

READ2302G

High Drivability & High Slew Rate, Input Output Full Range,
CMOS Dual Operational Amplifier

R03DS0097EJ0200

Rev.2.00

 $V_{IO} \leq \pm 6\text{mV}$, $SR = 8\text{V}/\mu\text{s}$, $GBW = 6\text{MHz}$

Apr. 17, 2017

Description

The READ2302G is input and output full range dual CMOS Operational Amplifier realizing high drivability and high slew rate. This IC can be used in minimum operating supply voltage from 2.5V, and in wide ambient temperature range from -40°C to +105°C.

Available in ultra-small 8 pins TSSOP packages.

Features

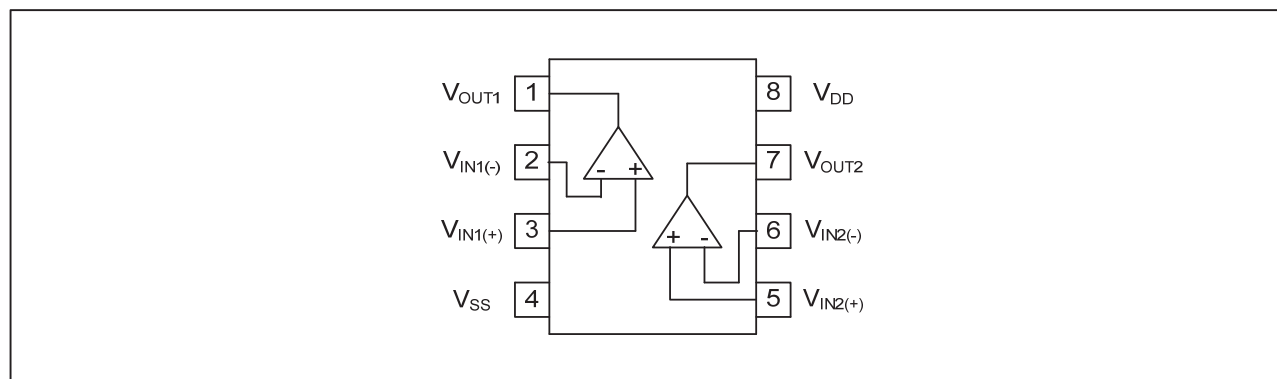
- Low voltage single supply operation $V_{DD} = 2.5\text{V}$ to 5.5V
- Low input offset voltage $V_{IO} \leq \pm 6.0\text{mV}$
- Low input bias current $I_B \leq (1\text{pA})$.
- Wide output voltage range $V_{OUT} : V_{SS} + 0.1\text{V}$ to $V_{DD} - 0.1\text{V} (@I_O = 5\text{mA})$
- Supply current (per channel) $I_{DD} = 0.75\text{mA}$ Typ.
- High slew rate $SR = 8\text{V}/\mu\text{s}$ Typ.

() reference value of design

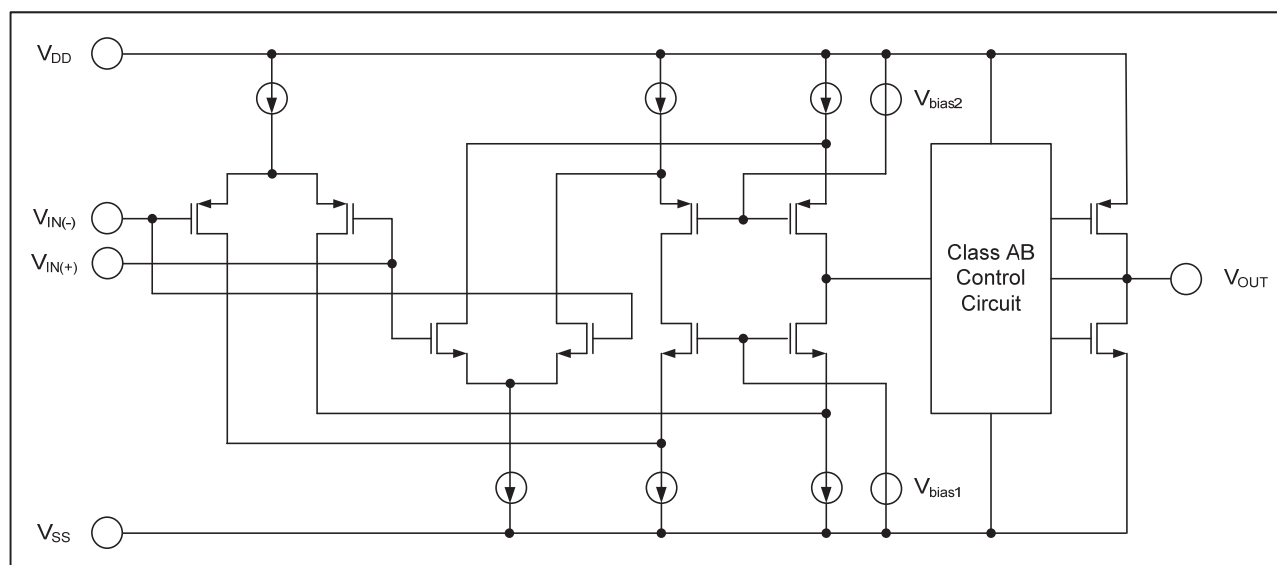
Product Line-up

Type name	Product type quality level	Package
READ2302GSP	High slew rate with Normal quality level	8 pins plastic TSSOP

Pin Arrangement



Equivalent Circuit (per one channel)



Absolute Maximum Ratings

<T_A=25 °C >

Items	Symbol	Ratings	Unit
Supply voltage ^{Note.1}	V _{DD}	-0.3 to +6.5	V
Differential input voltage	V _{ID}	-V _{DD} to +V _{DD}	V
Input voltage ^{Note.2}	V _I	-0.3 to V _{DD} +0.3	V
Maximum output current	I _O	20	mA
Power dissipation ^{Note.3}	P _T	440	mW
Junction temperature	T _J	+150	°C
Operating temp. range	T _A	-40 to +105	°C
Storage temp. range	T _{stg}	-55 to +150	°C

Note 1. Please take note that reverse connection of a power supply may cause destruction.

2. Stresses above these ratings may cause permanent damage such as characteristics degradation or destruction. Please do not exceed voltage below of GND-0.3V as it is bottom limit. In addition, operation amplifier is operated as normal when input voltage for electrical characteristics is in common mode input voltage range.

3. The value is measured under mounted on a glass epoxy base board (size 100mm×100mm, 1mm thickness, copper foiled surface base board area with 15% solid pattern). Please take note that every package has derating rate's restriction reception.

Electrical Characteristics<V_{DD}=5V, T_A=25 °C >

Items	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Supply voltage	V _{DD} - V _{SS}	2.5		5.5	V	
Input offset voltage	V _{IO}			±6.0	mV	
Input offset current	I _{IO}			(1)	pA	
Input bias current	I _B			(1)	pA	
Output high voltage	V _{OH}	V _{DD} -0.2			V	I _L = 10mA
Output low voltage	V _{OL}			V _{SS} +0.2	V	I _L = 10mA
Voltage gain	A _v	60	90		dB	R _L ≥100kΩ
Channel supply current	I _{DD} /ch		0.75	1.5	mA	R _L =∞, I _O =0
Common mode rejection ratio	CMRR	60	80		dB	
Supply voltage rejection ratio	SVRR	60	80		dB	
Common mode input voltage range	V _{ICM}	V _{SS}		V _{DD}	V	
Gain bandwidth product	GBW		6		MHz	C _L =20pF
Slew rate	SR		8		V/μs	C _L =20pF

() reference value of design

Notes

Output terminal : The over-current protection feature is not built in the output terminal of this product.

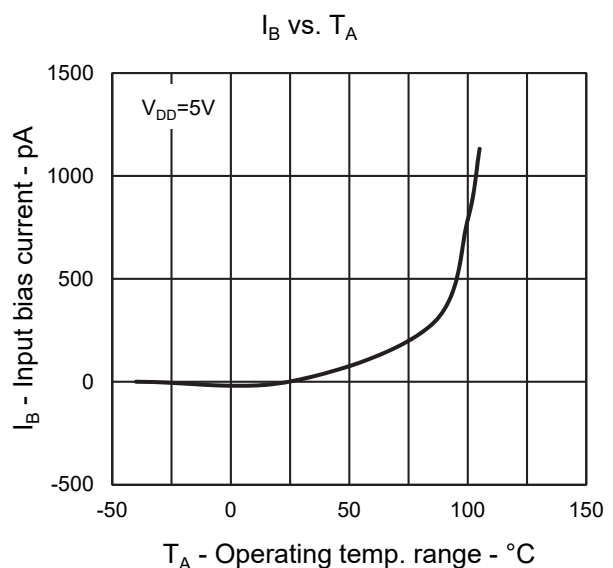
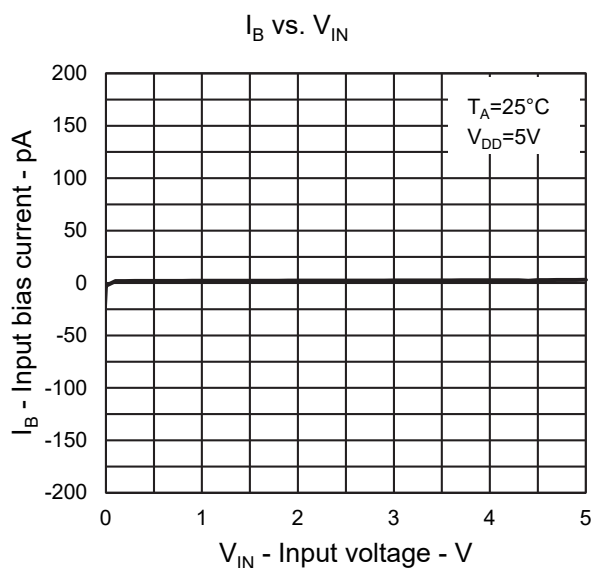
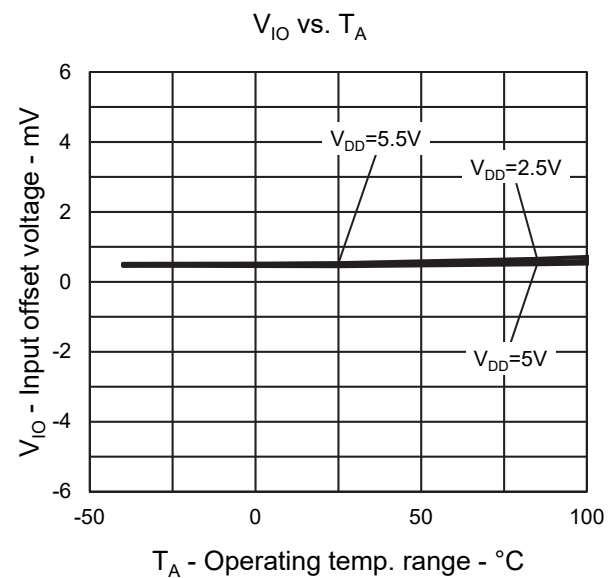
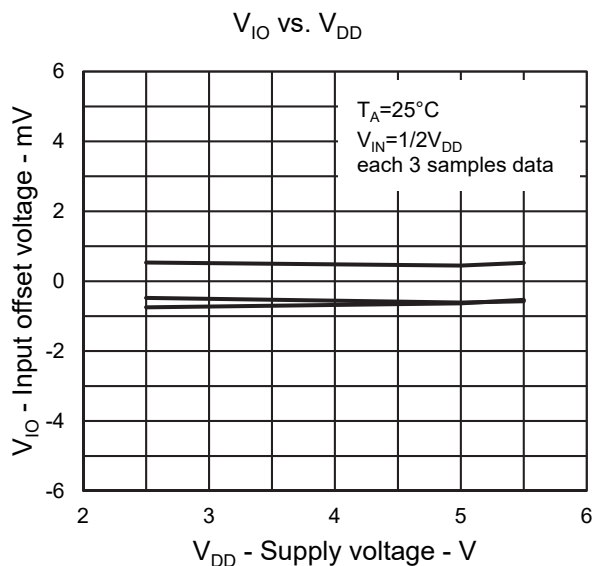
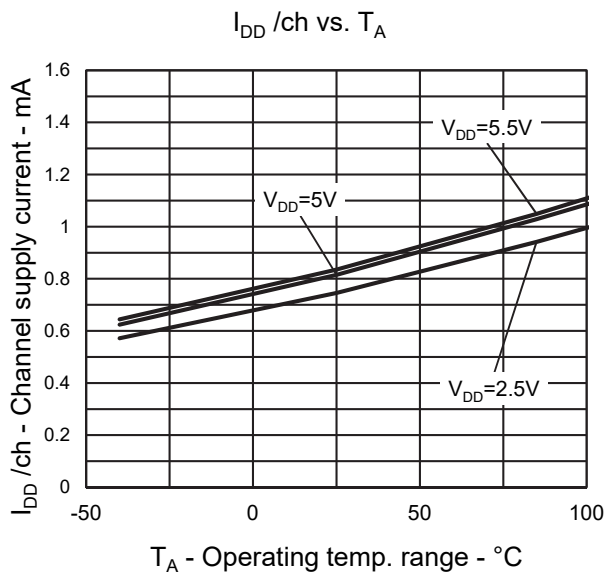
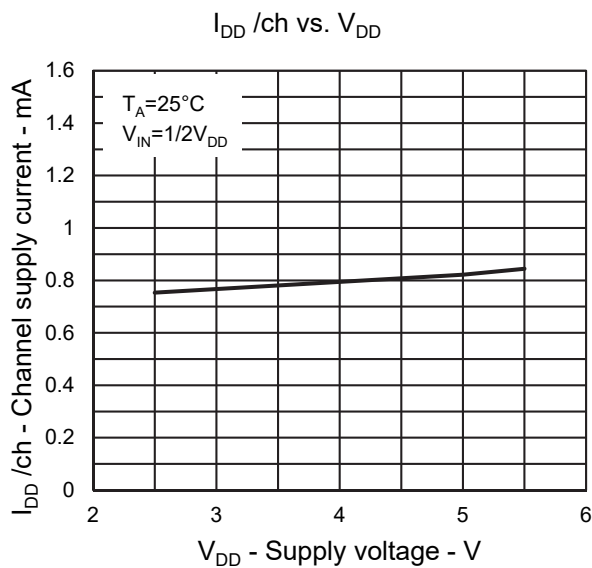
Therefore, please insert resistance to output port.

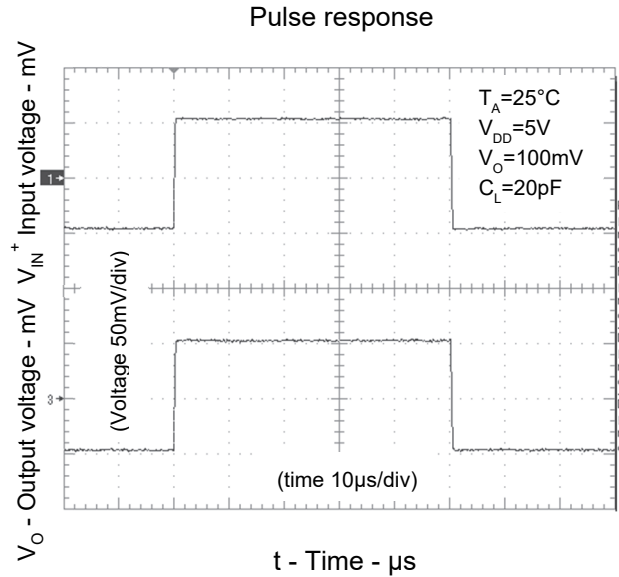
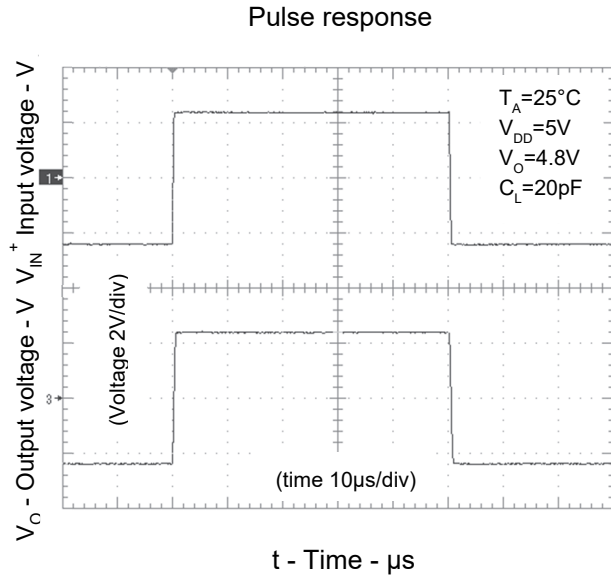
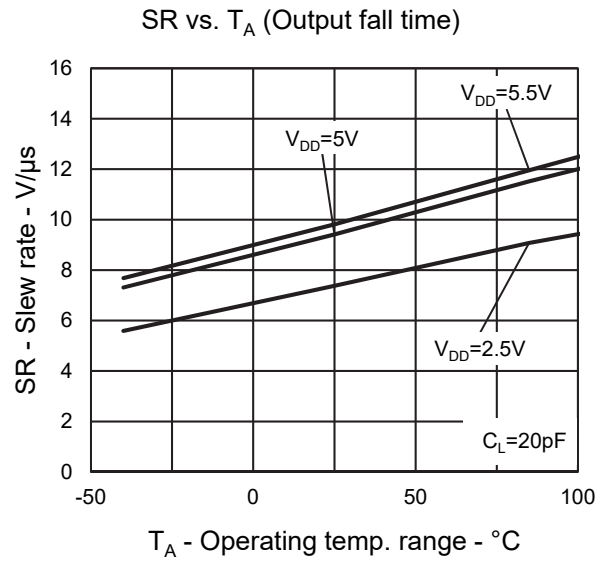
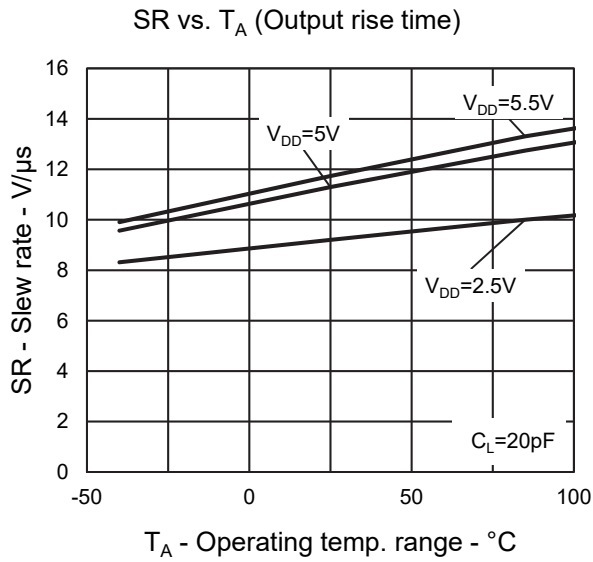
Input offset voltage : the amplifier circuit of the first block of operational amplifier.

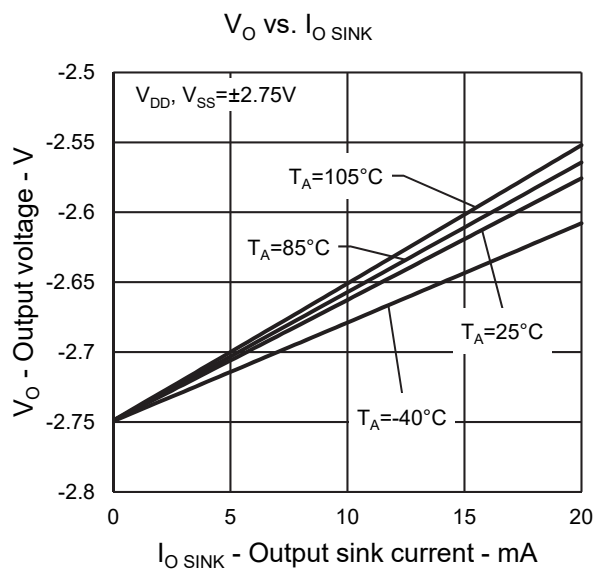
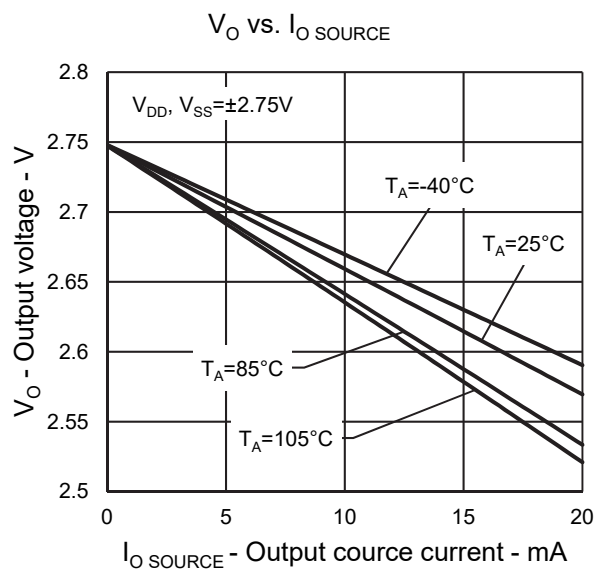
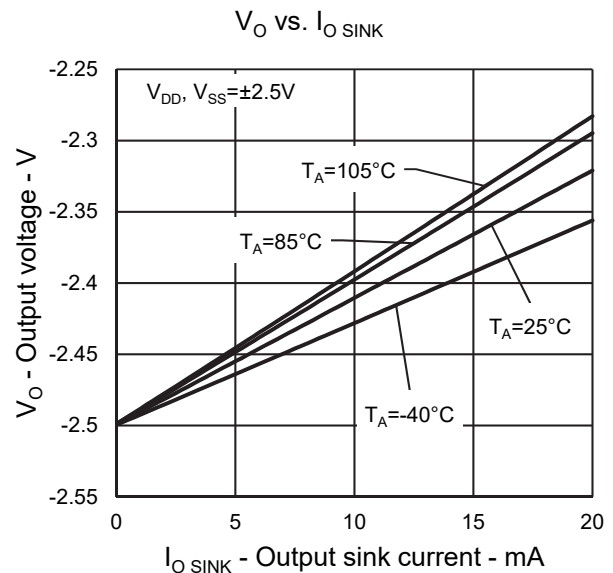
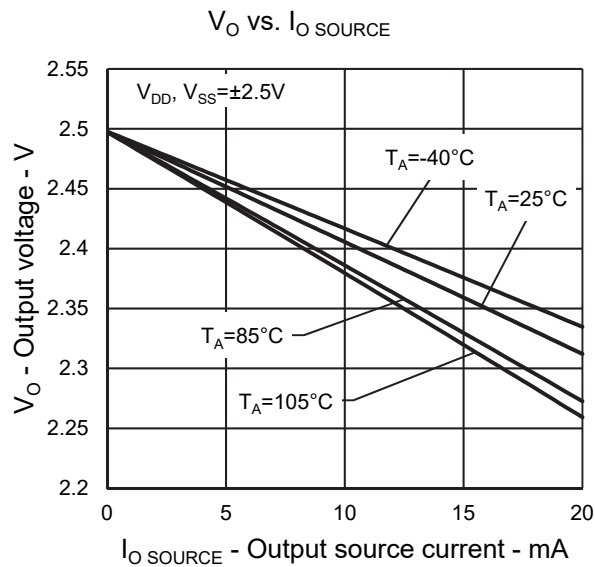
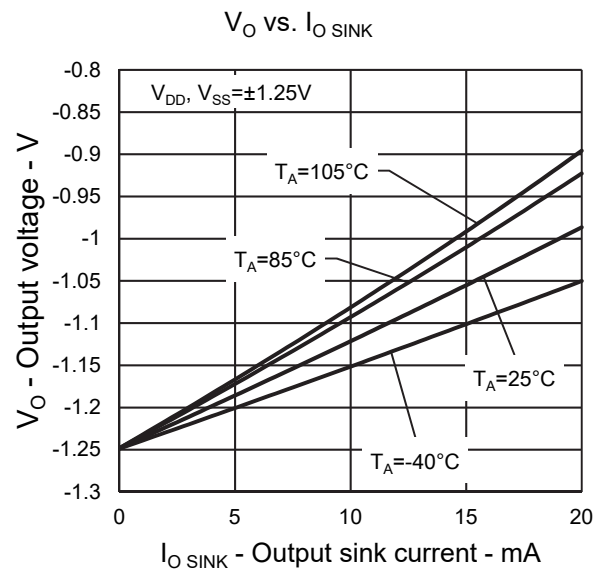
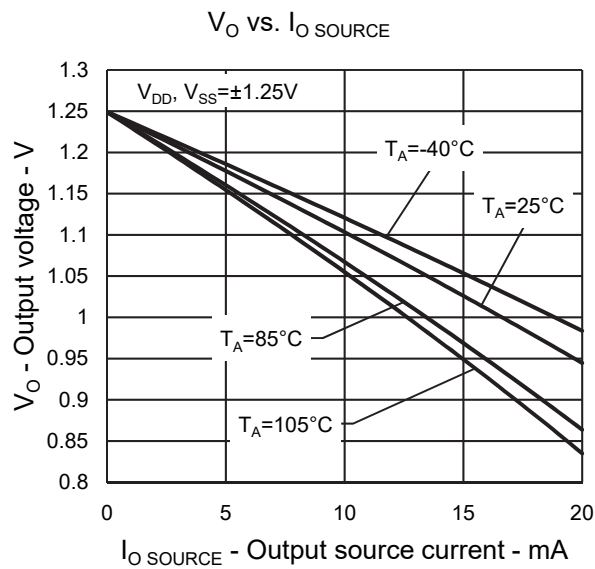
A circuit suitable for operation near GND, and a circuit suitable for operation near +power supply.

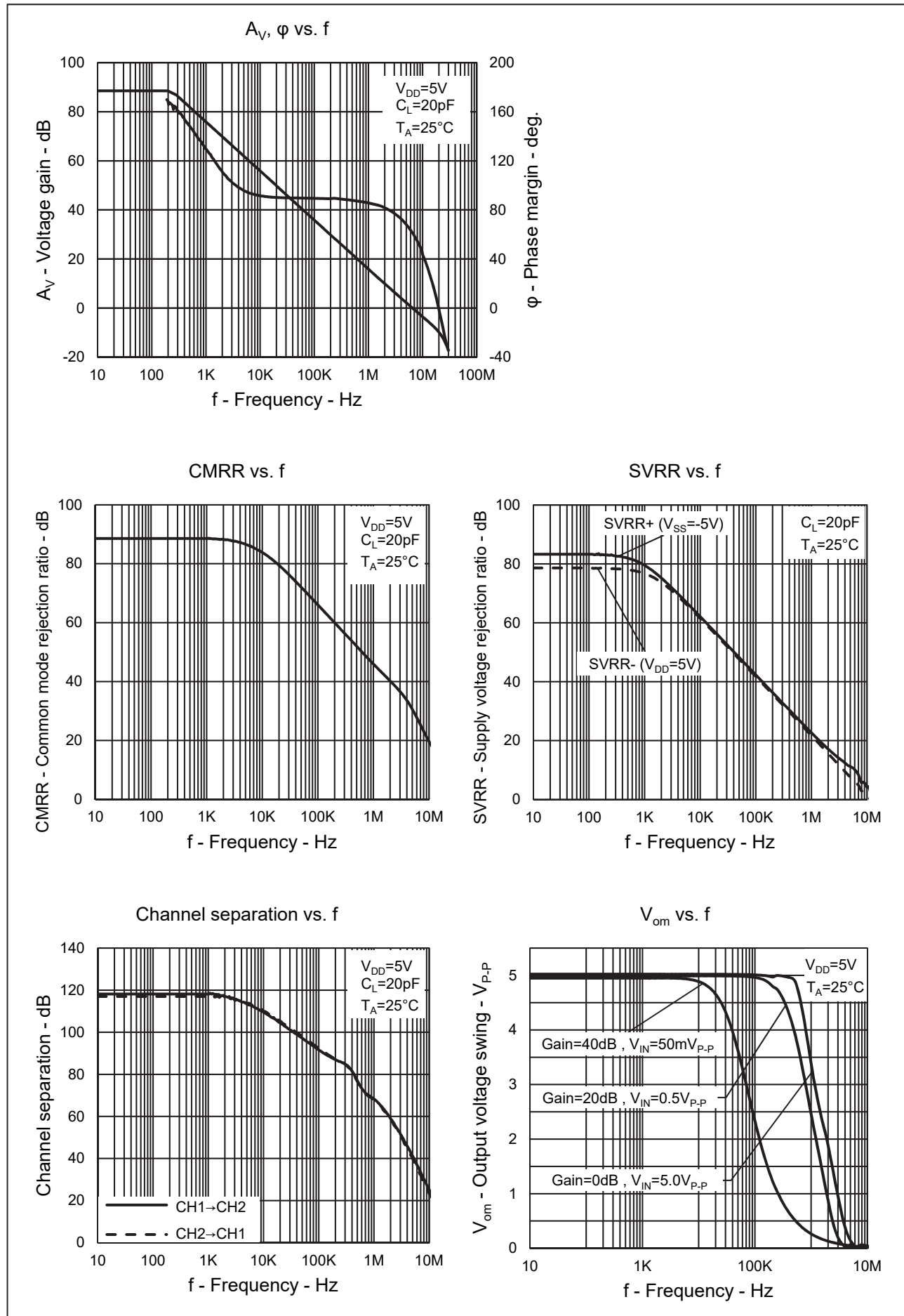
in case of input voltage of overlap point output port has a minute voltage shift or distortion.

Electrical Characteristics







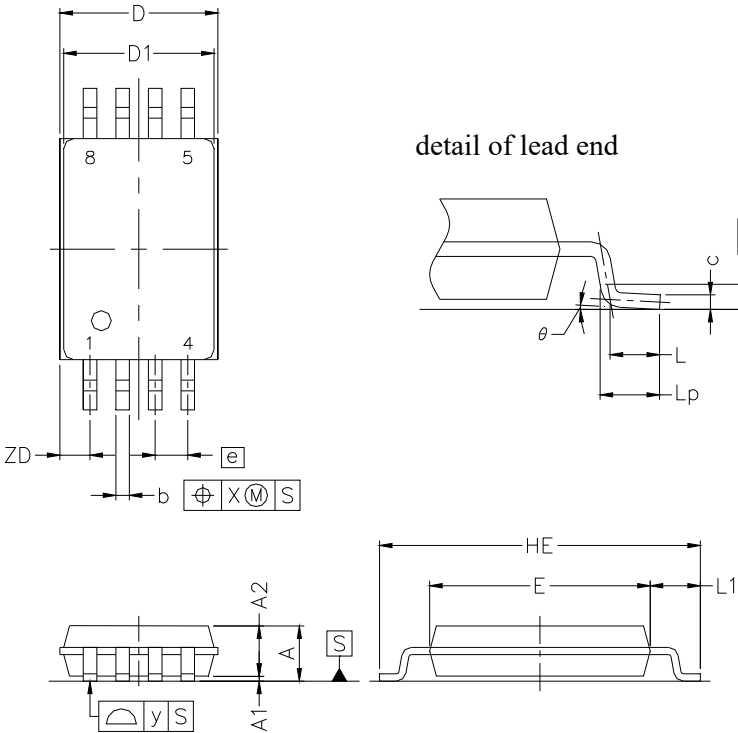


Package Dimensions

8-PIN PLASTIC TSSOP

JEITA Package code	RENESAS code	Previous code	MASS(TYP.)[g]
P-TSSOP8-0225-0.65	PTSP0008JD-A	P8GR-65-9LG	-

Unit:mm



NOTE

Each lead centerline is located within 0.10 mm of its true position at maximum material condition.

ITEM	MILLIMETERS
D	3.15 ±0.15
D1	3.00 ±0.10
E	4.40 ±0.10
HE	6.40 ±0.20
A	1.20 MAX.
A1	0.10 ±0.05
A2	1.00 ±0.05
A3	0.25
b	0.24 ^{+0.06} _{-0.05}
c	0.145 ±0.055
L	0.5
Lp	0.60 ±0.15
L1	1.00 ±0.20
θ	3° ^{+5°} _{-3°}
e	0.65
x	0.10
y	0.10
ZD	0.60

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2801 Scott Boulevard Santa Clara, CA 95050-2549, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
9251 Yonge Street, Suite 8309 Richmond Hill, Ontario Canada L4C 9T3
Tel: +1-905-237-2004

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadistraße 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100191, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, P. R. China 200333
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1611, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852-2886-9022

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886-2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 1207, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jin Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics India Pvt. Ltd.
No.777C, 100 Feet Road, HAL II Stage, Indiranagar, Bangalore, (India)
Tel: +91-80-67208700, Fax: +91-80-67208777

Renesas Electronics Korea Co., Ltd.
12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

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