SONY

CXA3299TN

Wideband Pre-amplifier

Description

The CXA3299TN is a wideband Pre-amplifier for VTR head.

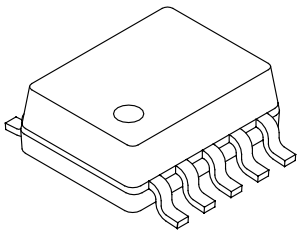
Features

- Operate on single +3.3 V power supply
- Low power consumption
  Read : 58 mW
- Ultra small package
- Wideband (–3 dB) : 160 MHz (typ)
- Read amplifier emitter follower output featuring 380 times gain (typ).
- Low input capacitance : 3.0 pF
- Low input noise : 0.65 nV /$\sqrt{\text{Hz}}$

Structure

Bipolar silicon monolithic IC

10 pin TSSOP (Plastic)



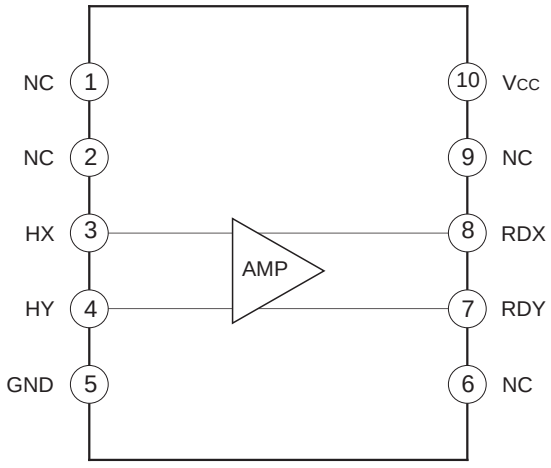
Absolute Maximum Ratings (Ta=25 °C)

• Supply voltage	V_{CC}	6	V
• Operating temperature	Topr	–20 to +70	°C
• Storage temperature	Tstg	–55 to +150	°C
• Allowable power dissipation (on board)	P_D	1000	mW

Operating Conditions

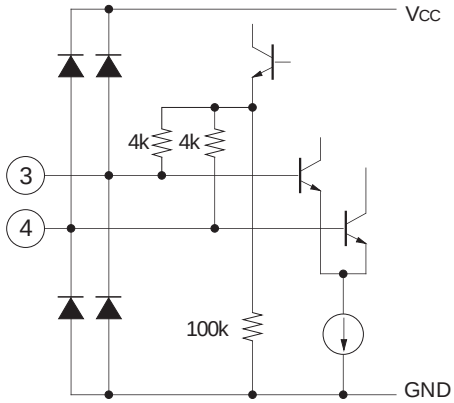
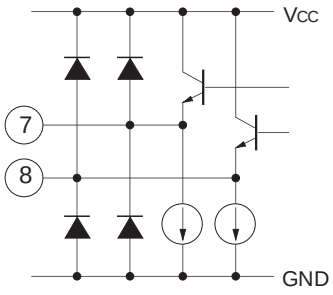
Supply voltage	V_{CC}	3.2 to 5.5	V

Block Diagram and Pin Configuration



E98Z30-TE

Pin Description

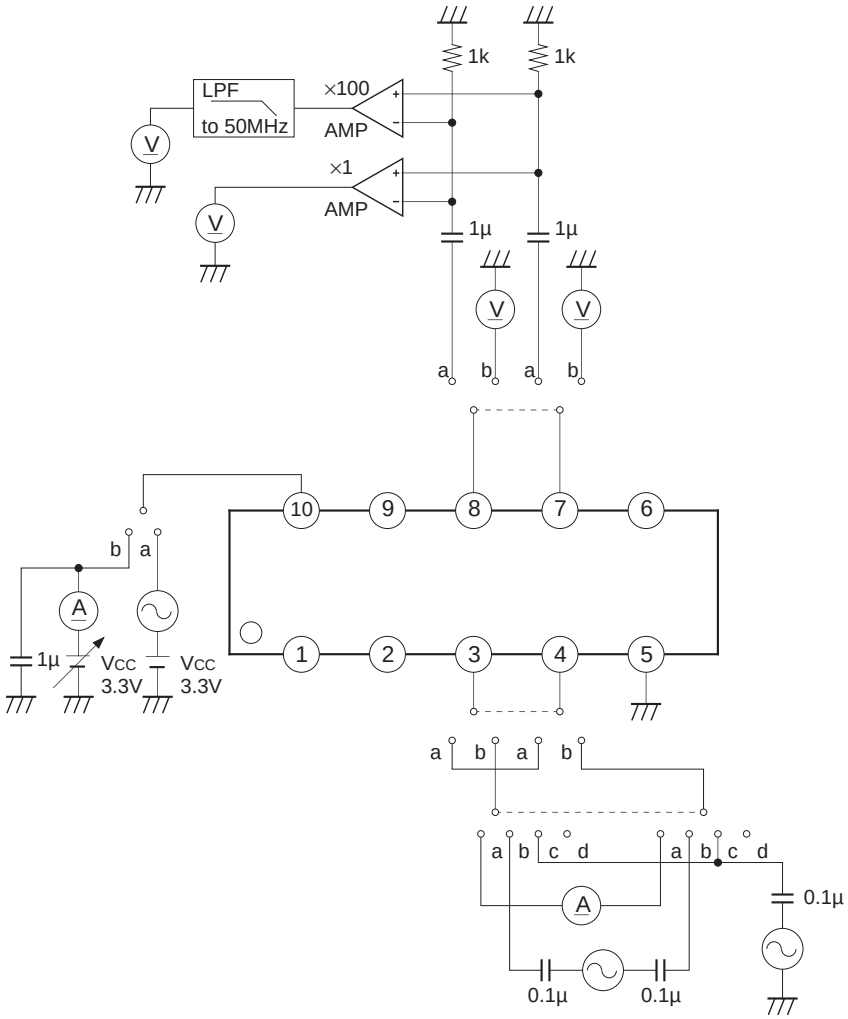
No.	Symbol	Equivalent circuit	Description
1 2	NC		
3 4	H0X H0Y		Head.
5	GND		
6	NC		
7 8	RDY RDX		Read amplifier output.
9	NC		
10	Vcc		

Electrical Characteristics (Unless otherwise specified, V_{CC}=3.3 V, Ta=25 °C)

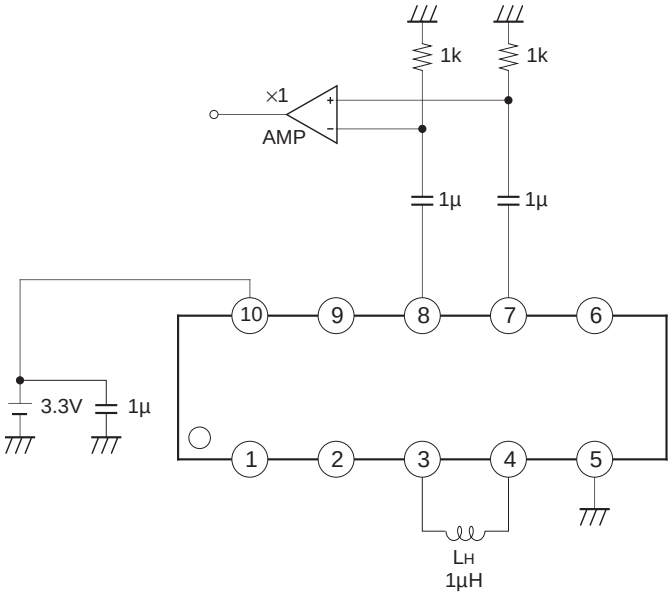
Item	Symbol	Test condition	Min.	Typ.	Max.	Unit.
Current consumption for read	I_{CC}		13.5	17.5	*22.5	mA
Read amplifier differential voltage gain	A_V	Input voltage : 1 mVp-p, 300 kHz	300	380	460	V/V
Frequency band width (–3 dB)	B_W	Frequency at which A_V lower by 3 dB	100	160		MHz
Input referred noise voltage	E_N	Head impedance : 0 Ω		0.65	0.8	$\frac{nV}{\sqrt{Hz}}$
Common mode rejection ratio	CMRR	Common input voltage : 100 mVp-p, 20 MHz	50			dB
Supply voltage rejection ratio	PSRR	Ripple voltage : 100 mVp-p, 20 MHz	50			dB
Read data output offset voltage for Read	V_{OFFR}	$V_{OFFR}=V_{RDX}-V_{RDY}$	–300		300	mV
Differential input capacitance	C_{IN}			3.0	4.5	pF
Differential input resistance	R_{IN}		0.7	1.8	3.0	kΩ
Output resistance	R_{RD}			4	8	Ω
Read data output sink current	Isink		2.5	3.2	4.3	mA
Read data output voltage	V_{RD}			V_{CC} –1.6		V

∗ Guaranteed until Ta=70 °C

Test Circuit 1



Test Circuit 2



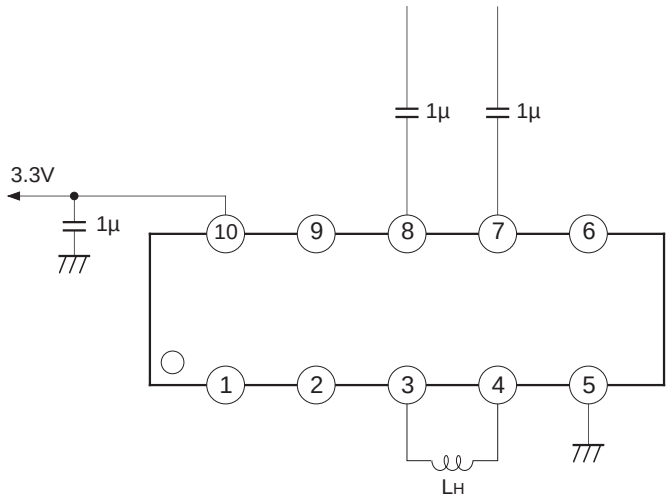
Description of Functions

Pre-amplifier

This is a low noise amplifier for amplifying the signals from the heads with an emitter follower output.

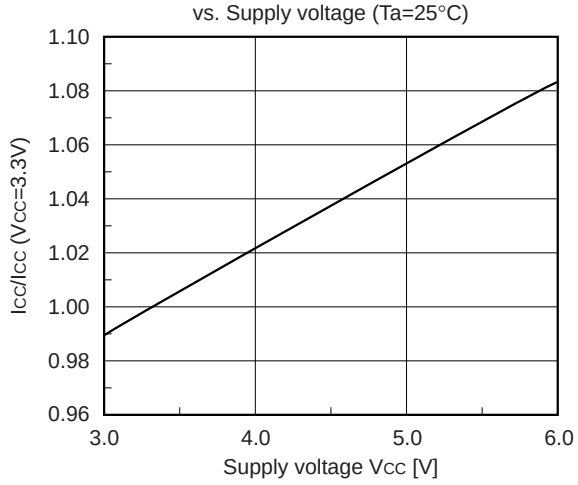
The RDX and RDY are the outputs of the differential amplifier whose polarity between the RDX and X side of the head input is same.

Application Circuit

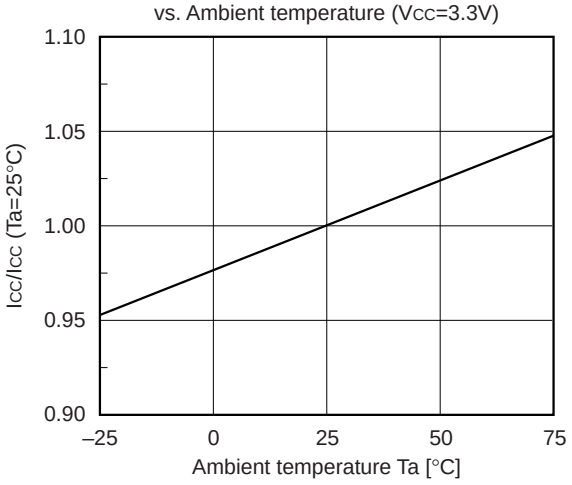


Application circuits shown are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits or for any infringement of third party patent and other right due to same.

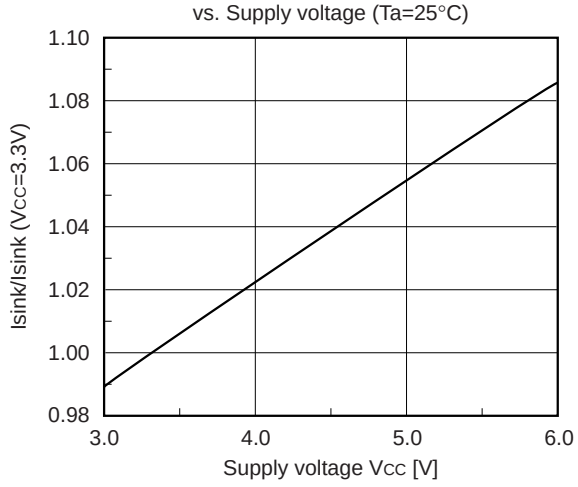
Normalized current consumption
vs. Supply voltage (Ta=25°C)



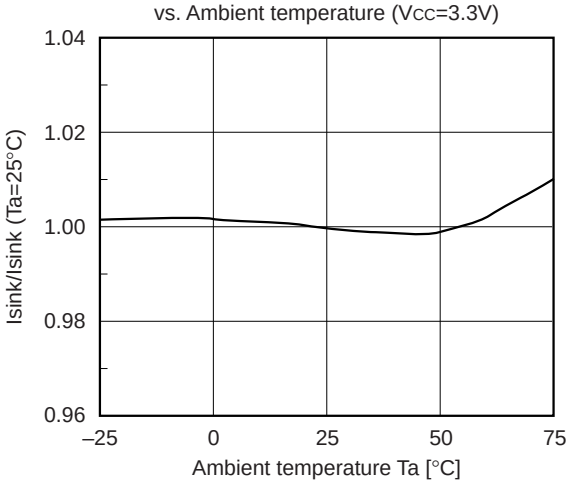
Normalized current consumption
vs. Ambient temperature (Vcc=3.3V)



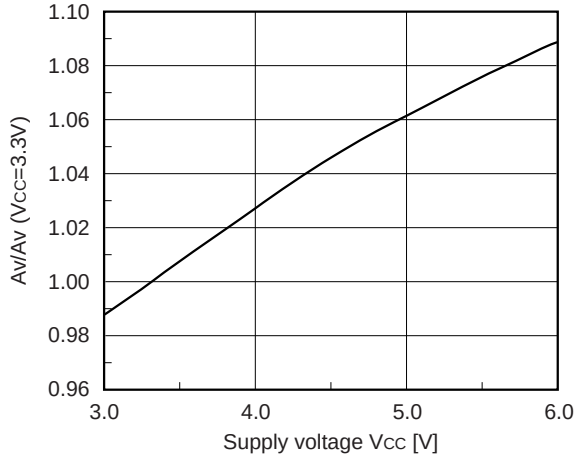
Normalized read data output sink current
vs. Supply voltage (Ta=25°C)



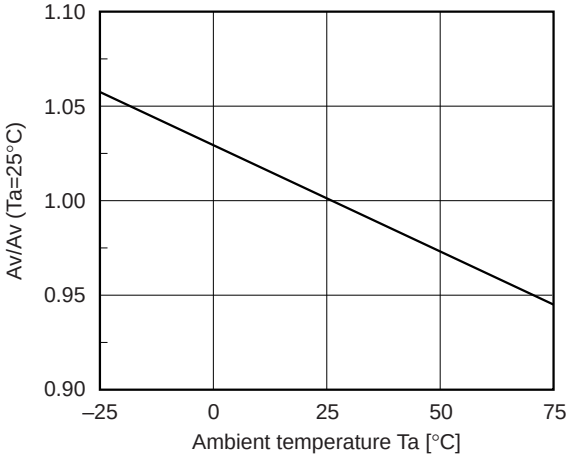
Normalized read data output sink current
vs. Ambient temperature (Vcc=3.3V)



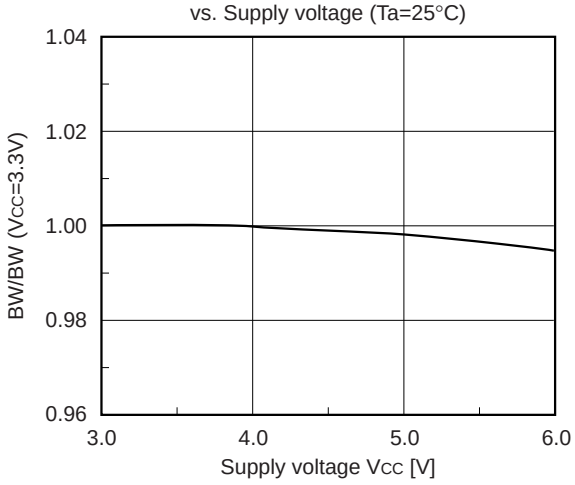
Normalized read amplifier differential voltage gain
vs. Supply voltage (Ta=25°C)



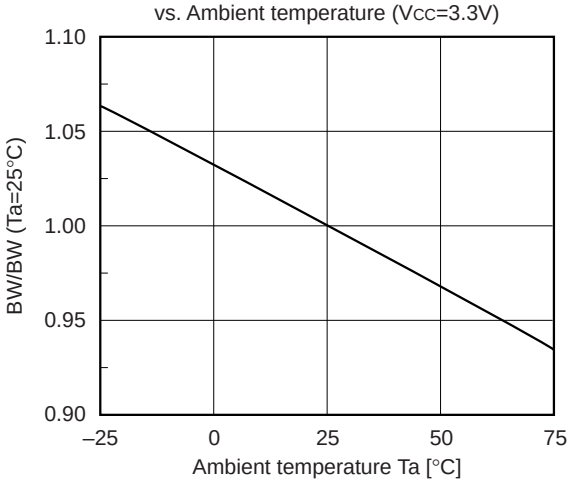
Normalized read amplifier differential voltage gain
vs. Ambient temperature (Vcc=3.3V)



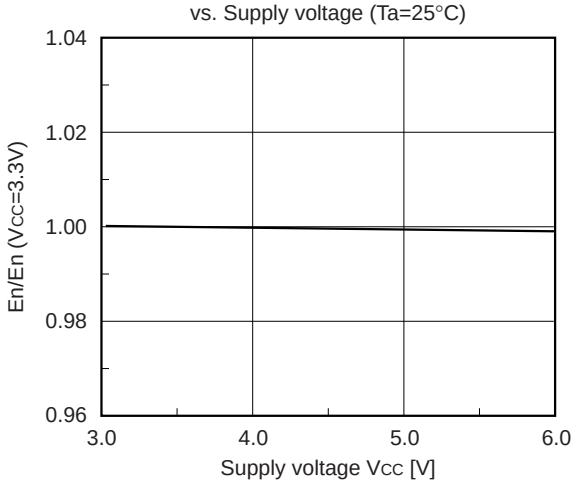
Normalized frequency band width (–3dB)
vs. Supply voltage (Ta=25°C)



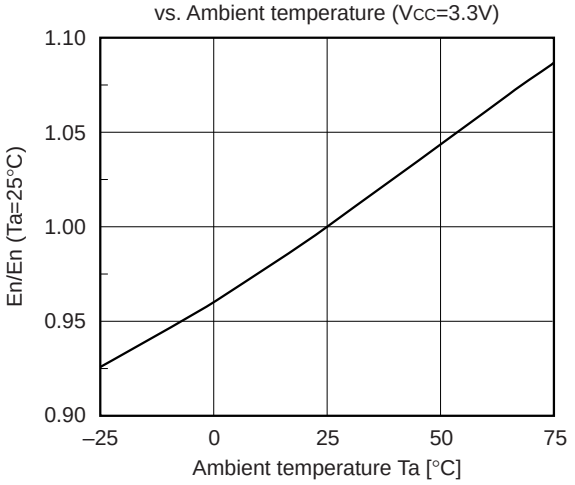
Normalized frequency band width (–3dB)
vs. Ambient temperature (VCC=3.3V)



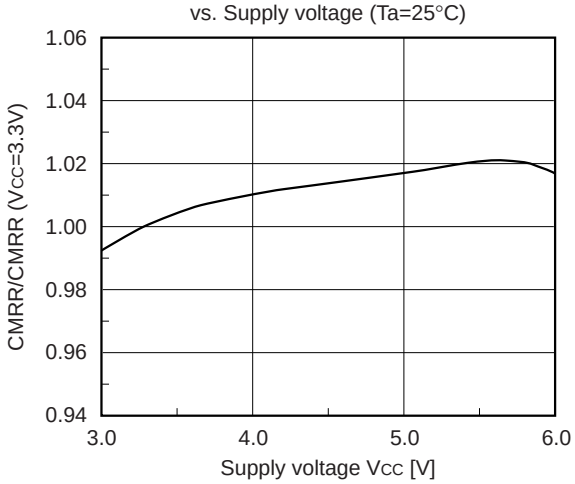
Normalized input referred noise voltage
vs. Supply voltage (Ta=25°C)



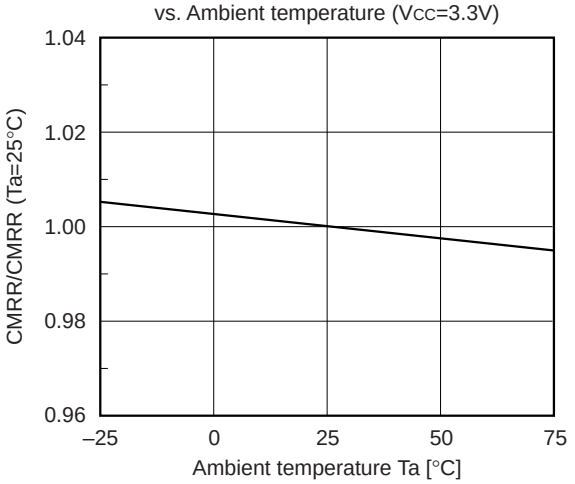
Normalized input referred noise voltage
vs. Ambient temperature (VCC=3.3V)



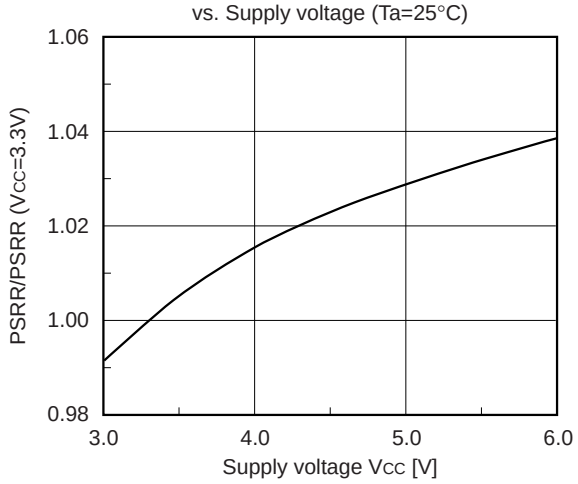
Normalized common mode rejection ratio
vs. Supply voltage (Ta=25°C)



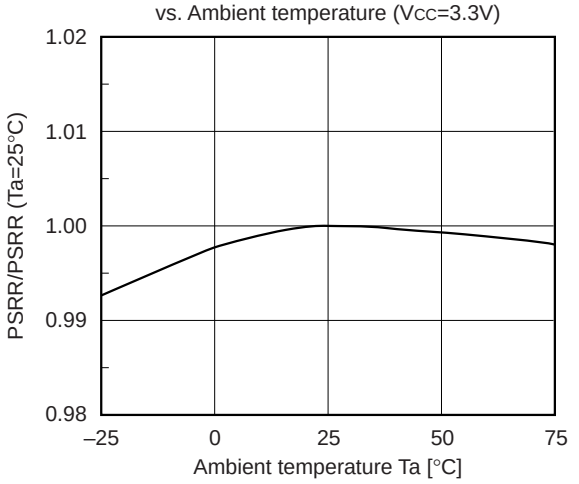
Normalized common mode rejection ratio
vs. Ambient temperature (VCC=3.3V)



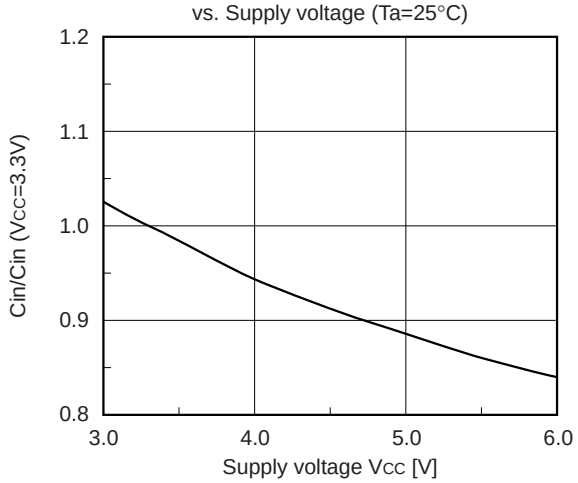
Normalized power supply rejection ratio
vs. Supply voltage (Ta=25°C)



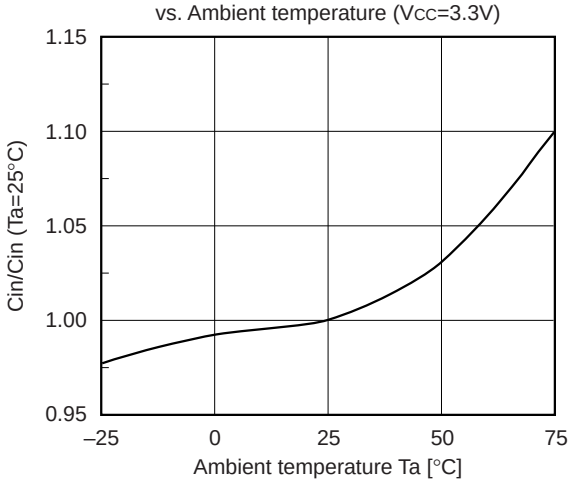
Normalized power supply rejection ratio
vs. Ambient temperature (VCC=3.3V)



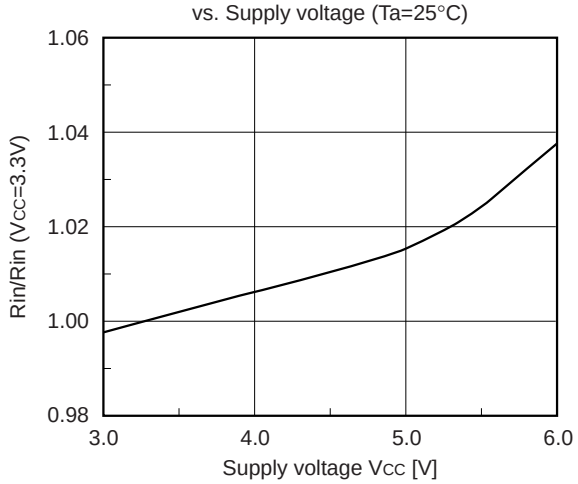
Normalized differential input capacitance
vs. Supply voltage (Ta=25°C)



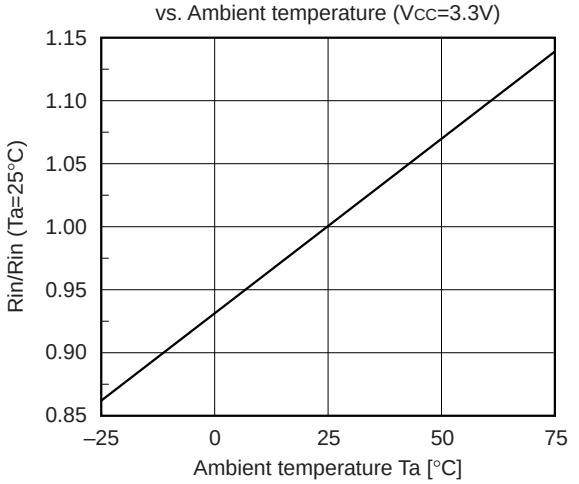
Normalized differential input capacitance
vs. Ambient temperature (VCC=3.3V)



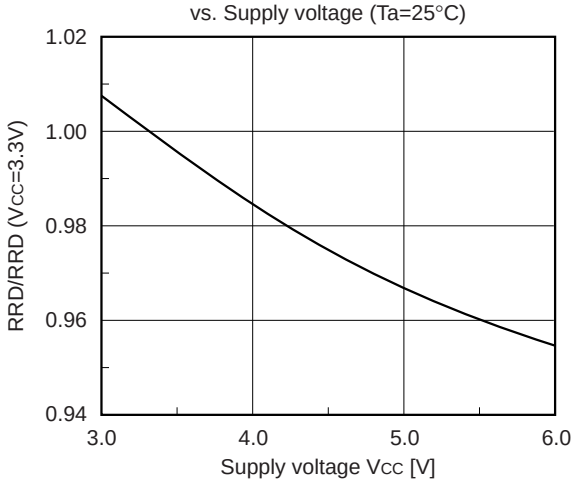
Normalized differential input resistance
vs. Supply voltage (Ta=25°C)



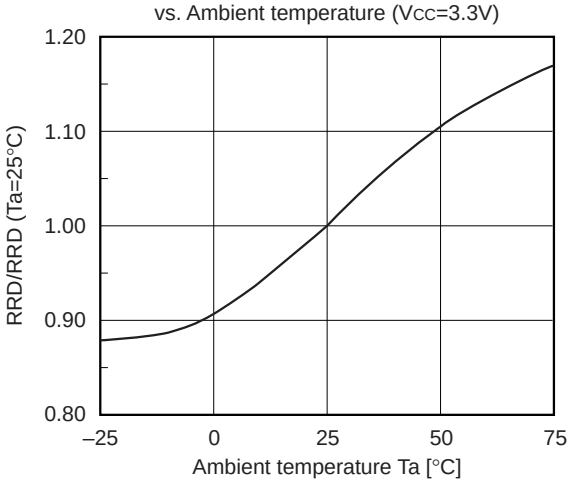
Normalized differential input resistance
vs. Ambient temperature (VCC=3.3V)



Normalized output resistance
vs. Supply voltage (Ta=25°C)

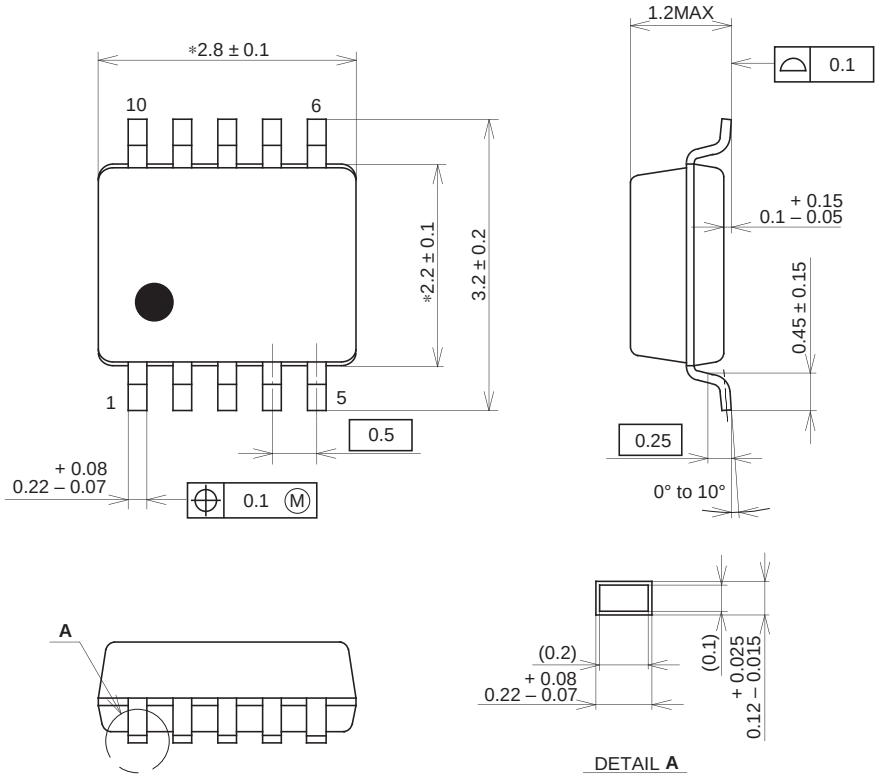


Normalized output resistance
vs. Ambient temperature (VCC=3.3V)



Package Outline Unit : mm

10PIN TSSOP(PLASTIC)



NOTE: Dimension "∗" does not include mold protrusion.

SONY CODE	TSSOP-10P-L01
EIAJ CODE	————
JEDEC CODE	————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.02g