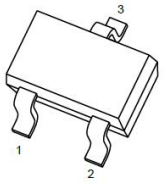
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-2N7002KW Plastic-Encapsulated MOSFET

AD-2N7002KW N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$,Max	I_D
60V	2.5Ω @ 10V	340mA
	3Ω @ 4.5V	

SOT-323



1. GATE
2. SOURCE
3. DRAIN

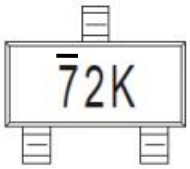
FEATURES

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected
- AEC-Q101 qualified

APPLICATIONS

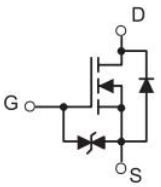
- Load switch for portable devices
- DC/DC Converter

MARKING



$\overline{7}$2K = Device code

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current	I_D	340	mA
Pulsed drain current[1])	I_{DM}	800	mA
Maximum power dissipation	P_D [1)]	0.2	W
Thermal resistance from junction to ambient	$R_{\theta JA}$ [4)]	625	°C/W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

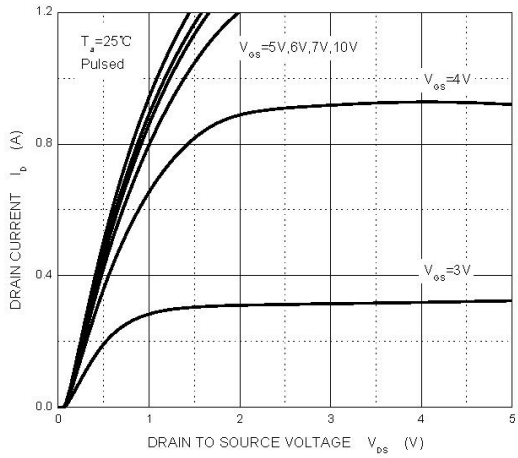
ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	-	-	V
Gate threshold voltage[2)]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 1mA	1	1.3	2.5	V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V	-	-	1.0	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V	-	-	±10	μA
Drain-source on-state resistance [2)]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 500mA	-	0.9	2.5	Ω
		V_{GS} = 4.5V, I_D = 200mA	-	1.1	3	
Dynamic characteristics [3)]						
Input capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	-	-	40	pF
Output capacitance	C_{oss}		-	-	30	
Reverse transfer capacitance	C_{rss}		-	-	10	
Switching parameters [3)]						
Turn-on delay time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} = 50V, R_G = 50Ω,	-	-	10	ns
Turn-off delay time	$t_{d(off)}$	R_{GS} = 50Ω, R_L = 250Ω	-	-	15	
Reverse recovery time	t_{rr}	V_{GS} = 0V, I_S = 300mA, V_R = 25V, d_{Is}/d_t = -100A/μs	-	30	-	ns
Recovered charge	Q_r	V_{GS} = 0V, I_S = 300mA, V_R = 25V, d_{Is}/d_t = -100A/μs	-	30	-	nC
GATE-SOURCE ZENER DIODE						
Gate-source breakdown voltage	BV_{GSO}	I_{GS} = ±1mA (open drain)	±21.5	-	±30	V
DRAIN-SOURCE DIODE						
Drain forward voltage[2)]	V_{SD}	I_S = 300mA, V_{GS} = 0V	-	-	1.5	V
Continuous Diode Forward Current	I_S	-	-	-	0.2	A
Pulsed Diode Forward Current[1)]	I_{SM}	-	-	-	0.53	A

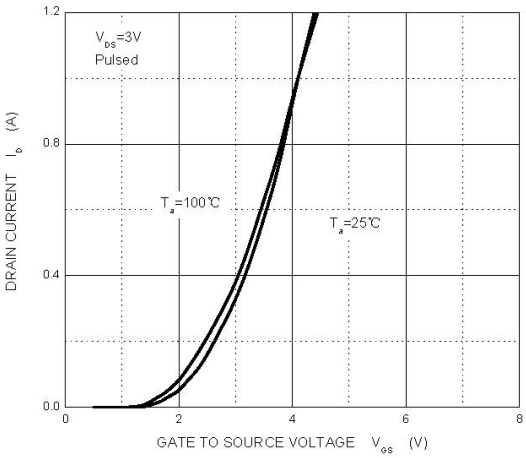
1) Repetitive rating: pluse width limited by junction temperature.
2) Pulse Test : Pulse width≤300μs, duty cycle≤2%.
3) Guaranteed by design, not subject to production testing.
4) Measured with the device mounted on 1 inch^2 FR-4 board with no copper, in a still air environment with T_a = 25℃

TYPICAL CHARACTERISTICS

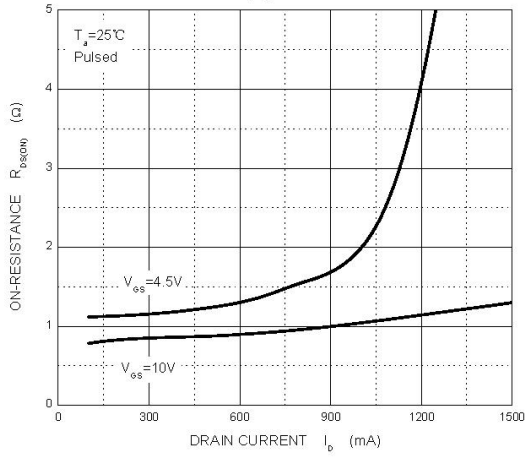
Output Characteristics



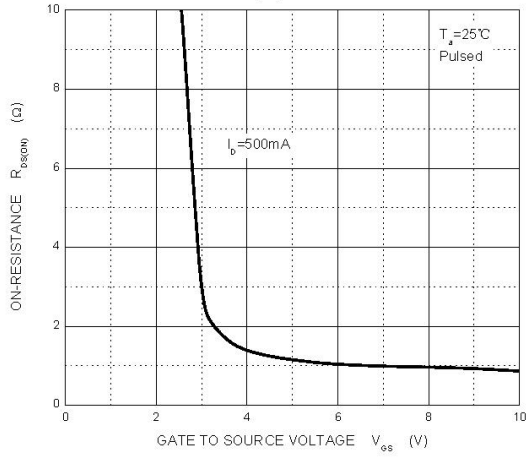
Transfer Characteristics



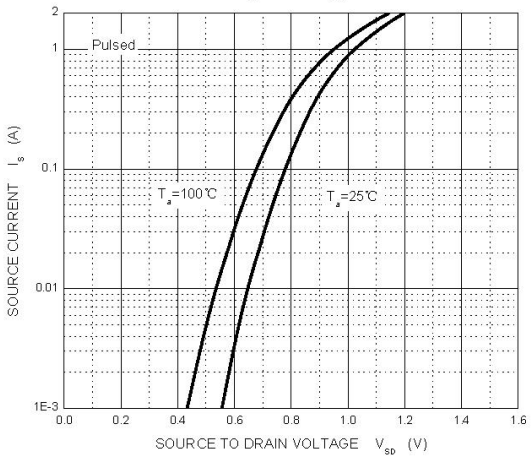
$R_{DS(ON)}$ —— I_D



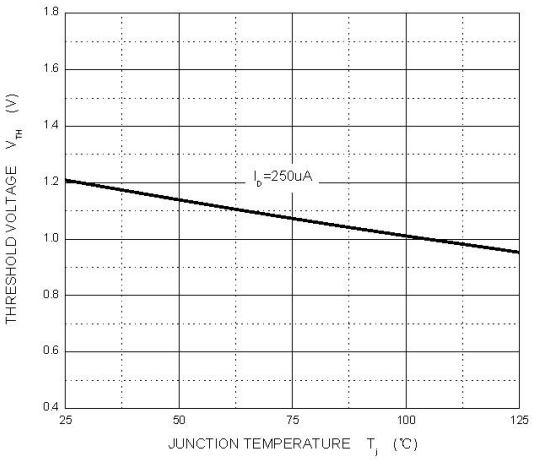
$R_{DS(ON)}$ —— V_{GS}



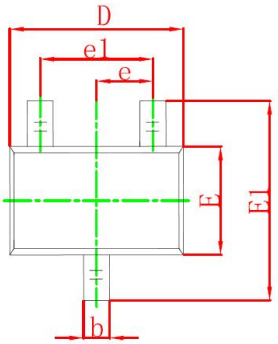
I_S —— V_{SD}

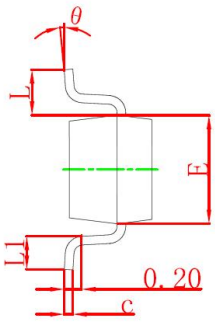


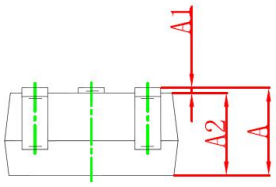
Threshold Voltage



SOT-323 PACKAGE OUTLINE DIMENSIONS

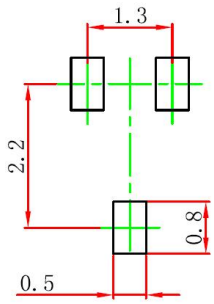






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

SOT-323 SUGGESTED PAD LAYOUT

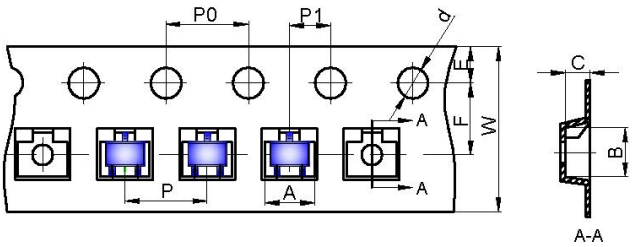


Note:

1. Controlling dimension in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purpose only.

SOT-323 TAPE AND REEL

SOT-323 Embossed Carrier Tape

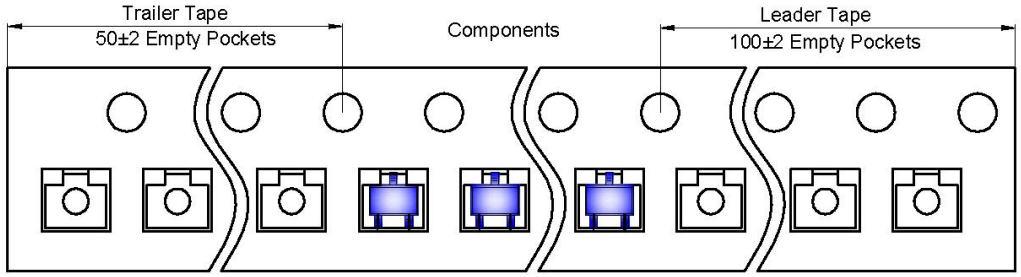


Packaging Description:

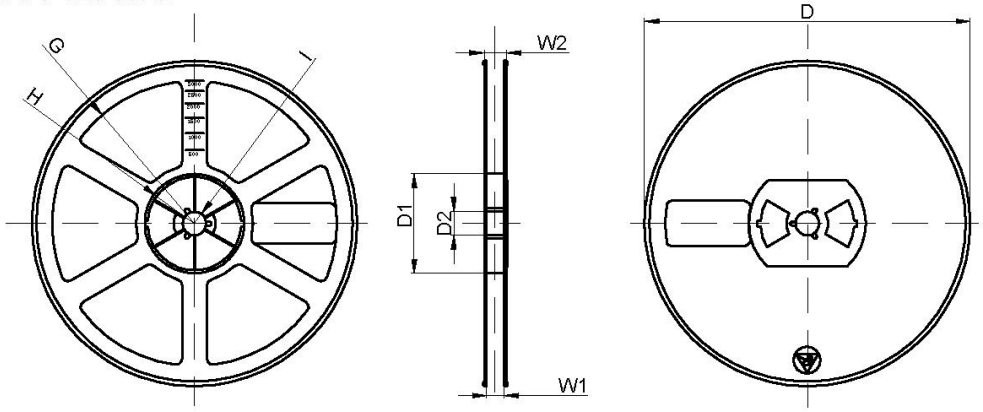
SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

SOT-323 Tape Leader and Trailer



SOT-323 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	

PUBLISHED BY

JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.
13th Floor, C Block, Tengfei Building, Yan Chuang Yuan, Nanjing Jiangbei New Area, China

LEGAL DISCLAIMER

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples, hints or typical values stated herein and/or any information regarding the application of the device, JSCJ hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of JSCJ in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

INFORMATION

For further information on technology, delivery terms and conditions as well as prices, please contact your nearest JSCJ office (www.jscj-elec.com).

WARNINGS

Due to technical requirements, products may contain dangerous substances. For information on the types in question, please contact your nearest JSCJ office.

Except as otherwise explicitly approved by JSCJ in a written document signed by authorized representatives of JSCJ, JSCJ's products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.