JXP2304VRG

30V N-Channel Enhancement Mode MOSFET

DESCRIPTION

The JXP2304VRG uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

- ✧ V_{DS} =30V，I_D =3.6A
  $R_{DS(ON)}$(Typ.)=39mΩ @V_{GS}=4.5V
  $R_{DS(ON)}$(Typ.)=24mΩ @V_{GS}=10V
- ✧ High power and current handing capability
- ✧ Lead free product is acquired
- ✧ Surface mount package

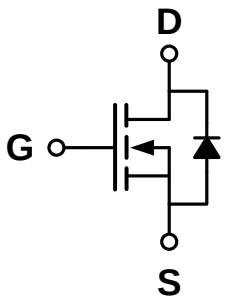
APPLICATION

- ✧ PWM applications
- ✧ Load switch

PACKAGE

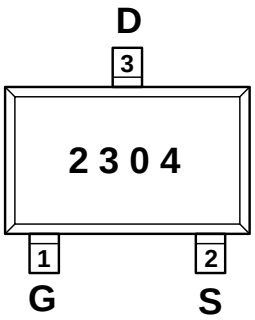
- ✧ SOT-23

SCHEMATIC DIAGRAM



PIN ASSIGNMENT

SOT-23
(TOP VIEW)



ORDERING INFORMATION

Part Number	Storage Temperature	Package	Marking	Devices Per Reel
JXP2304VRG	-55°C to +150°C	SOT-23	2304	3000

ABSOLUTE MAXIMUM RATINGS

(TA=25℃ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	±20	V
Continuous drain current (T_J = 150 °C) [a]	T_A=25°C	I_D	3.6	A
	T_A=70°C		3.0	
Pulsed drain current [b]		I_{DM}	14.4	
Continuous source current (diode conduction) [a]		I_S	0.6	
Power dissipation [a]	T_A=25°C	P_D	0.71	W
	T_A=70°C		0.46	
Operating junction and storage temperature range		T_J, T_{stg}	-55—150	℃

THERMAL CHARACTERISTICS

Parameter		Symbol	Typ	Max	Unit
Maximum junction-to-ambient [a]	≤ 5 s	$R_{\theta JA}$	120	145	℃/W
	Steady-State		140	175	
Maximum junction-to-foot	Steady-State	$R_{\theta JC}$	62	78	

Notes

a. Surface mounted on 1" x 1" FR4 board

b. Pulse width limited by maximum junction temperature

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}=0V, I_D=250μA	30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=30V, 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	1.0	1.5	2.0	V
Drain-source on-state resistance [a]	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.6A	-	24	30	mΩ
		V_{GS}=4.5V, I_D=3A		39	48	
Forward transconductance [a]	gfs	V_{DS}=5V, I_D=3.6A	-	11	-	S
Dynamic Characteristics [b]						
Input capacitance	C_{ISS}	V_{DS}=15V ,V_{GS}=0V f=1.0MHz	-	230	-	pF
Output capacitance	C_{OSS}		-	40	-	
Reverse transfer capacitance	C_{RSS}		-	17	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DS}=15V V_{GS}=10V R_L=6 ohm R_{GEN}=3ohm	-	10	-	ns
Rise time	tr		-	50	-	
Turn-off delay time	$t_{D(OFF)}$		-	10	-	
Fall time	tf		-	20	-	
Total gate charge	Qg	V_{DS}=15V,I_D=3.6A V_{GS}=10V	-	40	-	nC
Gate-source charge	Qgs		-	0.75	-	
Gate-drain charge	Qgd		-	0.65	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	V_{GS}=0V,Is=1A	-	0.76	1.16	V

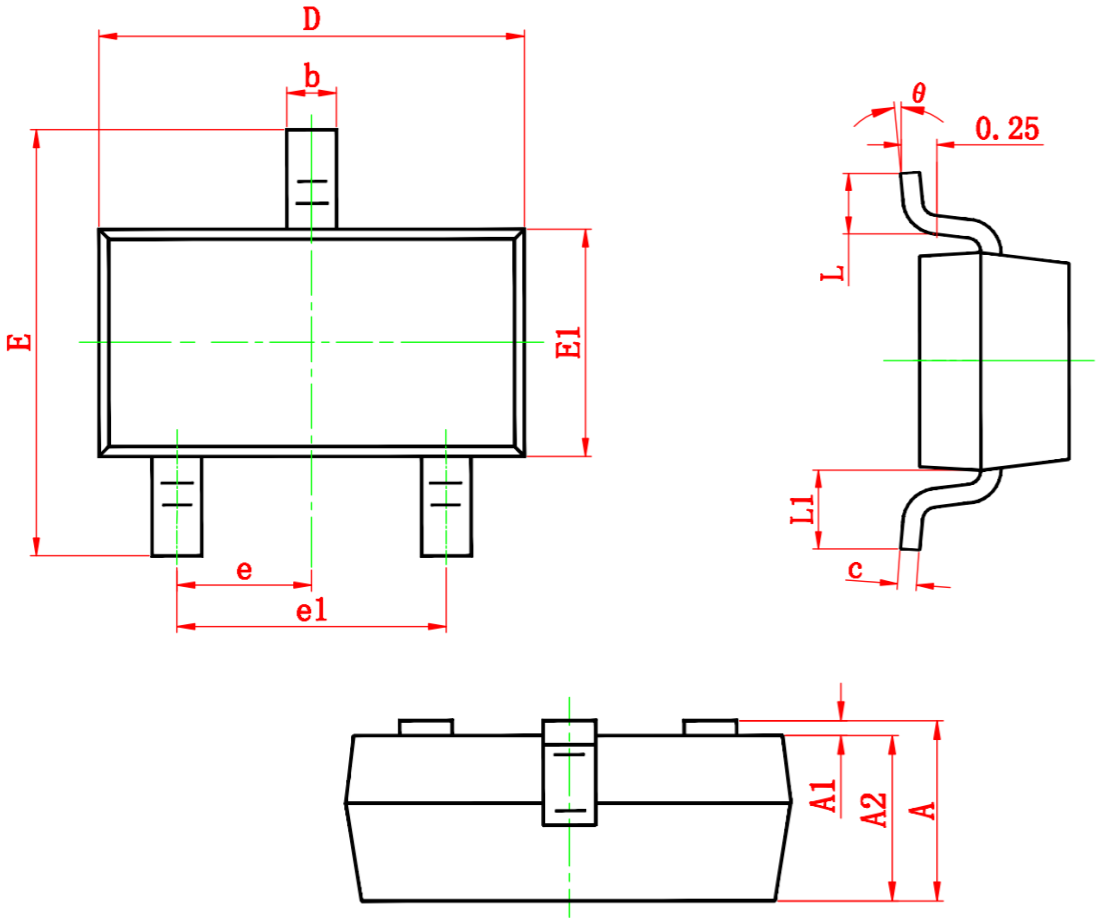
Notes

a. Pulse test: Pulse width ≤ 300 μs, duty cycle ≤ 2 %

b. Guaranteed by design, not subject to production testing

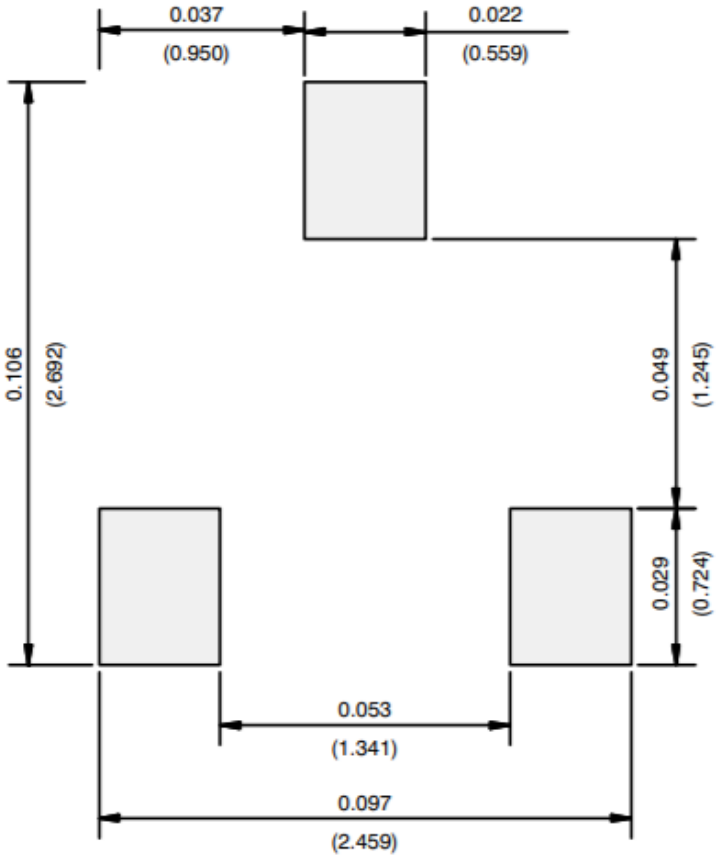
PACKAGE INFORMATION

- **SOT-23**



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°

RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads
Dimensions in Inches/(mm)