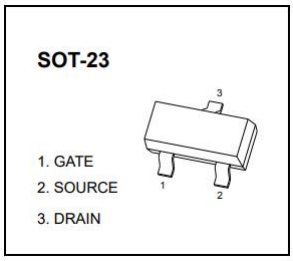
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-CJ2302 Plastic-Encapsulated MOSFET

AD-CJ2302 N-Channel 20-V(D-S) MOSFET

$V_{(BR)DSS}$	$R_{DS(on),\ max}$	I_D
20V	60mΩ @ 4.5V	2.1A
	115mΩ @ 2.5V	



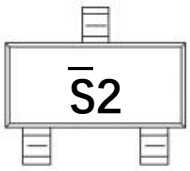
FEATURES

- TrenchFET power MOSFET
- AEC-Q101 qualified

APPLICATIONS

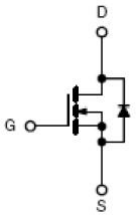
- Load switch for portable devices
- DC/DC converter

MARKING



$\bar{S}2$ = Device code

EQUIVALENT CIRCUIT



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

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±8	V
Continuous drain current	I_D	2.1	A
Continuous source-drain current (diode conduction)	I_S	0.6	A
Power dissipation	P_D 1)	0.75	W
Thermal resistance from junction to ambient	$R_{\theta JA}$ 1)	167	°C/W
Thermal resistance from junction to lead	$R_{\theta JL}$ 1)	15	°C/W
Thermal resistance from junction to ambient (t ≤ 5s)	$R_{\theta JA}$ 2)	312.5	°C/W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

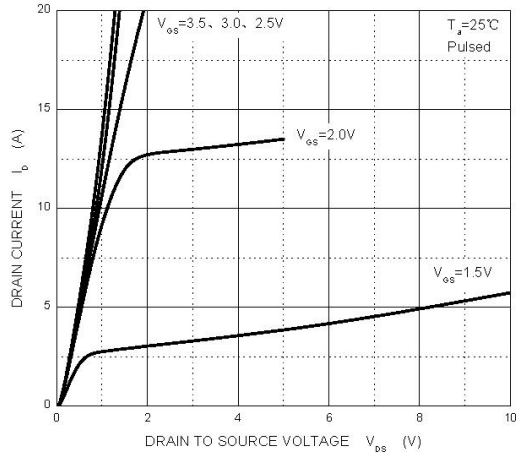
ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Static characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 10μA	20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 20V, V_{GS} = 0V	-	-	1.0	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±8V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.65	0.95	1.2	V
Forward transconductance	g_{fs} 3)	V_{DS} = 5V, I_D = 3.6A	-	8	-	S
Drain-source on-state resistance	$R_{DS(on)}$ 3)	V_{GS} = 4.5V, I_D = 3.6A	-	0.035	0.060	Ω
		V_{GS} = 2.5V, I_D = 3.1A	-	0.045	0.115	
Dynamic characteristics 4)						
Total gate charge	Q_g	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 3.6A	-	4.0	10	nC
Gate-source charge	Q_{gs}		-	0.65	-	
Gate-drain charge	Q_{gd}		-	1.5	-	
Input capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz	-	300	-	pF
Output capacitance	C_{oss}		-	120	-	
Reverse transfer capacitance	C_{rss}		-	80	-	
Switching parameters 4)						
Turn-on delay time	$t_{d(on)}$	V_{DD} = 10V, I_D = 3.6A, R_G = 6Ω, V_{GEN} = 4.5V, R_L = 2.8Ω	-	7	15	ns
Turn-off delay time	$t_{d(off)}$		-	16	60	
Rise time	t_r		-	55	80	
Fall time	t_f		-	10	25	
Diode characteristics						
Drain-source diode forward voltage	V_{SD} 2)	I_S = 0.94A, V_{GS} = 0V	-	0.76	1.2	V

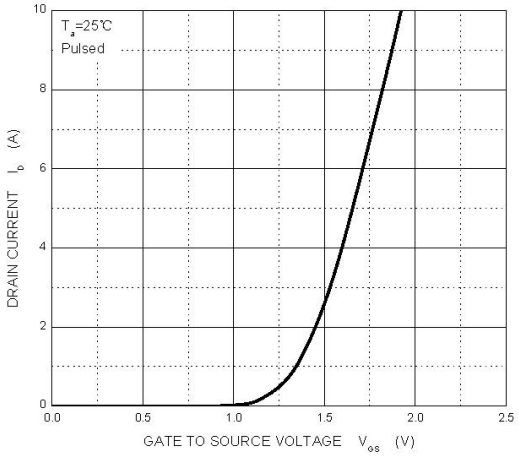
1) Measured with the device mounted on 1 cm^2 FR-4 board with 1oz. copper, in a still air environment with T_a = 25℃.
2) Measured with the device mounted on 1 cm^2 FR-4 board with minimum recommended pad size, no copper, in a still air environment with T_a = 25℃.
3) Pulse test: Pulse width ≤ 300μs, duty cycle ≤ 2%.
4) Guaranteed by design, not subject to production.

TYPICAL CHARACTERISTICS

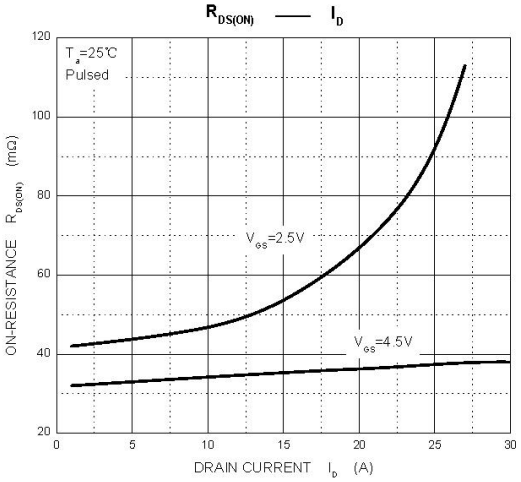
Output Characteristics



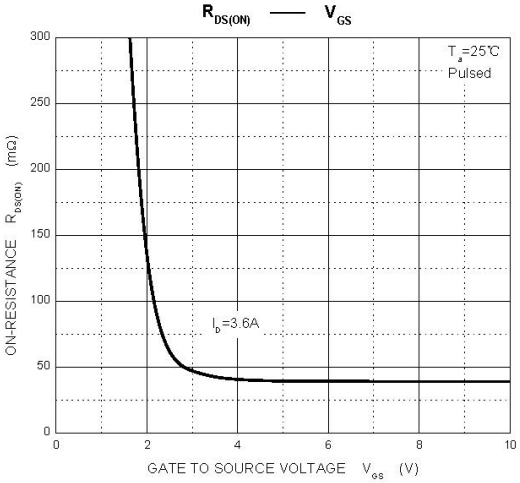
Transfer Characteristics



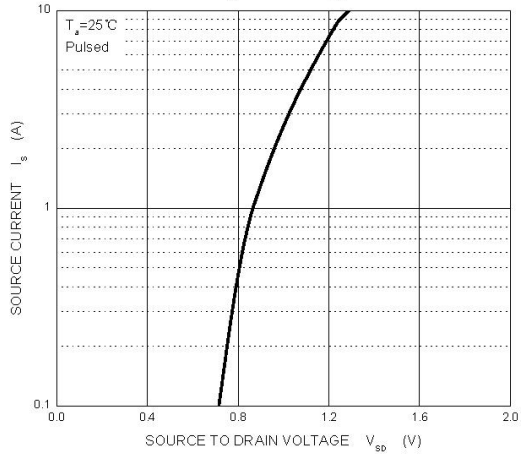
$R_{DS(ON)}$ —— I_D



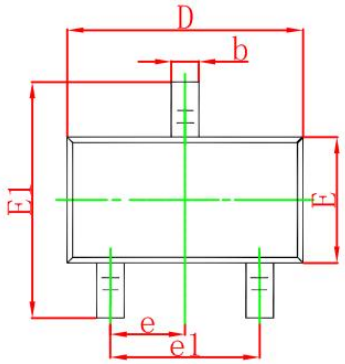
$R_{DS(ON)}$ —— V_{GS}

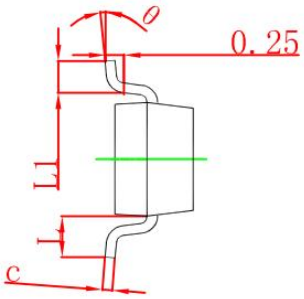


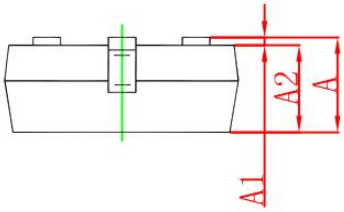
I_S —— V_{SD}



SOT-23 PACKAGE OUTLINE DIMENSIONS

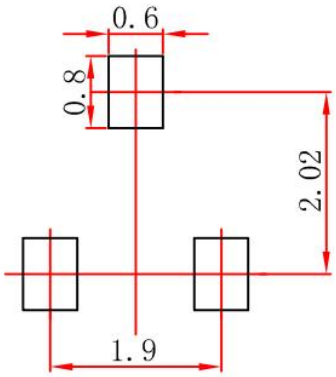






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 SUGGESTED PAD LAYOUT



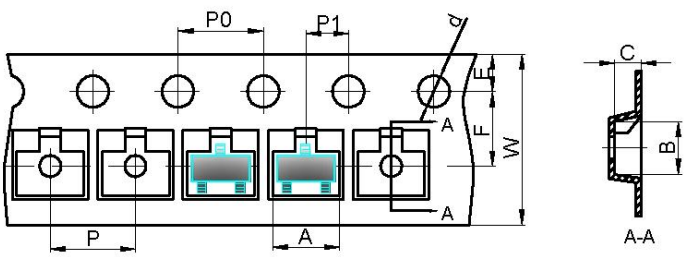
Note:

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

SOT-23 TAPE AND REEL

SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

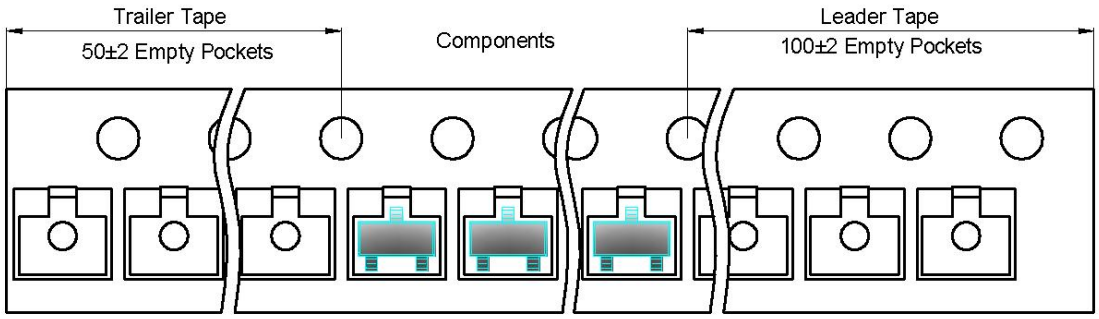


Packaging Description:

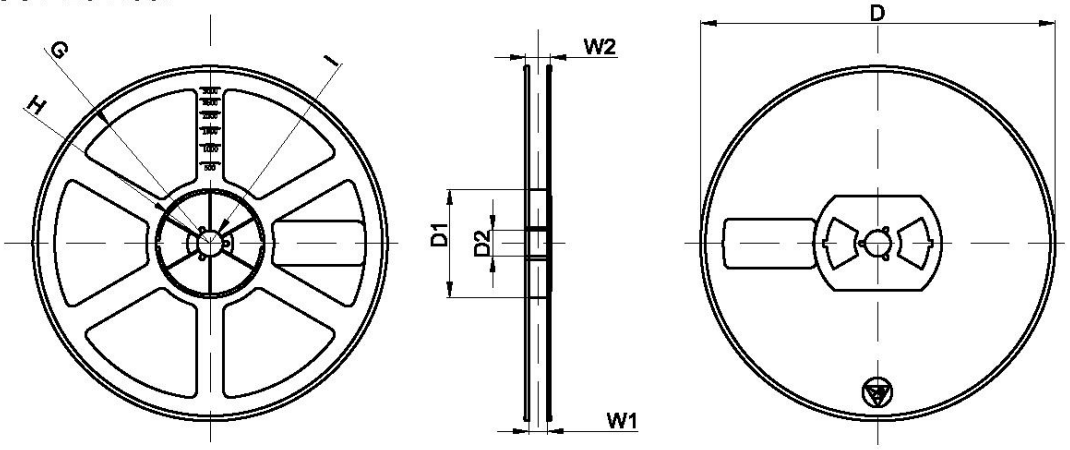
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in 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-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 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	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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

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