

## 47 $\mu$ F AC-Coupling Capacitor 4in-2out Video Driver with Isolation Amplifier

### ■GENERAL DESCRIPTION

**NJW1342** is 47 $\mu$ F AC-Coupling Capacitor 4in-2out Video Driver with Isolation Amplifier. It can remove common mode noise because internal Isolation amplifier. It can reduce (47 $\mu$ F) usual output capacitor by NJRC original "ASC(Advanced SAG Correction)", and contributes to space saving.

**NJW1342** is the best for the switch of the video signal of car AV.

### ■PACKAGE OUTLINE

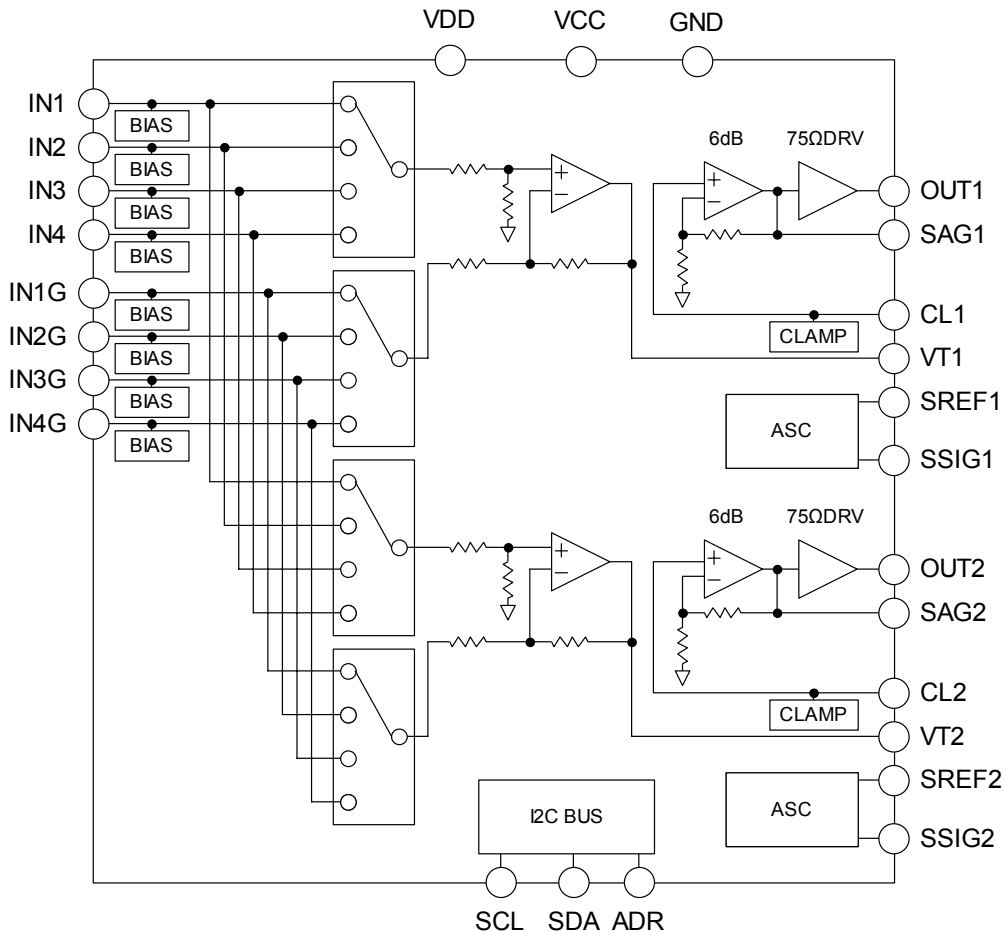


**NJW1342V**

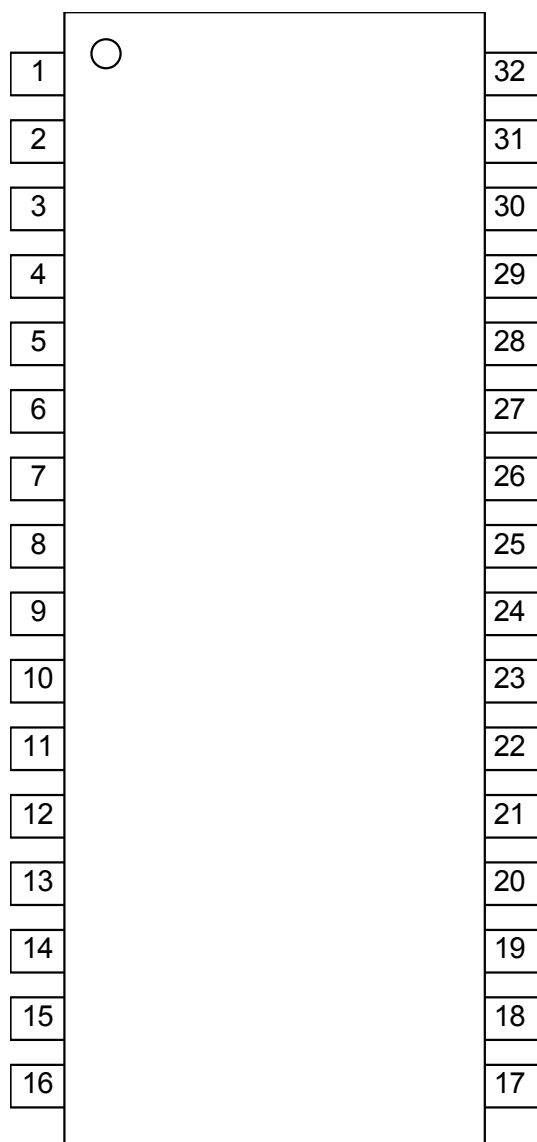
### ■FEATURES

- Operating Voltage 3.0 to 6.0V
- Small output coupling capacitor 47 $\mu$ F
- Internal Isolation Amplifier
- 4-input 2-output selector
- Internal 6dB Amplifier, 75ohm Driver
- I2C Bus Interface
- Bi-CMOS Technology
- Package Outline SSOP32

### ■BLOCK DIAGRAM



## ■PIN CONFIGURATION



- |          |           |
|----------|-----------|
| 1. VCC   | 17. SDA   |
| 2. IN1   | 18. SCL   |
| 3. IN1G  | 19. SREF2 |
| 4. GND   | 20. SSIG2 |
| 5. IN2   | 21. SAG2  |
| 6. IN2G  | 22. OUT2  |
| 7. NC    | 23. CL2   |
| 8. IN3   | 24. VT2   |
| 9. IN3G  | 25. VCC   |
| 10. VCC  | 26. GND   |
| 11. IN4  | 27. VT1   |
| 12. IN4G | 28. CL1   |
| 13. NC   | 29. OUT1  |
| 14. VDD  | 30. SAG1  |
| 15. ADR  | 31. SSIG1 |
| 16. GND  | 32. SREF1 |

## ■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	7.0	V
Power Dissipation	P <sub>D</sub>	1100(note1)	mW
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +150	°C

(Note1) At on a board of EIA/JEDEC specification. (114.3 x 76.2 x 1.6mm Two layers, FR-4)

## ■RECCOMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating voltage	Vopr		3.0	-	5.5	V

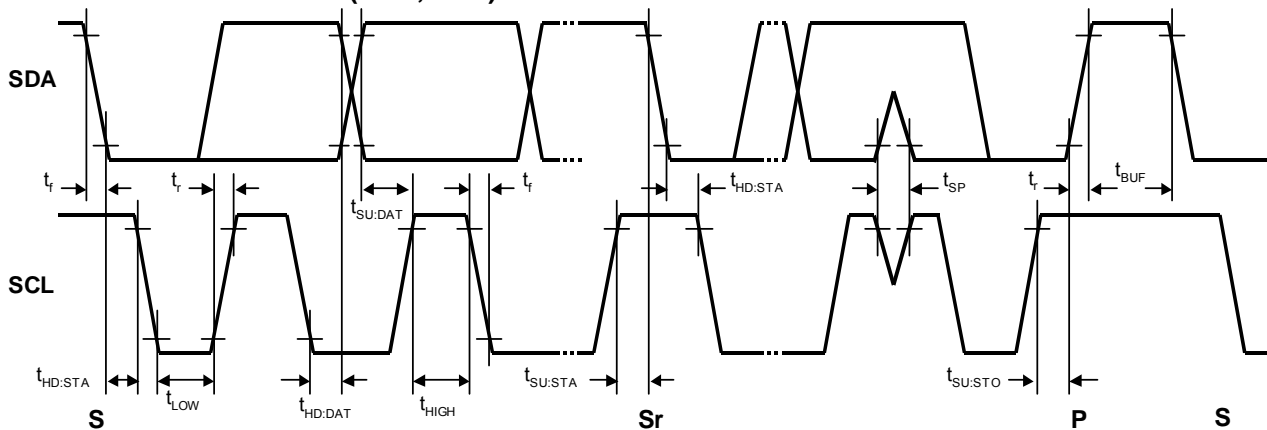
## ■ELECTRICAL CHARACTERISTICS (VCC,VDD=5V, RL=150ohm, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	Icc1	No signal	-	60	100	mA
Supply Current	Icc2	OUT1:active, OUT2:power save	-	30	60	mA
Supply Current	Icc3	OUT1:power save, OUT2:active	-	30	60	mA
Supply Current	Icc4	VDD	-	0.5	1	mA
Supply Current at Power Save Mode	Isave	Power save mode	-	2	4	mA
Maximum Output Level	Vom	Vin=100kHz,sin-signal,THD=1%,	2.0	2.2	-	Vp-p
Voltage Gain	Gv	Vin=1MHz,1.0Vp-p sin-signal	5.5	6.0	6.5	dB
Frequency Characteristic	Gf	Vin=10MHz / 1MHz , 1.0Vpp sin-signal	-1.0	0	1.0	dB
Common Mode Noise Ratio	CMR	Vin=20KHz,Vin=1Vpp	-	-55	-	dB
Cross-talk	CT-1	Vin=4.43MHz, 1.0Vp-p sin-signal	-	-60	-	dB
Differential Gain	DG	Vin=1.0Vp-p 10step video-signal	-	0.5	-	%
Differential Phase	DP	Vin=1.0Vp-p 10step video-signal	-	0.5	-	deg

## ■PORT

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
ADR Input Voltage High Level	V <sub>ADRH</sub>		2.2		Vcc	
ADR Input Voltage Low Level	V <sub>ADRL</sub>		0	-	1.0	V

## ■TIMING on the I<sup>2</sup>C BUS (SDA, SCL)



## ■CHARACTERISTICS OF BUS LINES (SDA, SCL) FOR I<sup>2</sup>C BUS DEVICES

I<sup>2</sup>C BUS Load Conditions

STANDARD MODE : Pull up resistance 4k $\Omega$  (Connected to +3.3V), Load capacitance 200pF (Connected to GND)

FAST MODE : Pull up resistance 4k $\Omega$  (Connected to +3.3V), Load capacitance 50pF (Connected to GND)

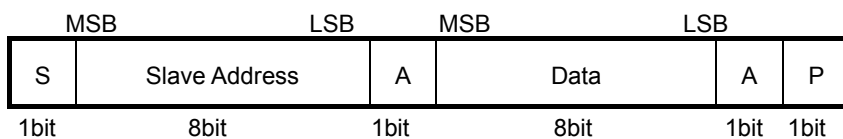
PARAMETER	SYM BOL	Standard mode			Fast mode			UNI T
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Low Level Input Voltage	V <sub>IL</sub>	0.0	-	1.2	0.0	-	1.2	V
High Level Input Voltage	V <sub>IH</sub>	2.4	-	5.0	2.4	-	5.0	V
Hysteresis of Schmitt Trigger Inputs	V <sub>hys</sub>	-	-	-	0.25	-	-	V
Low level Output Voltage (3mA at SDA pin)	V <sub>OL</sub>	0	-	0.4	0	-	0.4	V
Output Fall Time From V <sub>IHmin</sub> to V <sub>ILmax</sub> with a Bus Capacitance from 10pF to 400pF	t <sub>of</sub>	-	-	250	20 +0.1C <sub>b</sub>	-	250	ns
Pulse width of spikes which must be suppressed by the input filter	t <sub>SP</sub>	-	-	-	0	-	50	ns
Input Current each I/O pin with an Input Voltage between 0.1 and 0.9V <sub>DDmax</sub>	I <sub>i</sub>	-10	-	10	-10	-	10	$\mu$ A
Capacitance for each I/O pin	C <sub>i</sub>	-	-	10	-	-	10	pF
SCL Clock Frequency	f <sub>SCL</sub>	-	-	100	-	-	400	kHz
Data Transfer Start Minimum Waiting Time	t <sub>HD:STA</sub>	4.0	-	-	0.6	-	-	$\mu$ s
Low Level Clock Pulse Width	t <sub>LOW</sub>	4.7	-	-	1.3	-	-	$\mu$ s
High Level Clock Pulse Width	t <sub>HIGH</sub>	4.0	-	-	0.6	-	-	$\mu$ s
Minimum Start Preparation Waiting Time	t <sub>SU:STA</sub>	4.7	-	-	0.6	-	-	$\mu$ s
Minimum Data Hold Time <sup>(NOTE)</sup>	t <sub>HD:DAT</sub>	0.0	-	-	0.0	-	-	$\mu$ s
Minimum Data Preparation Time	t <sub>SU:DAT</sub>	250	-	-	100	-	-	ns
Rise Time	t <sub>r</sub>	-	-	1000	-	-	300	ns
Fall Time	t <sub>f</sub>	-	-	300	-	-	300	ns
Minimum Stop Preparation Waiting Time	t <sub>SU:STO</sub>	4.0	-	-	0.6	-	-	$\mu$ s
Data Change Minimum Waiting Time	t <sub>BUF</sub>	4.7	-	-	1.3	-	-	$\mu$ s
Capacitive load for each bus line	C <sub>b</sub>	-	-	400	-	-	400	pF
Noise Margin at the Low Level	V <sub>nL</sub>	0.5	-	-	0.5	-	-	V
Noise Margin at the High Level	V <sub>nH</sub>	1	-	-	1	-	-	V

C<sub>b</sub> ; total capacitance of one bus line in pF.

(NOTE). Please hold the Data Hold Time (t<sub>HD:DAT</sub>) to 300ns or more to avoid status of unstable at SCL falling edge.

## ■ DEFINITION OF I<sup>2</sup>C REGISTER

### ◆ I<sup>2</sup>C BUS FORMAT



S: Starting Term

A: Acknowledge Bit

P: Ending Term

### ◆ SLAVE ADDRESS



R/W=0: Receive Only

R/W=1: Data is not transmitted.

ADR : Set the Slave Address by "ADR" terminal.

### ◆ CONTROL REGISTER DEFAULT VALUE

Control register default values are as follows :

	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
Data	0	0	0	0	0	0	0	0

### ◆ INSTRUCTION CODE

	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
Data	OUT1 MUTE	OUT1 Select		NOT USE:0	OUT2 MUTE	OUT2 Select		NOT USE:0

### ◆ MUTE TABLE

MUTE	OUT1
D7	
0	MUTE OFF
1	MUTE ON

MUTE	OUT2
D3	
0	MUTE OFF
1	MUTE ON

MUTE OFF: Active mode

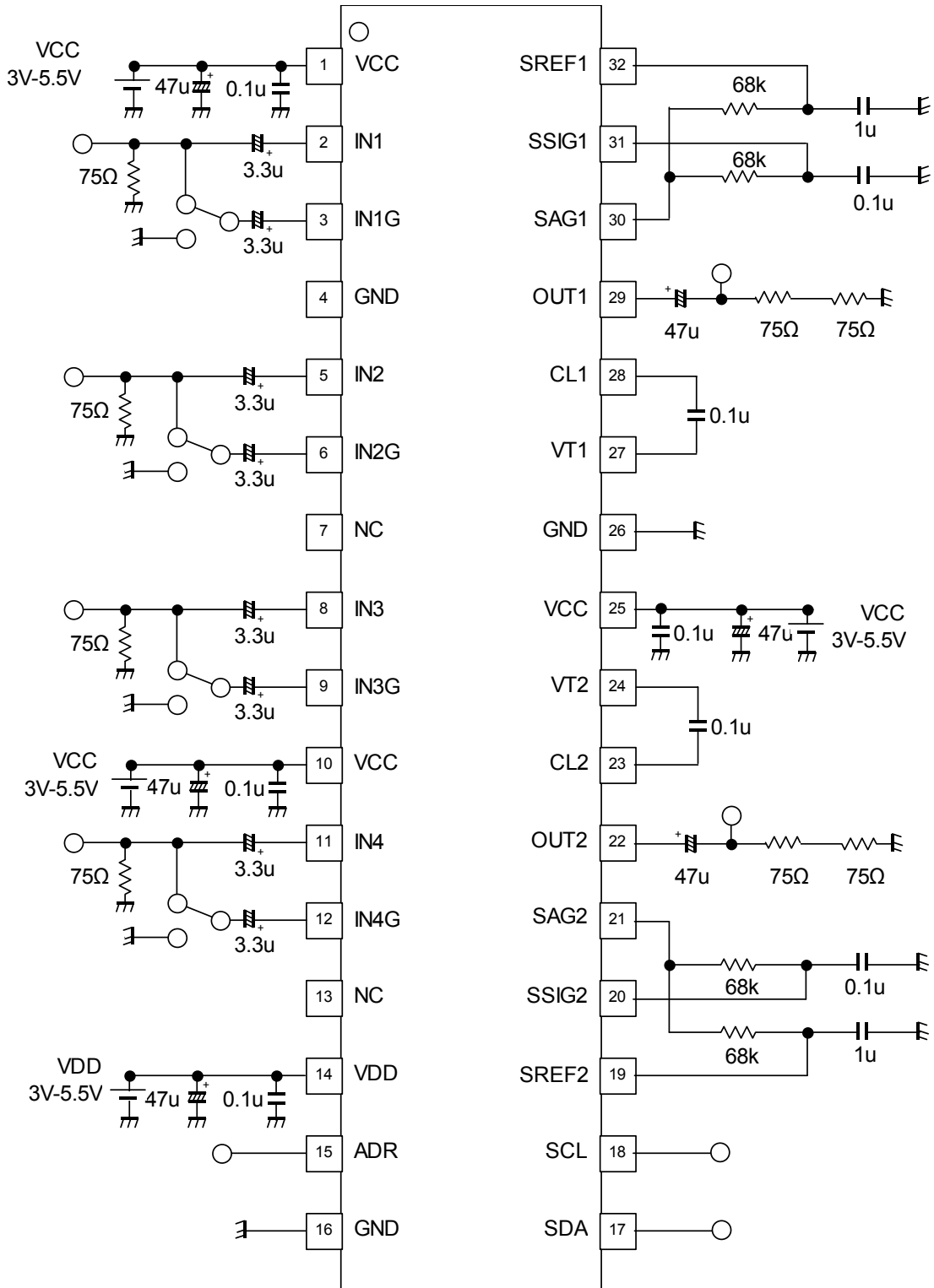
MUTE ON: Power save mode

## ◆VOUT SELECT TABLE

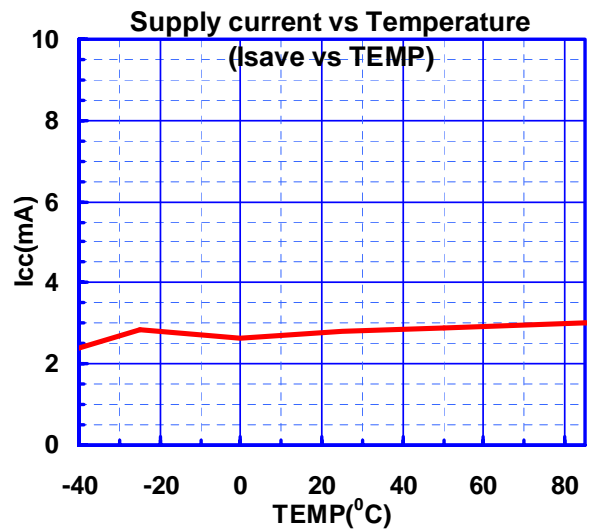
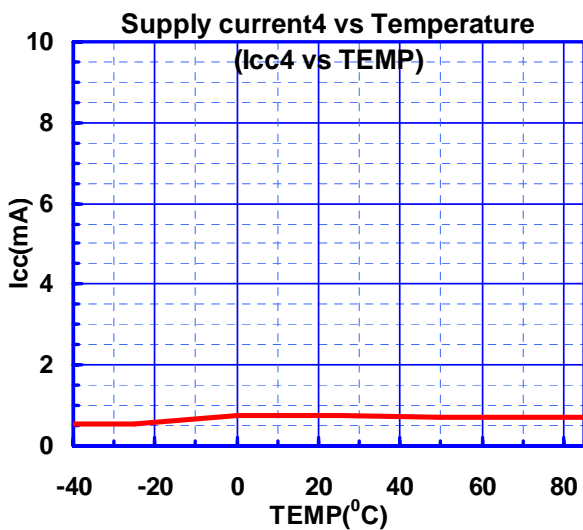
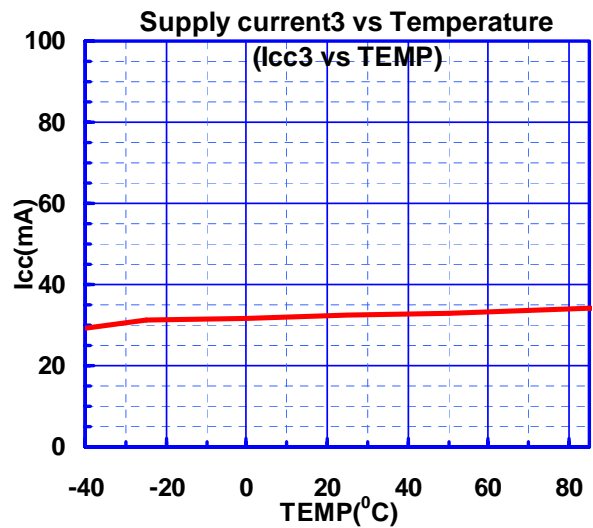
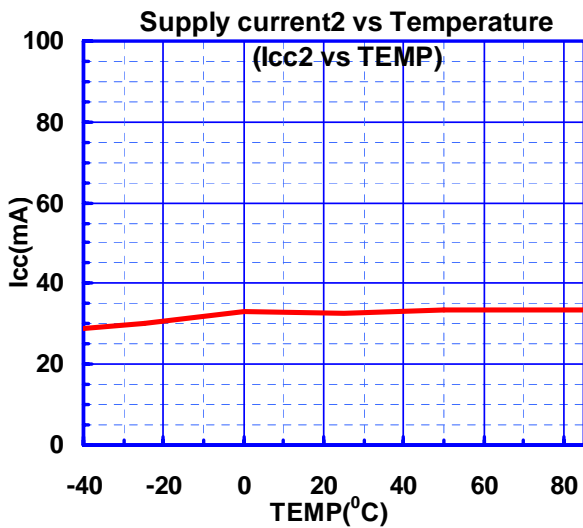
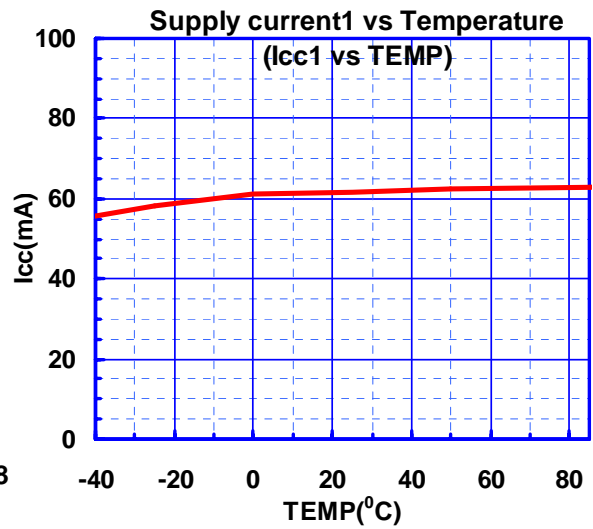
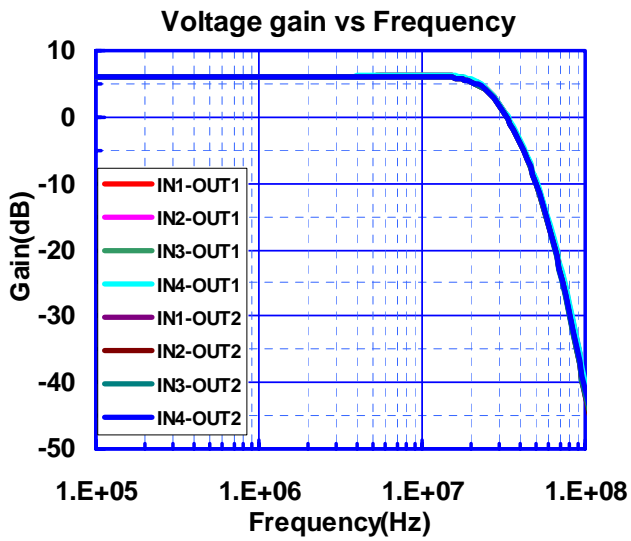
OUT1 Select			OUT1
D6	D5	D4	
0	0	0	VIN1
0	1	0	VIN2
1	0	0	VIN3
1	1	0	VIN4

OUT2Select			OUT2
D2	D1	D0	
0	0	0	VIN1
0	1	0	VIN2
1	0	0	VIN3
1	1	0	VIN4

## TEST CIRCUIT

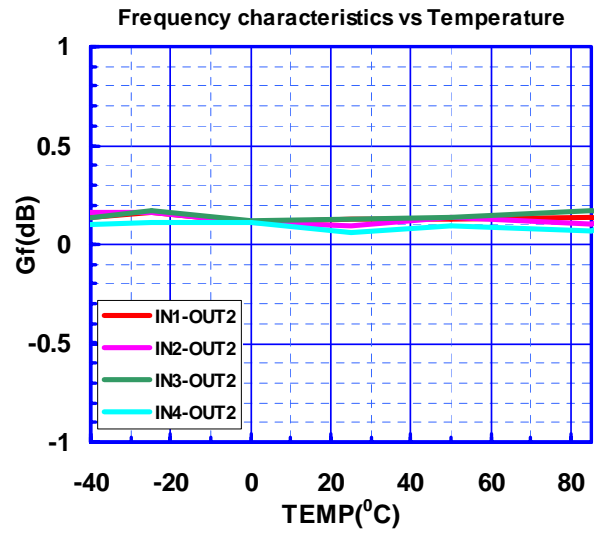
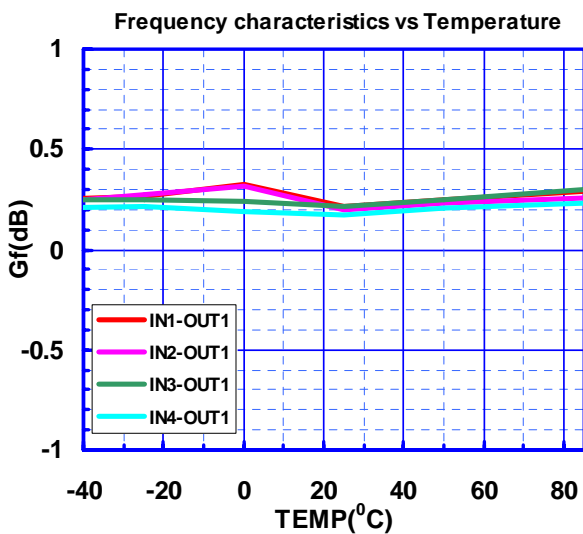
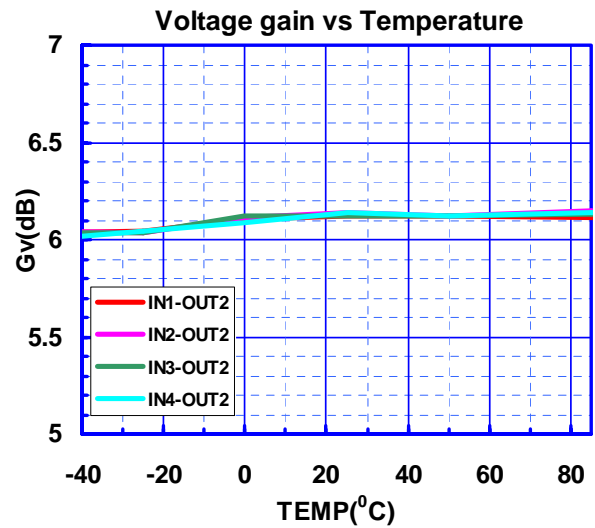
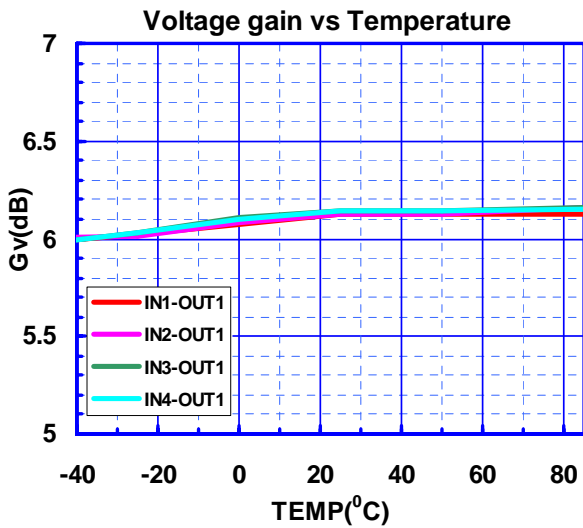
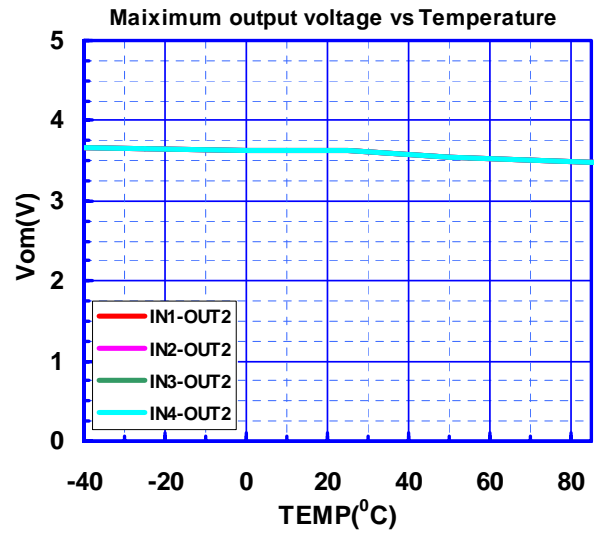
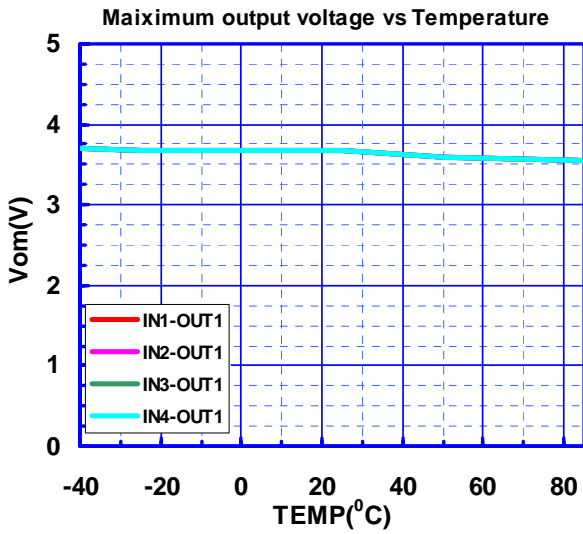


## TYPICAL CHARACTERISTICS

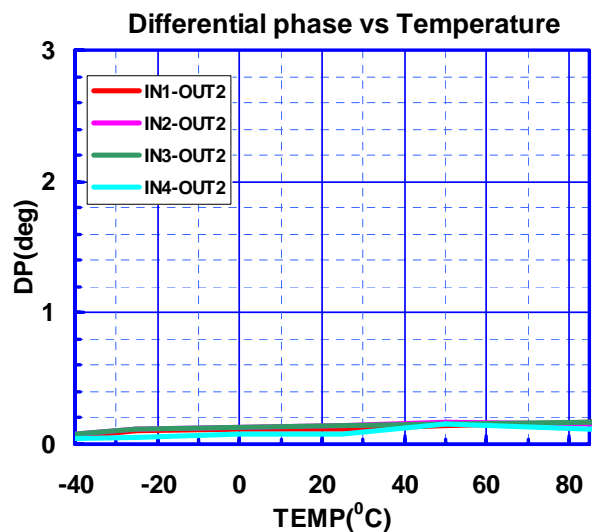
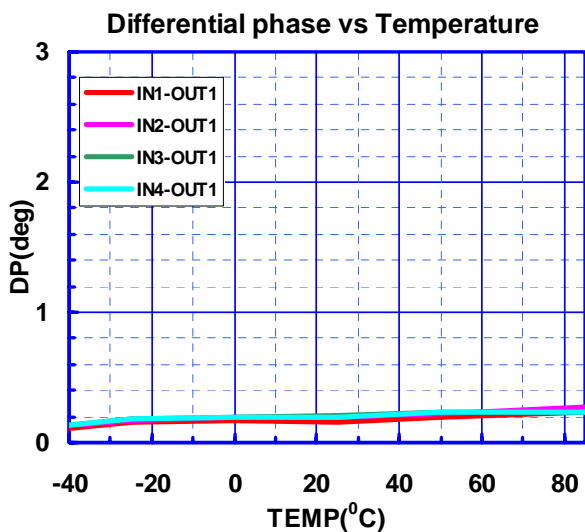
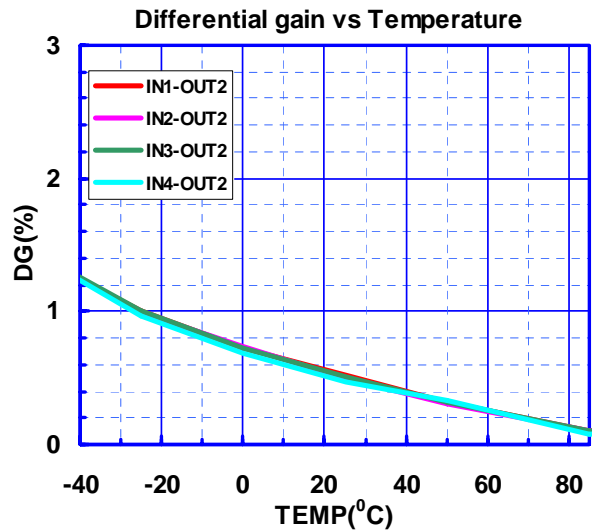
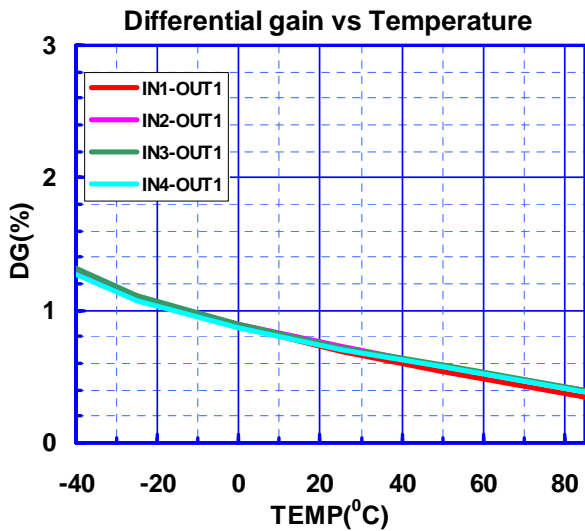
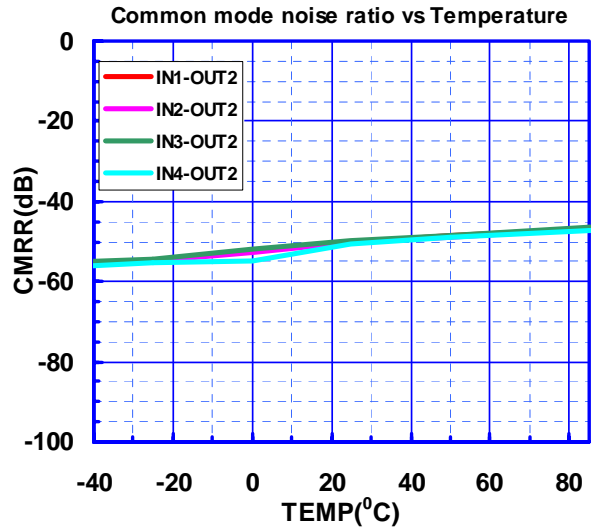
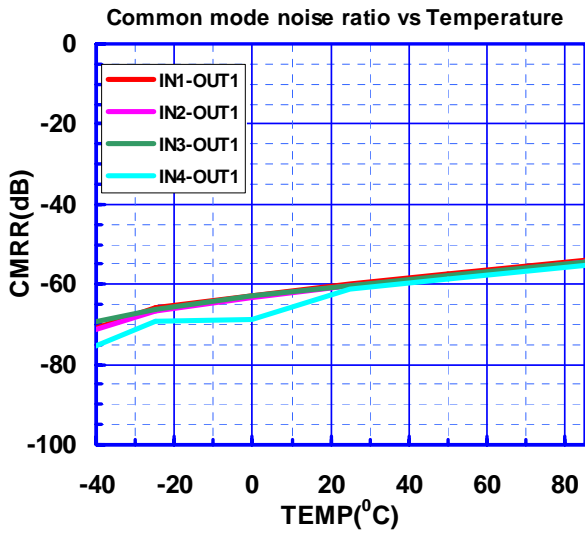




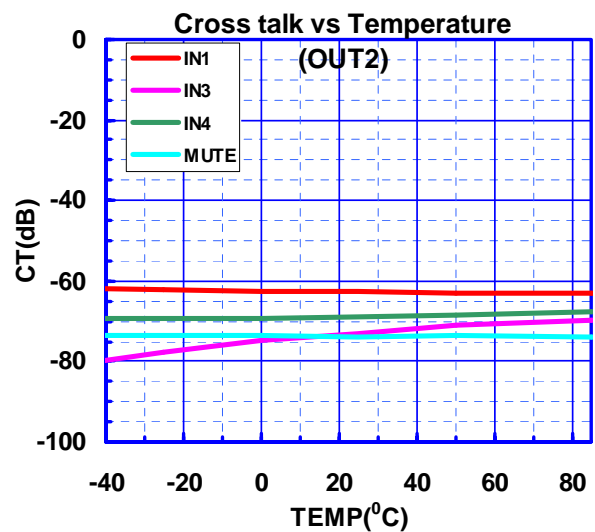
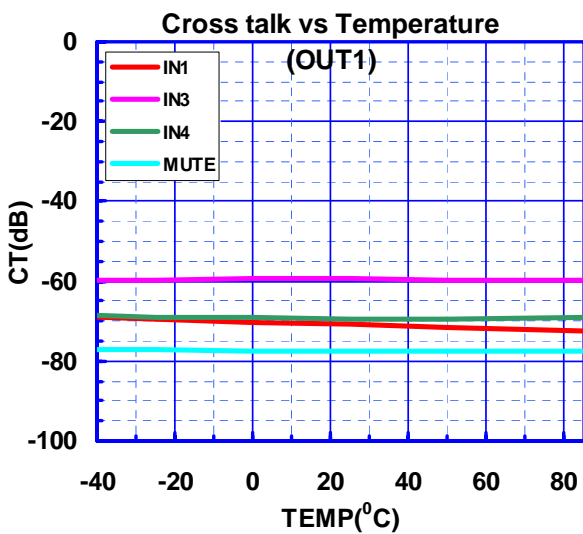
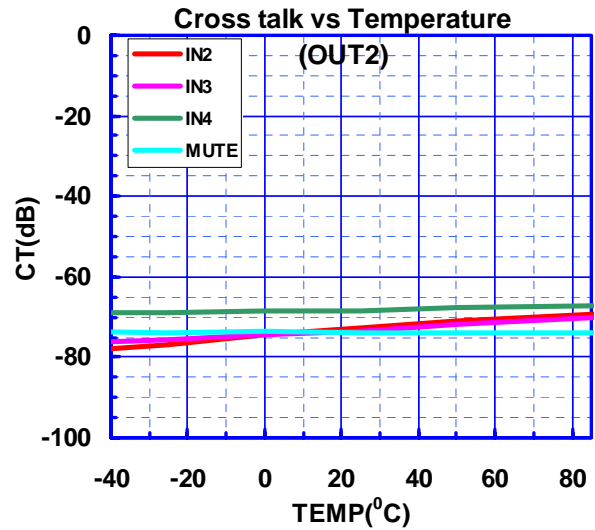
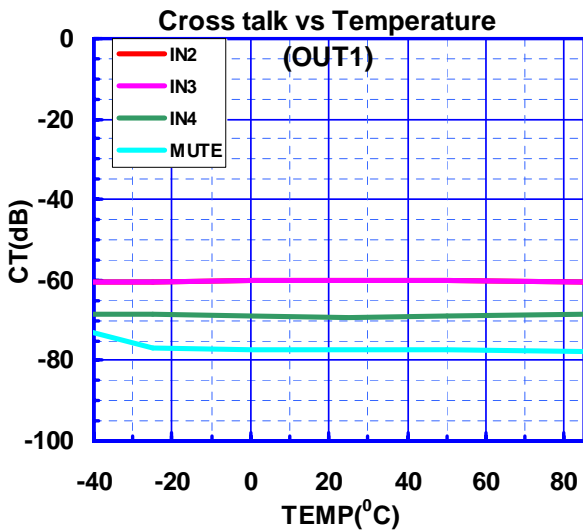
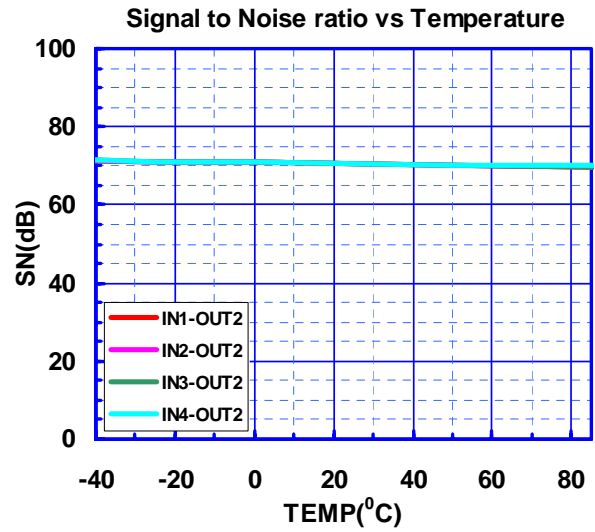
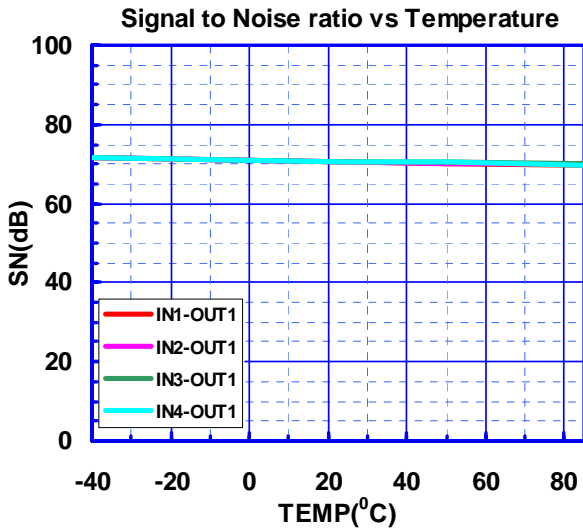
■ TYPICAL CHARACTERISTICS



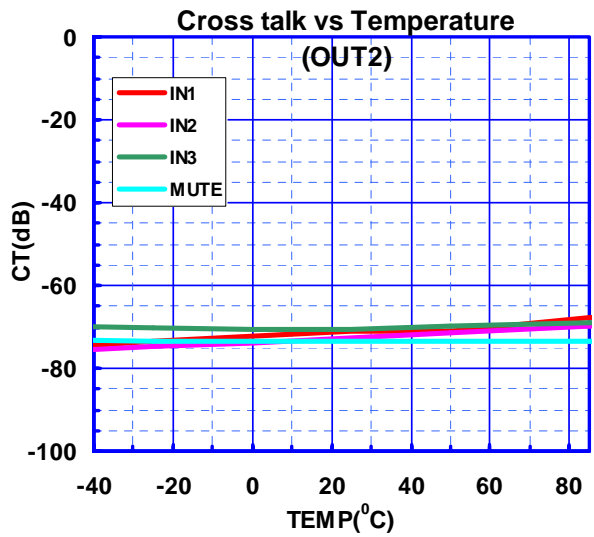
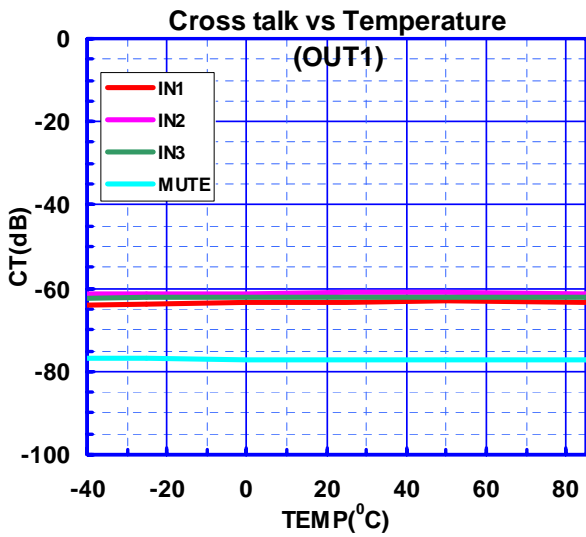
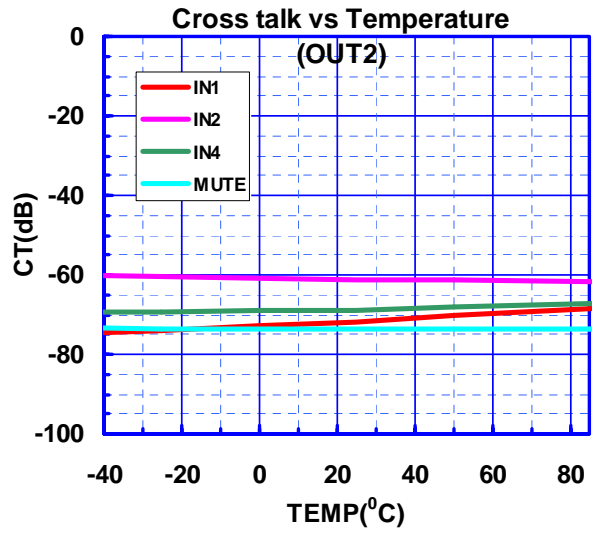
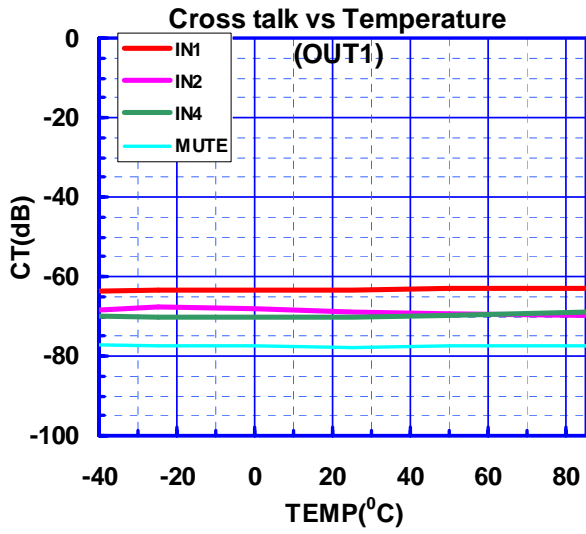
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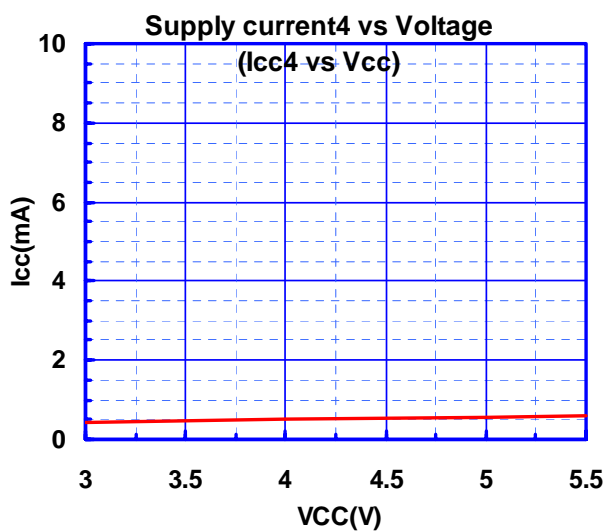
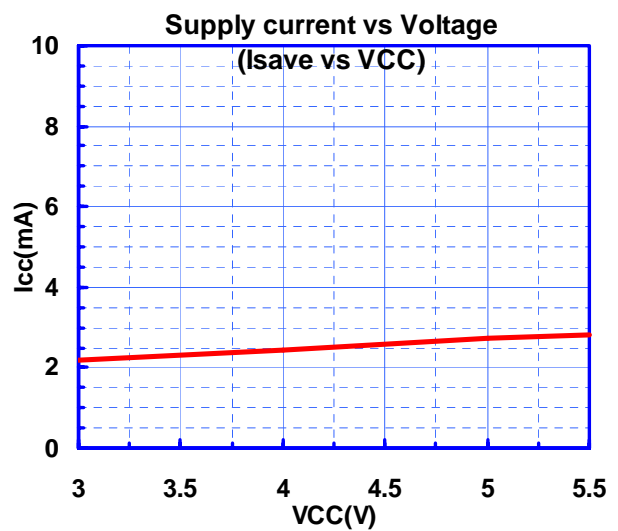
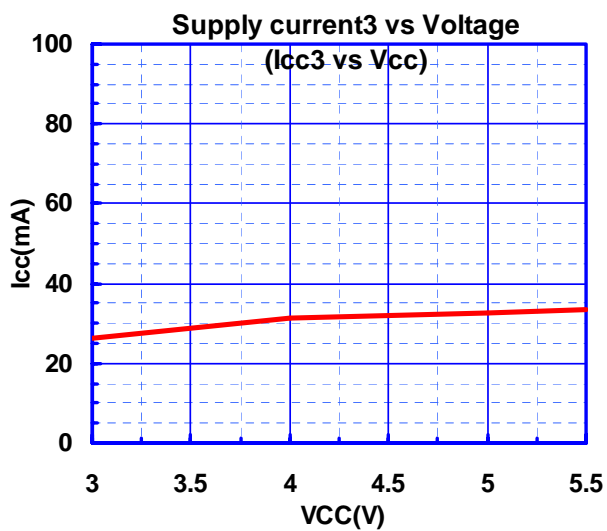
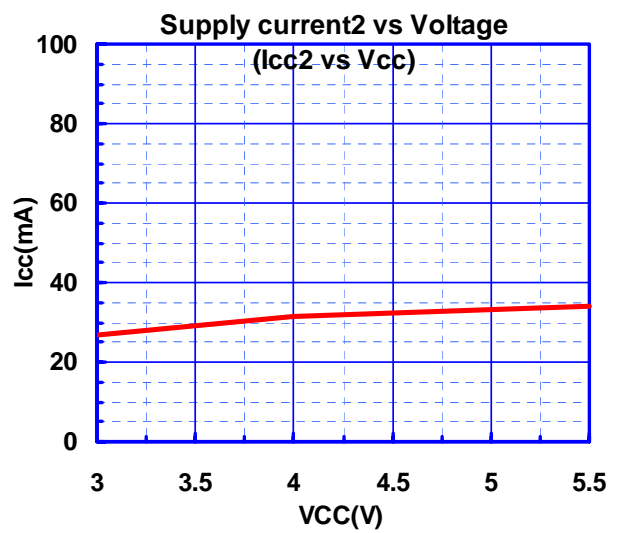
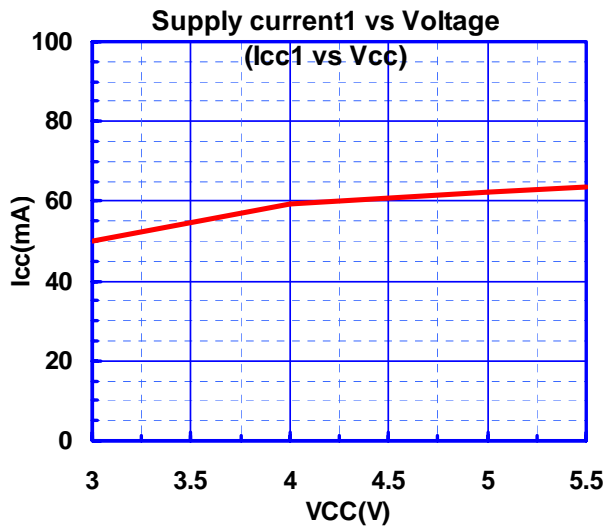
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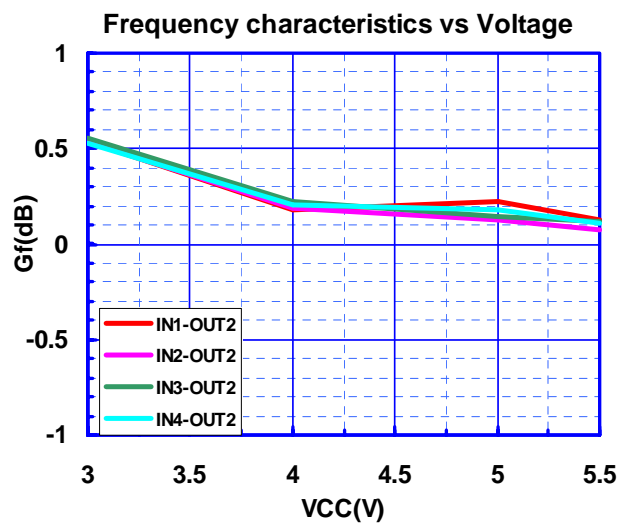
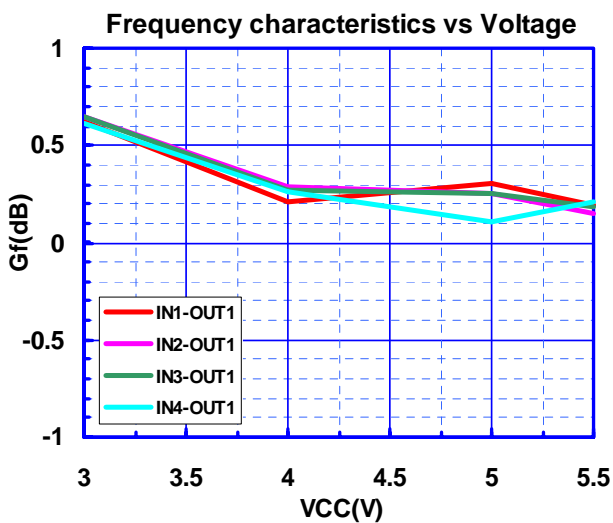
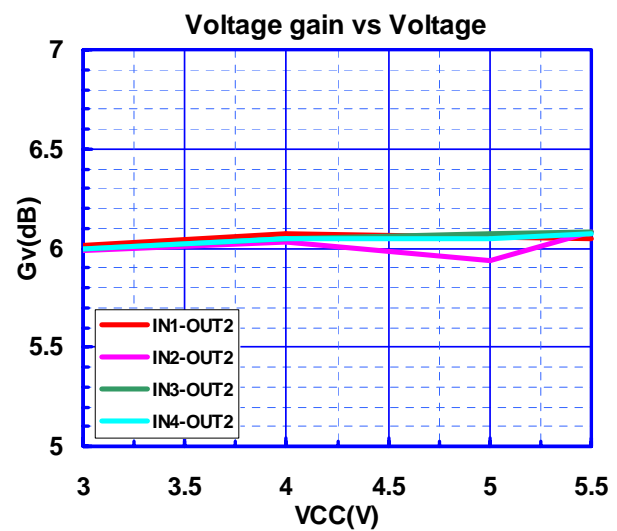
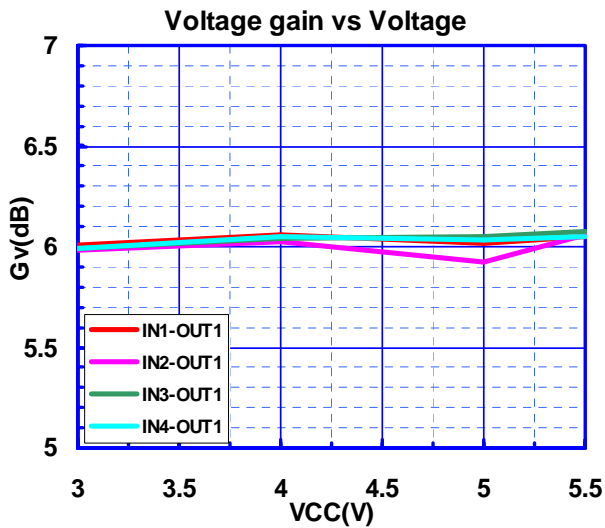
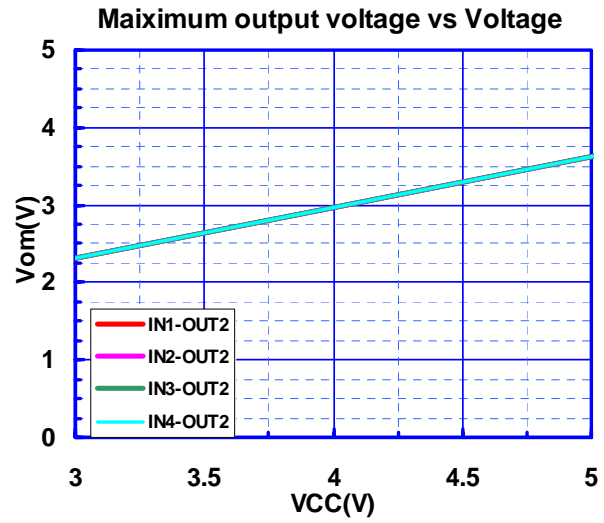
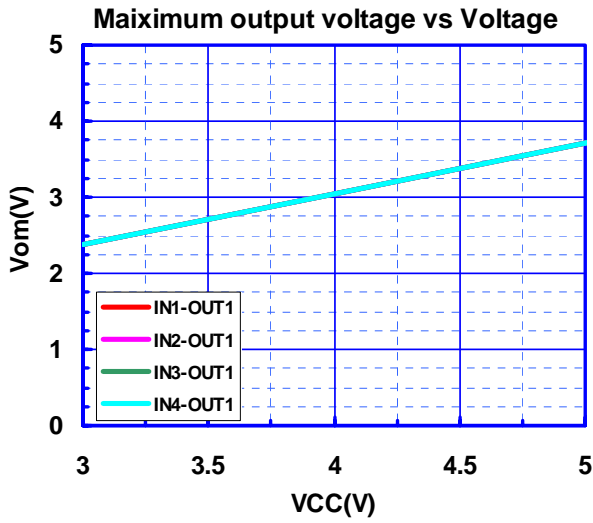
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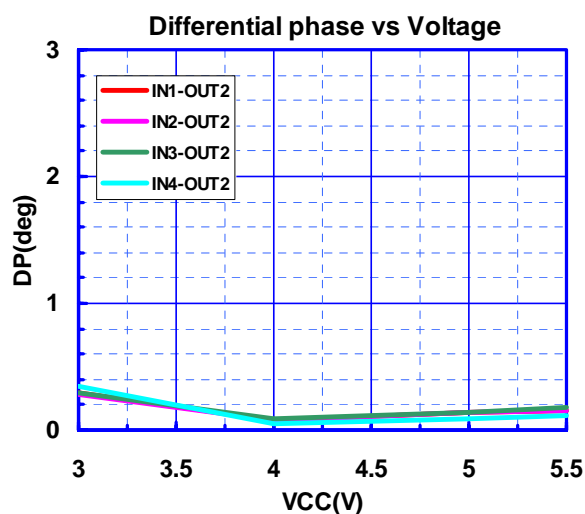
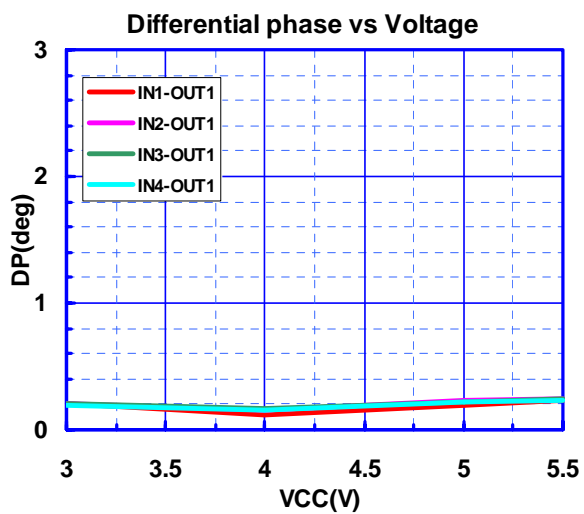
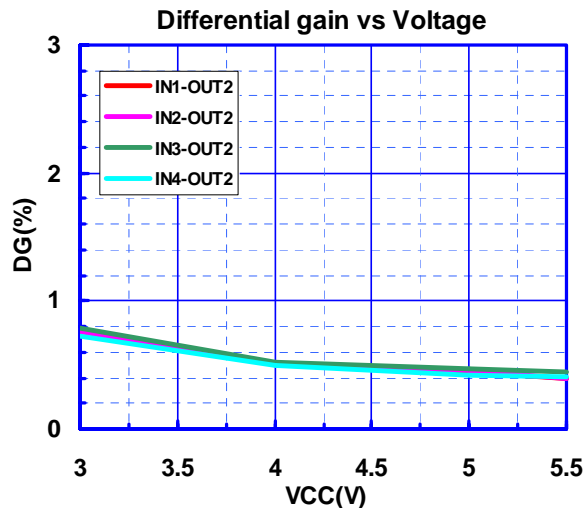
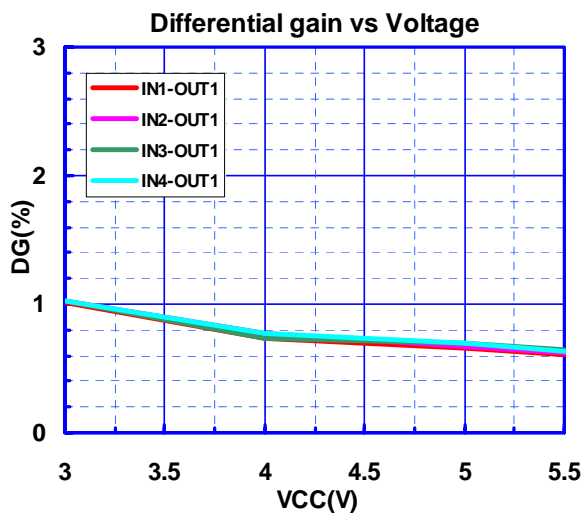
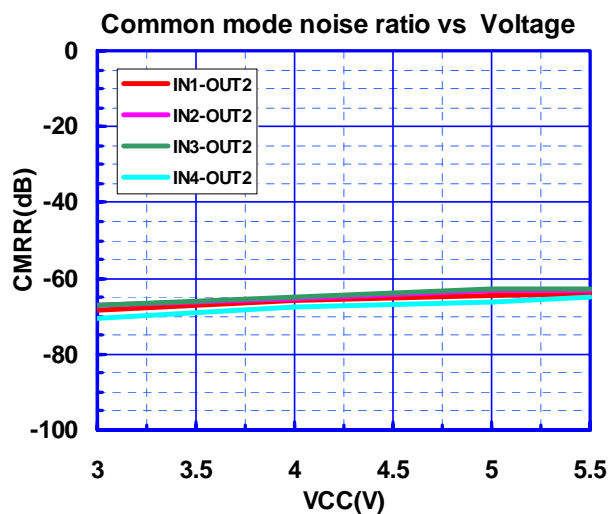
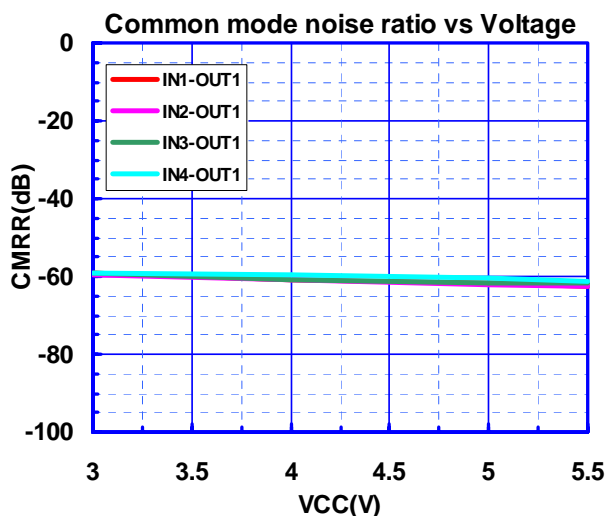
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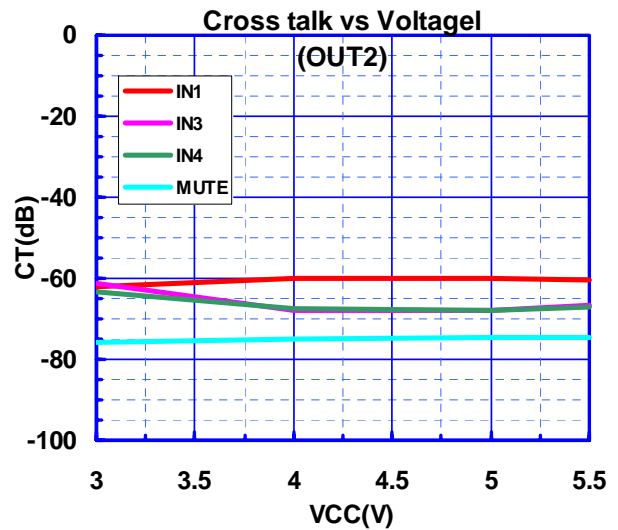
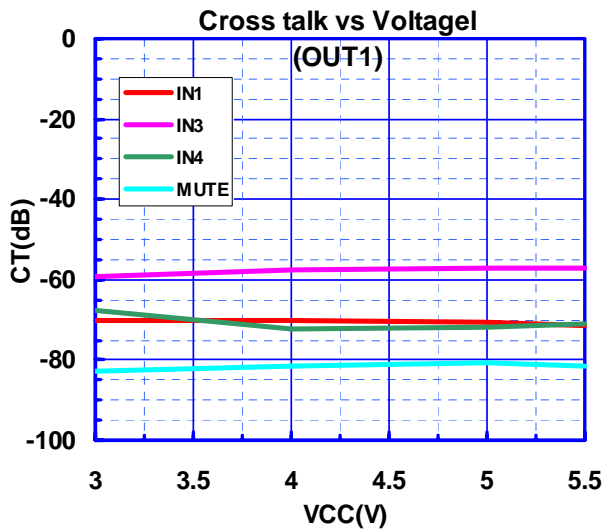
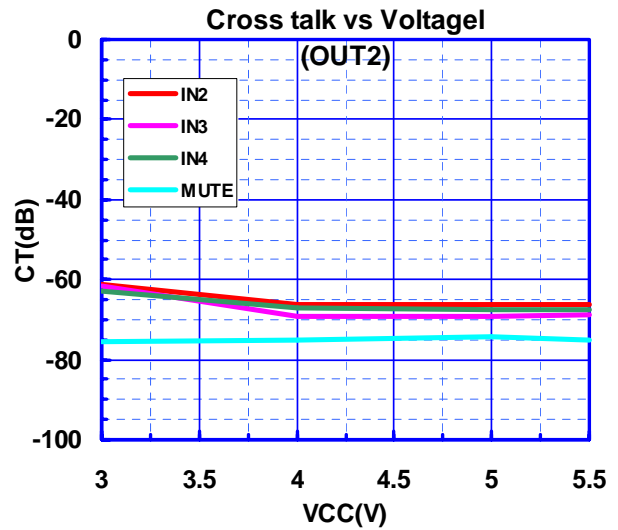
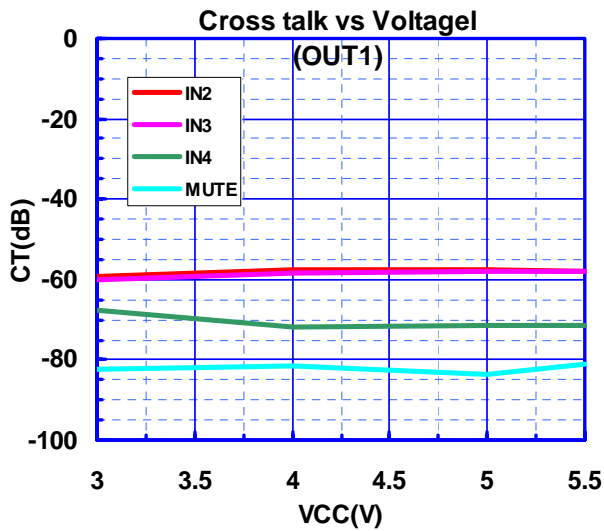
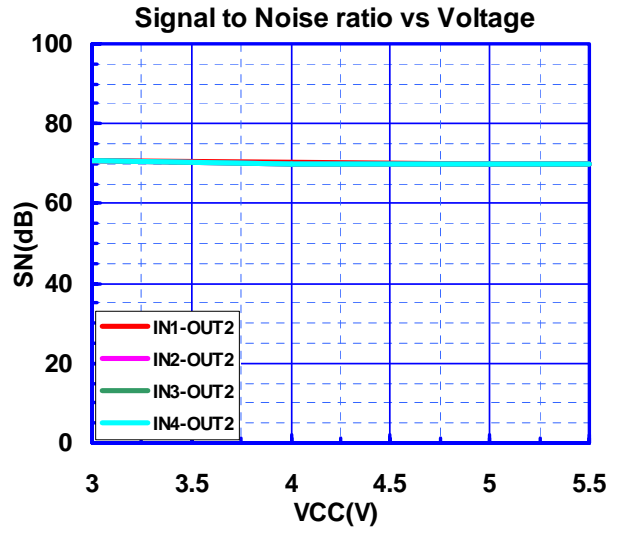
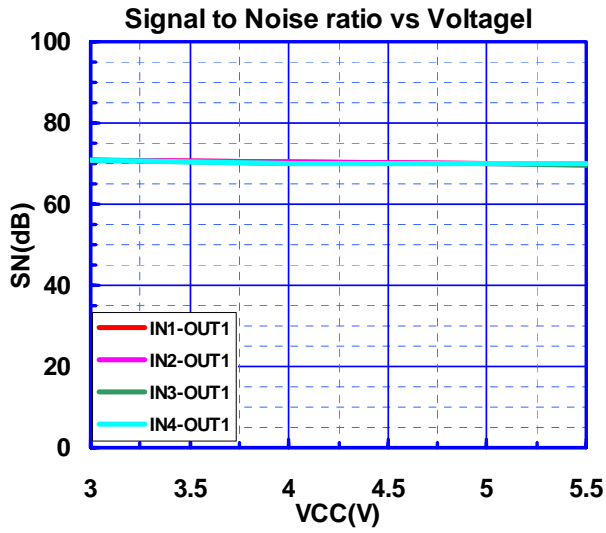
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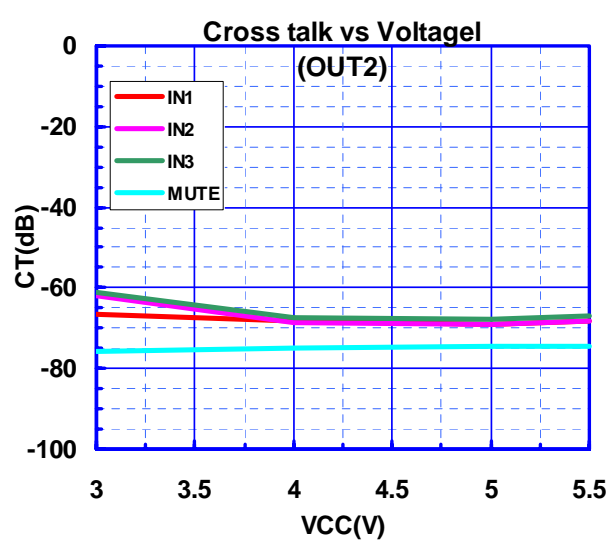
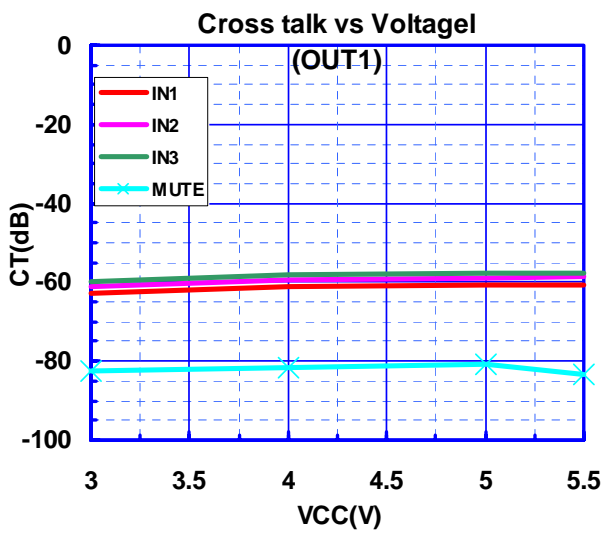
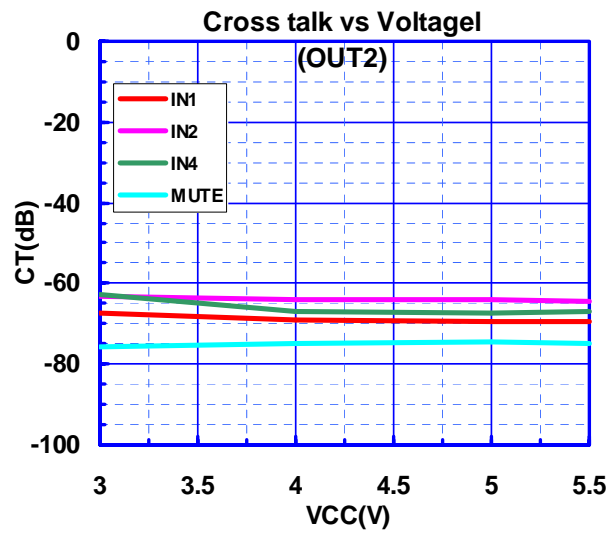
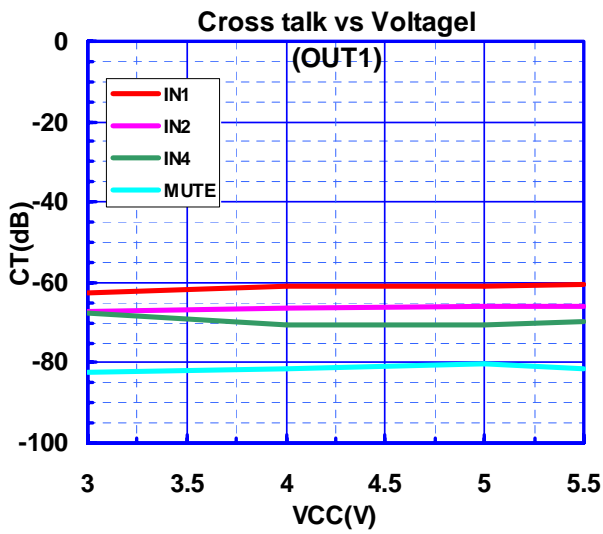


## TYPICAL CHARACTERISTICS





## TYPICAL CHARACTERISTICS



[CAUTION]  
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