.7	-1.2	V
Drain-source on-state resistance ^[3]	R _{DS(ON)}	V _{GS} =-4.5 V, I _D =-6 A	-	22	30	mΩ
		V _{GS} =-2.5 V, I _D =-5 A	-	28	40	
Forward transconductance ^[3]	g _{fs}	V _{DS} =-5 V, I _D =-6 A	-	13	-	S
Dynamic Characteristics ^[4]						
Input capacitance	C _{iss}	V _{DS} =-10 V, V _{GS} =0 V, f=1.0 MHz	-	1159	-	pF
Output capacitance	C _{oss}		-	133	-	
Reverse transfer capacitance	C _{rss}		-	118	-	
Switching Characteristics ^[4]						
Turn-on Delay Time	t _{d(on)}	V _{DS} =-10 V I _D =-6 A V _{GEN} =-4.5 V R _L =2.2 Ω R _{GEN} =1 Ω	-	23	-	ns
Turn-on Rise Time	t _r		-	25	-	
Turn-off Delay Time	t _{d(off)}		-	55	-	
Turn-off Fall Time	t _f		-	13	-	
Total Gate Charge	Q _g	V _{DS} =-10 V, I _D =-6 A V _{GS} =-4.5 V	-	14.5	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	
Gate-Drain Charge	Q _{gd}		-	2.5	-	
Drain-source Diode Characteristics						
Diode forward voltage	V _{SD}	V _{GS} =0 V, I _S =-1 A	-	-0.84	-1.2	V

Notes:

1. Surface mounted on 1" x 1" FR4 board.
2. Pulse width limited by maximum junction temperature, c:t=5 s.
3. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

5. Package Mechanical Data

SOT23-3L Package



Symbol	Dimensions in Millimeters	
	MIN	MAX
A	1.00	1.45
A1	0.00	0.15
A2	1.00	1.30
D	2.70	3.10
E	2.60	3.00
E1	1.50	1.70
c	0.08	0.25
b	0.30	0.50
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60