SZCJ

Shenzhen Changji Semiconductor Co., LTD.

JSCJ

Nano Power, Small Size, ESD Enhanced Comparator

CJCP201A-DJN Comparator

1 Introduction

The CJCP201A-DJN is an ultra low-power comparator with a typical power supply current of 0.4μA at 1.8V power supply. It has the best-in-class power supply current versus propagation delay performance. The propagation delay is as low as 5μs with 100mV overdrive at 1.8V power supply.

Designed and guaranteed to operate over a wide range of supply voltages, from 1.4V to 5.5V, the CJCP201A-DJN is ideal for use in a variety of battery powered applications. With rail-to-rail common-mode voltage range, the CJCP201A-DJN is well suited for single-supply or dual-supply operation. Featuring a push-pull output stage, the CJCP201A-DJN allows for operation with absolute minimum power consumption when driving any capacitive or resistive load.

CJCP201A-DJN is available in the Green DFNWB0.8×0.8-4L package. The CJCP201A-DJN is ideal for use in handheld electronics and mobile phone applications. It is rated over the -40°C to +85°C temperature range.

2 Available Packages

PARTNUMBER	PACKAGE
CJCP201A-DJN	DFNWB0.8×0.8-4L

Note: For all available packages, please refer to the part *Orderable Information*.

3 Features

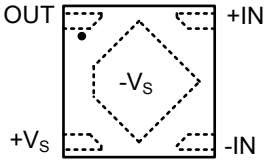
- Wide Supply Voltage Range: 1.4V ~ 5.5V
- Rail to Rail Input
- Propagation Delay:
  5μs (typ) at Vs = 1.8V
- Available in small DFNWB0.8×0.8 package
- Operating Temperature Range:
  -40°C to +85°C

4 Applications

- Mobile Phone
- RC Timers
- Window Detectors
- IR Receiver
- Multi-vibrators
- Alarm and Monitoring Circuits

5 Pin Configuration and Marking Information

5.1 Pin Configuration



DFNWB0.8×0.8-4L

5.2 Pin Function

PIN NAME	I/O	CJCP201A-DJN Pin Function
		DESCRIPTION
OUT	O	Output
$+V_S$	-	Positive supply
$-V_S$	-	Negative supply
-IN	I	Negative Input
+IN	I	Positive Input

5.3 Marking Information

Part Number	Package Type	Marking Code
CJCP201A-DJN	DFNWB0.8×0.8-4L	CA

6 Specifications

6.1 Absolute Maximum Ratings

(T_A = 25°C, unless otherwise specified)(1)

CHARACTERISTIC		SYMBOL	VALUE	UNIT
Supply voltage[(V+) - (V-)]		V_S	7	V
Signal input pins	Voltage(2)		(V-)-0.3 ~ (V+)+0.3	V
	Current(2)		±10	mA
Output short-circuit		T_{sc}	Continuous(3)	mA
Maximum junction temperature		$T_{J\ MAX}$	160	°C
Storage temperature		T_{stg}	-65 ~ 150	°C
Soldering temperature & time		T_{solder}	260°C, 10s	-

(1) Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

(2) All voltages are with respect to network ground terminal.

(3) Refer to Thermal Information for details.

6.2 Recommended Operating Conditions

PARAMETER	SYMBOL	MIN.	NOM.	MAX.	UNIT
Input voltage	V_{IN}	1.4	-	5.5	V
Operating junction temperature	T_J	-40	-	85	°C

6 Specifications

6.3 ESD Ratings

ESD RATINGS		SYMBOL	VALUE	UNIT
Electrostatic discharge(4)	Human body model	$V_{ESD-HBM}$	8000	V

(4) ESD testing is conducted in accordance with the relevant specifications formulated by the Joint Electronic Equipment Engineering Commission (JEDEC). The human body model (HBM) electrostatic discharge test is based on the JS-001-2017 test standard, using a 100pF capacitor and discharging to each pin of the device through a resistance of 1.5kΩ.

6 Specifications

6.4 Electrical Characteristics

V_S = 1.4V to 5.5V, T_A = + 25°C, V_{CM} = V_S/2, unless otherwise noted.

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
OFFSET VOLTAGE						
Input offset voltage	V_{OS}	V_S = 1.8V	-	±1	±5	mV
		T_A = −40 to +85°C	-	-	±7	
Hysteresis	V_{HYS}	V_S = 1.8V, V_{CM} = 0.225V	-	22	-	mV
		V_S = 1.8V, V_{CM} = V_S/2	13	20	29	mV
Power supply rejection ratio	PSRR	V_S = 1.8 to 3.3V	-	-140	-125.8	dB
INPUT VOLTAGE						
Common-mode voltage range	V_{CM}	-	(V-)−0.1	-	(V+)+0.1	V
Common-mode rejection ratio	CMRR	V_S = 3.3V, V_{CM} = 0.1 to 3.2V, T_A = −40 to +85°C	-	-132	-122	dB
INPUT BIAS CURRENT						
Input bias current	I_B	T_A = −40 to +85°C	-	1	-	nA
OUTPUT						
High output voltage swing	V_{OH}	I_O = 2.5mA, input overdrive ≥ 50mV, V_S = 5V	-	244	293	mV
		I_O = 2.5mA, input overdrive ≥ 50mV, V_S = 5V, T_A = −40 to +85°C	-	-	350	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 5V	-	23	-	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 5V, T_A = −40 to +85°C	-	-	30	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 1.8V	-	24	-	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 1.8V, T_A = −40 to +85°C	-	-	28	
Low output voltage swing	V_{OL}	I_O = 2.5mA, input overdrive ≥ 50mV, V_S = 5V	-	194	233	mV
		I_O = 2.5mA, input overdrive ≥ 50mV, V_S = 5V, T_A = −40 to +85°C	-	-	300	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 5V	-	83	-	
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 5V, T_A = −40 to +85°C	-	-	85	

6 Specifications

6.4 Electrical Characteristics (continued)

V_S = 1.4V to 5.5V, T_A = + 25°C, V_{CM} = V_S/2, unless otherwise noted.

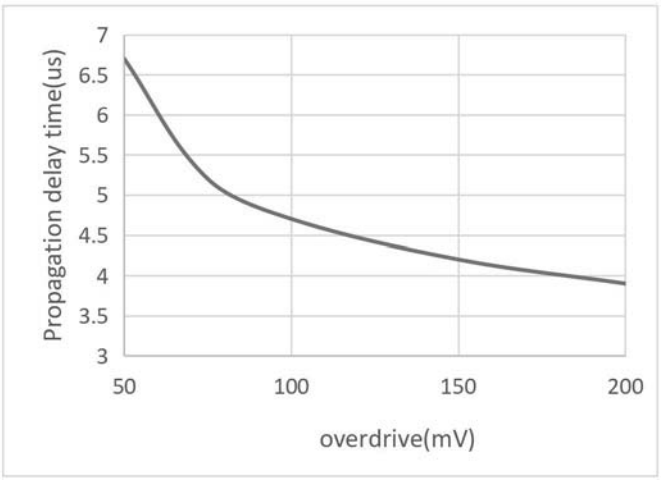
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Low output voltage swing	V_{OL}	I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 1.8V	-	14	-	mV
		I_O ≤ 100μA, input overdrive ≥ 50mV, V_S = 1.8V, T_A = −40 to +85°C	-	-	28	
Short-circuit current	Isource	V_S = 5V	-	41	-	mA
	Isink	V_S = 5V	-	54	-	
POWER SUPPLY						
Quiescent current	I_Q	V_S = 1.8V	-	360	500	nA
		V_S = 1.8V, T_A = −40 to +85°C	-	435	600	
SWITCHING CHARACTERISTICS						
Propagation delay time	t_{PHL}	V_S = 1.8V, Input overdrive = 50mV	-	7	-	μs
		V_S = 1.8V, Input overdrive = 100mV	-	5	-	
	t_{PLH}	V_S = 1.8V, Input overdrive = 50mV	-	7	-	
		V_S = 1.8V, Input overdrive = 100mV	-	5	-	
Rise time	t_R	V_S = 1.8V, Input overdrive = 100mV	-	36	-	ns
Fall time	t_F	V_S = 1.8V, Input overdrive = 100mV	-	28	-	

6 Specifications

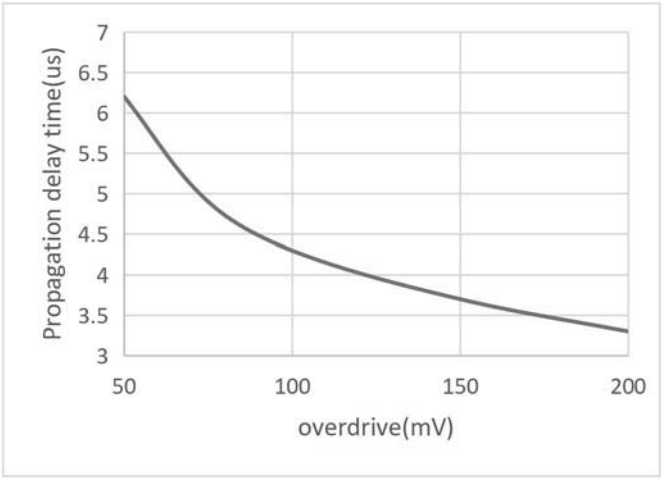
6.5 Typical Characteristics

V_S = 1.4V to 5.5V, T_A = + 25°C, V_{CM} = V_S/2, unless otherwise noted.

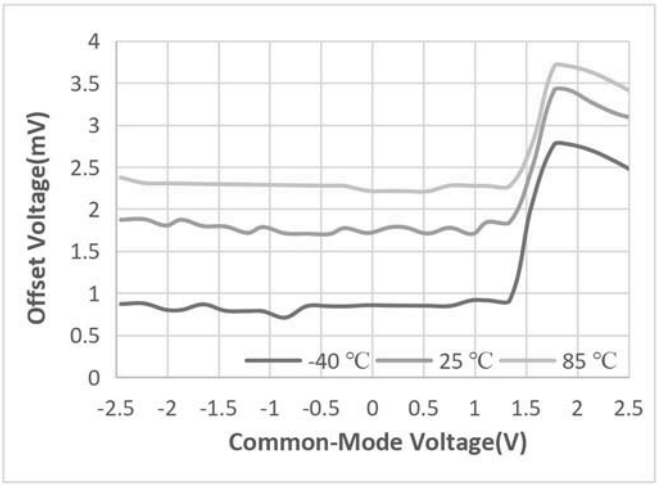
Tpd Low-to-high



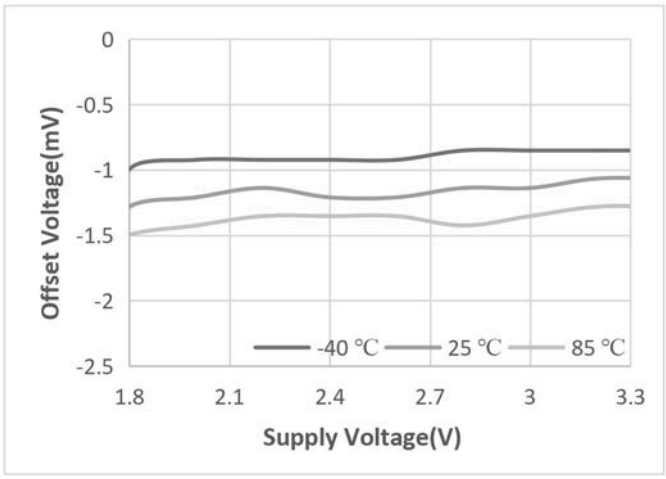
Tpd High-to-low



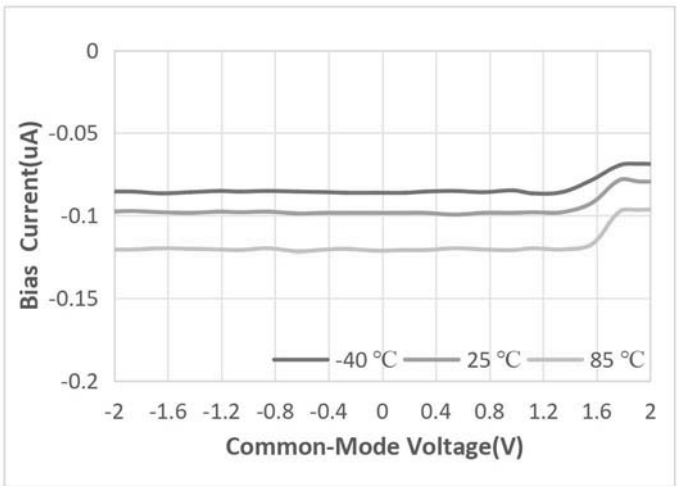
Offset Voltage vs. Common-mode Voltage



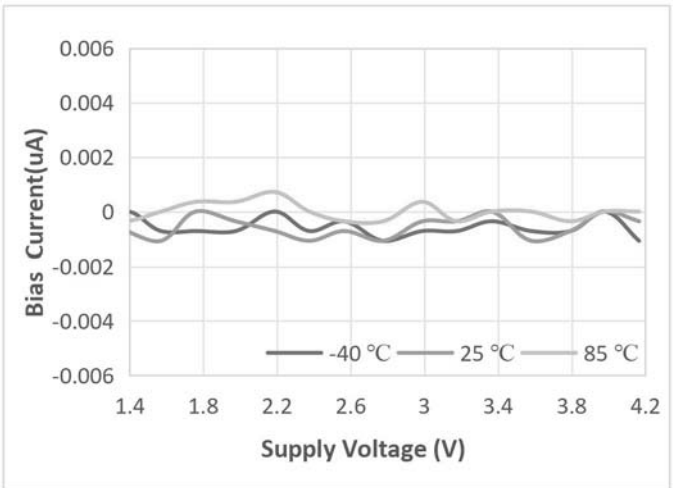
Offset Voltage vs. Supply Voltage



Bias Current vs. Common-mode Voltage



Bias Current vs. Supply Voltage



7 Application and Implementation

7.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, click the official website of JSCJ -- https:www.jscj-elec.com for more details.

7.2 Notes

Electrostatic Discharge Caution



This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

7.3 Revision History

August, 2025: released CJCP201A-DJN Rev-1.0.

8 Orderable, Mechanical, and Packaging Information

The following pages include mechanical packaging and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser based versions of this data sheet, refer to the left hand navigation.

DISCLAIMER

IMPORTANT NOTICE, PLEASE READ CAREFULLY

The information in this data sheet is intended to describe the operation and characteristics of our products. SZCJ has the right to make any modification, enhancement, improvement, correction or other changes to any content in this data sheet, including but not limited to specification parameters, circuit design and application information, without prior notice.

Any person who purchases or uses SZCJ products for design shall: 1. Select products suitable for circuit application and design; 2. Design, verify and test the rationality of circuit design; 3. Procedures to ensure that the design complies with relevant laws and regulations and the requirements of such laws and regulations. SZCJ makes no warranty or representation as to the accuracy or completeness of the information contained in this data sheet and assumes no responsibility for the application or use of any of the products described in this data sheet.

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Official Website: www.szcjsemi.com

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Orderable Information

MODEL	DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJCP201A	CJCP201A-DJN	DFNWB0.8×0.8-4L	-40 ~ 85°C	RoHS & Green	Level 3 168 HR	Tape and Reel 10000 Units / Reel	Active
Customized Products							
Others	-	-	-	-	-	-	Customized

Note:

ECO PLAN: For the RoHS and Green certification standards of this product, please refer to the official report provided by SZCJ

MSL: Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

SORT: Specifically defined as follows:

Active: Recommended for new products;

Customized: Products manufactured to meet the specific needs of customers;

Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;

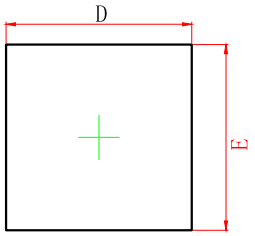
NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;

Obsolete: The device has been discontinued.

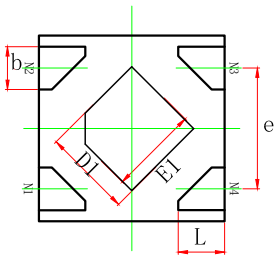
Mechanical Information

DFNWB0.8×0.8-4L Mechanical Information

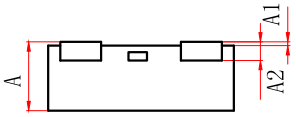
DFNWB0.8×0.8-4L Outline Dimensions



TOP VIEW



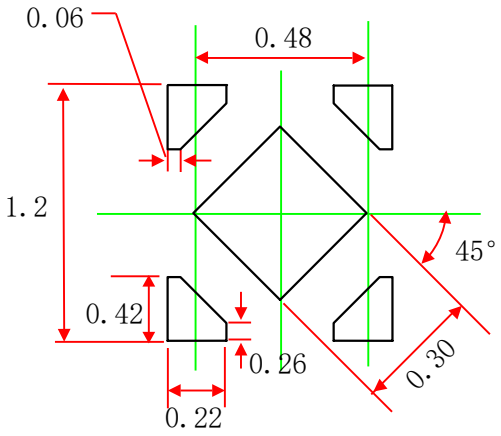
BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.340	0.400	0.013	0.016
A1	0.000	0.050	0.000	0.002
A2	0.100 REF.		0.004 REF.	
D	0.750	0.850	0.030	0.033
E	0.750	0.850	0.030	0.033
D1	0.200	0.300	0.008	0.012
E1	0.200	0.300	0.008	0.012
b	0.170	0.270	0.007	0.011
e	0.480BSC.		0.019BSCP.	
L	0.170	0.270	0.007	0.011

DFNWB0.8×0.8-4L Suggested Pad Layout



Note:

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