KJ2307A

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 V

I_D = -7.5 A

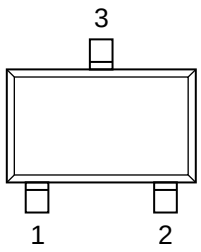
$R_{DS(ON)}$ ≦ 26 mΩ @ V_{GS} = -4.5 V (Type: 20 mΩ)

$R_{DS(ON)}$ ≦ 37 mΩ @ V_{GS} = -2.5 V (Type: 27 mΩ)

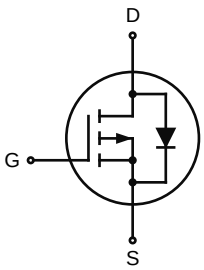
Pin Description

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

Simplified Outline	Symbol



Top View
SOT23-3L



Package Marking and Ordering Information

Product Name	Package	Marking	Reel Size	Tape width	Quantity
KJ2307A	**SOT23-3L**	**2307**	**-**	**-**	**3000**

2. Absolute Maximum Ratings (T_A=25℃ 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℃) [a]	T_A = 25℃	I_D	-7.5	A
	T_A = 70℃		-6	
Pulsed drain current [b]		I_{DM}	-30	
Power dissipation [a]	T_A = 25℃	P_D	1.4	W
	T_A = 70℃		0.9	
Operating junction and storage temperature range		T_J, T_{stg}	-55—150	℃

3. Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient [a]	t ≤ 10s	$R_{\theta JA}$	70	90	℃/W
Maximum Junction-to-Ambient [a]	Steady-State		100	125	
Maximum Junction-to-Foot	Steady-State	$R_{\theta JC}$	63	80	

Notes:
a. Surface mounted on 1" x 1" FR4 board
b. Pulse width limited by maximum junction temperature

4. Electrical Characteristics (T_A=25℃, 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	-1.0	V
Drain-source on-state resistance [a]	$R_{DS(ON)}$	V_{GS}=-4.5 V, I_D=-7 A	-	20	26	mΩ
		V_{GS}=-2.5 V, I_D=-4 A	-	27	37	
Forward transconductance [a]	gfs	V_{DS}=-5 V, I_D=-7 A	-	5	-	S
Dynamic Characteristics [b]						
Input capacitance	C_{iss}	V_{DS}=-10 V, V_{GS}=0 V F=1.0 MHz	-	1200	-	pF
Output capacitance	C_{oss}		-	191	-	
Reverse transfer capacitance	C_{rss}		-	168	-	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-10 V, I_D=-5 A, V_{GS}=-4.5 V, R_L=10 Ω	-	11	-	ns
Turn-on Rise Time	t_r		-	35	-	
Turn-off Delay Time	$t_{d(off)}$		-	30	-	
Turn-off Fall Time	t_f		-	10	-	
Total Gate Charge	Q_g	V_{DS}=-10 V, I_D=-5 A, V_{GS}=-4.5 V	-	33.7	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	
Gate-Drain Charge	Q_{gd}		-	10.5	-	
Drain-source Diode Characteristics						
Diode forward voltage	V_{SD}	V_{GS}=0 V, I_S=-1.25 A	-	-0.81	-1.2	V

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

5. Typical Characteristics

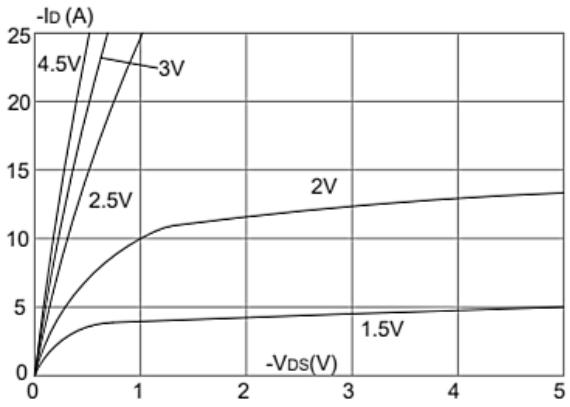


Figure1: Output Characteristics

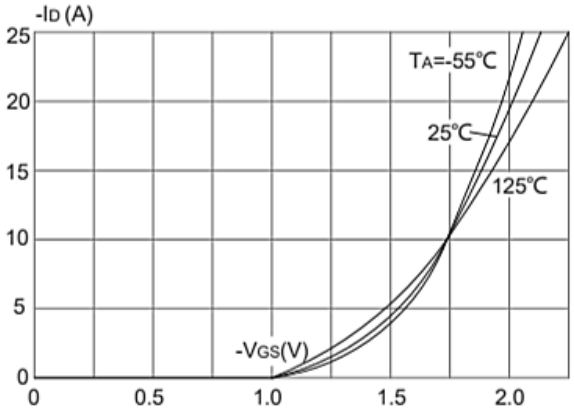


Figure 2: Typical Transfer Characteristics

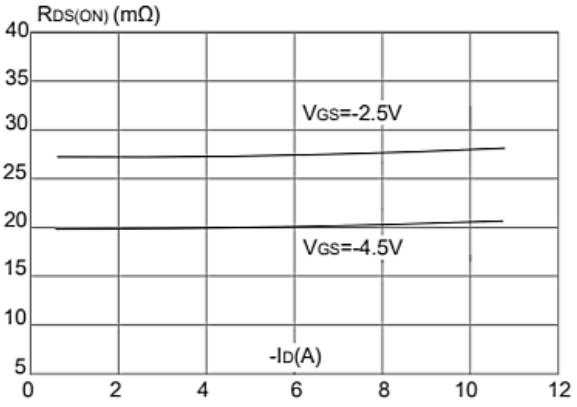


Figure 3:On-resistance vs. Drain Current

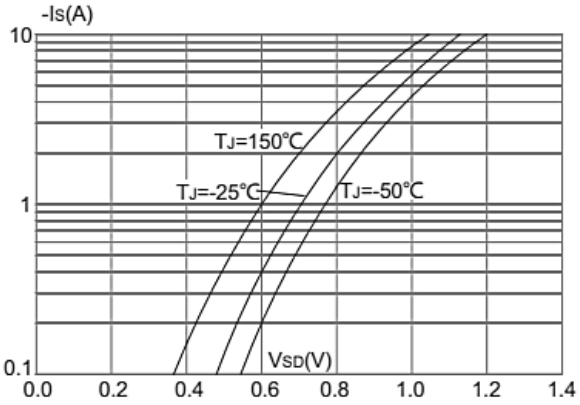


Figure 4: Body Diode Characteristics

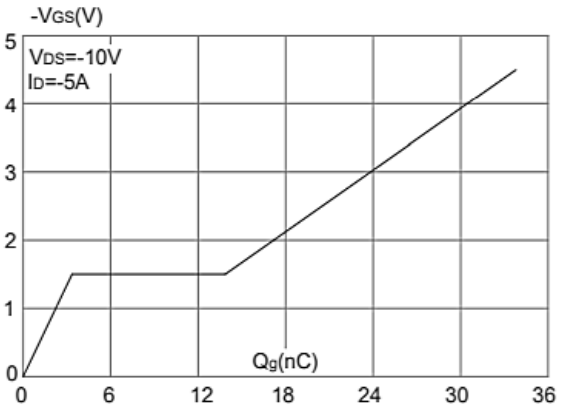


Figure 5: Gate Charge Characteristics

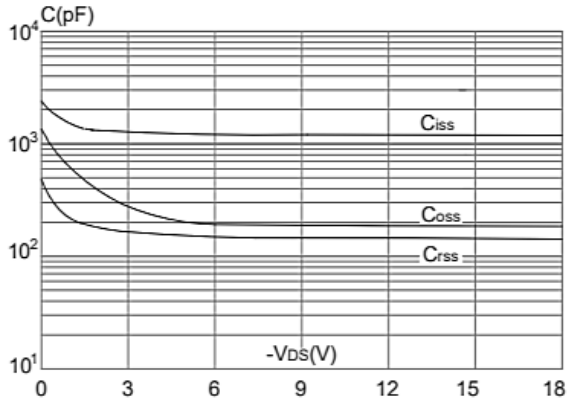
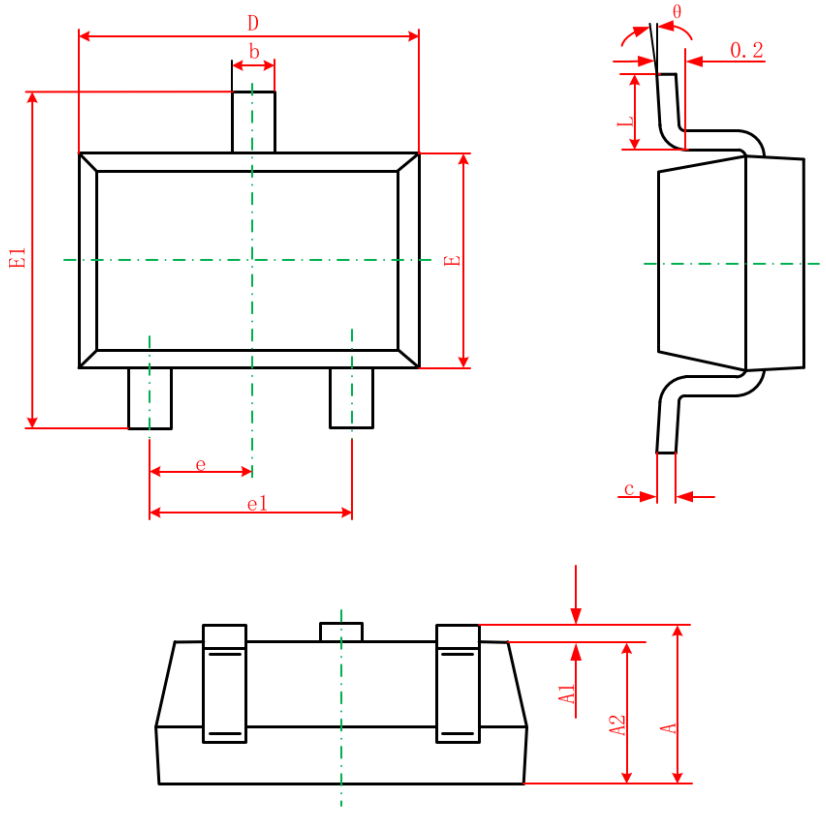


Figure 6: Capacitance Characteristics

6. Package Mechanical Data

SOT23-3L package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°