VIDEO DIFFERENTIAL INPUT RECEIVER

■GENERAL DESCRIPTION

The NJM2507 is video differential input receiver. The differential signal is converted to the single-end signal. The single-end signal can be transmitted by the differential signal by the connection with NJM2504.

And, it is converted to the single-end signal by the NJM2507.

The common mode noise can be removed because of the differential motion transmission, and it is the best for the transmission of car AV system.
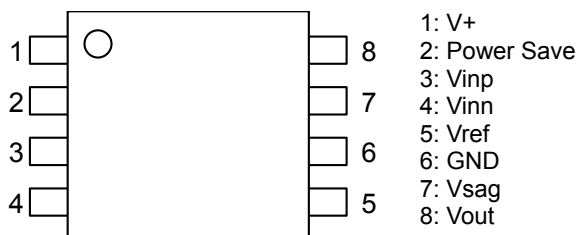
■PACKAGE OUTLINE

NJM2507RB1
MSOP8(TVSP8)

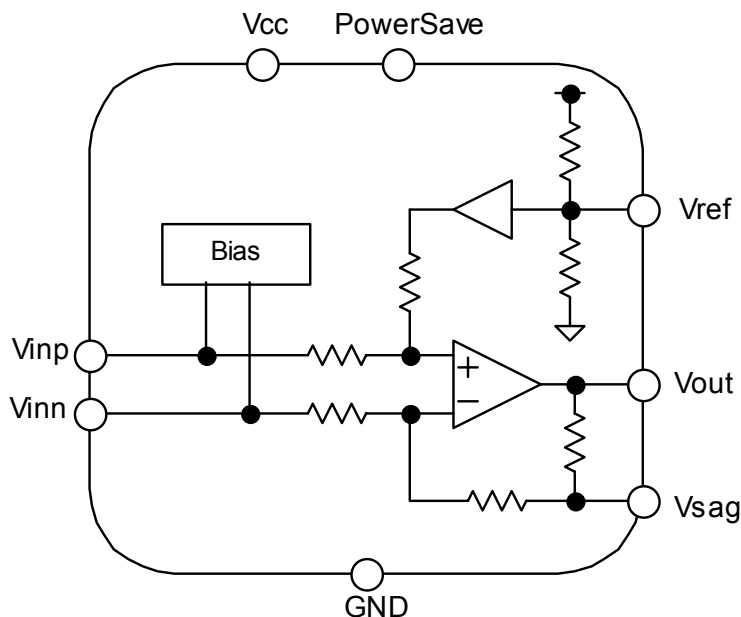## ■FEATURES

● Operating Voltage   4.5 to 9.5V
● Input: Differential signal, Output: Single-end signal
● Internal 6dB Amplifier *Differential input mode
● Internal 75ohm Driver
● Internal SAG Correction Circuit
● Bipolar Technology
● Package Outline   MSOP8(TVSP8)*
               *MEET JEDEC MO-187-DA / THIN TYPE

■PIN CONNECTION

```
1 ▢        8
2 ▢        7
3 ▢        6
4 ▢        5
```

1: V+
2: Power Save
3: Vinp
4: Vinn
5: Vref
6: GND
7: Vsag
8: Vout

■BLOCK DIAGRAM

NJM2507

■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	10	V
Power Dissipation	P_D	580(Note1)	mW
Operating Temperature Range	Topr	-40 to +85(Note2)	°C
Storage Temperature Range	Tstg	-40 to +150	°C

(Note 1) At on a board of EIA/JEDEC specification. (114.3 x 76.2 x 1.6mm 2 layers, FR-4)
(Note 2) It has high operating temperature range product.(-40 to +105°C)

■RECCOMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating voltage	Vopr		4.5	-	9.0	V

■ELECTRICAL CHRACTERISTCS (V^+ =5V, RL=150ohm,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I_{CC}	No signal	-	10	12	mA
Supply Current at Power Save Mode	Isave	Power save mode	-	0.3	0.5	mA
Maximum Output Level	Vom	Vin=100kHz,sin-signal, THD=1%,	2.2	2.4	-	Vp-p
Voltage Gain	Gv	Vin=1MHz, 1.0Vp-p sin-signal	-0.3	0.2	0.7	dB
Frequency Characteristics	Gf	Vin=10MHz/1MHz, 1.0Vpp sin-signal	-1.0	0	1.0	dB
Common Mode Rejection Ratio	CMR	Vin=20kHz, 1.0Vpp,sin-signal	-	-50	-	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
SW Voltage High Level	VthH		2.2	-	V^+	V
SW Voltage Low Level	VthL		0	-	1.0	V
SW Sink Current High Level	IthH	V=5V	-	-	120	µA
SW Sink Current Low Level	IthL	V=0.3V	-	-	8.0	µA

■CONTROL CHRACTERISTC

PARAMETER	STATUS	MODE	
Power Save	H	Power save: OFF	Active mode
	L	Power save: ON	Non-Active mode (Mute)
	OPEN	Power save: ON	Non-Active mode (Mute)

■**TEST CIRCUIT**

1	VCC		VOUT	8
2	PS		VSAG	7
3	VINP		GND	6
4	VINN		VREF	5

- 47μF 0.1μF (VCC)
- 100μF 75Ω 75Ω (VOUT)
- 22μF (VSAG)
- 75Ω 10μF (VINP)
- 75Ω 10μF (VINN)
- 10μF (VREF)
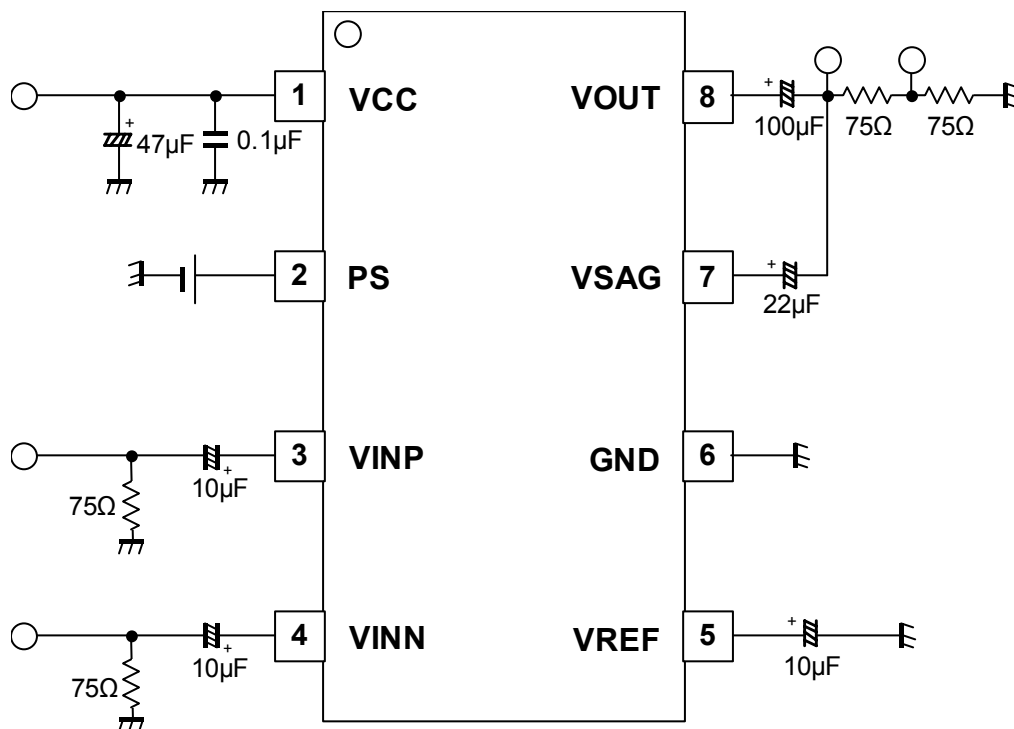
■**APPLICATION CIRCUIT**

NJM2504

IN
10uF
50or75Ω
VIN
BIAS
+6dB VOUTP 100uF 75Ω
VSAGP 22uF
−6dB VOUTN 100uF 75Ω
VSAGN 22uF
VCC GND PS
0.1uF 47uF

NJM2507

10uF VINP
BIAS
10uF VINN
75Ω 75Ω
+6dB VOUT 100uF 75Ω OUT
VSAG 22uF 75Ω
VCC VREF GND PS
0.1uF 47uF 10uF
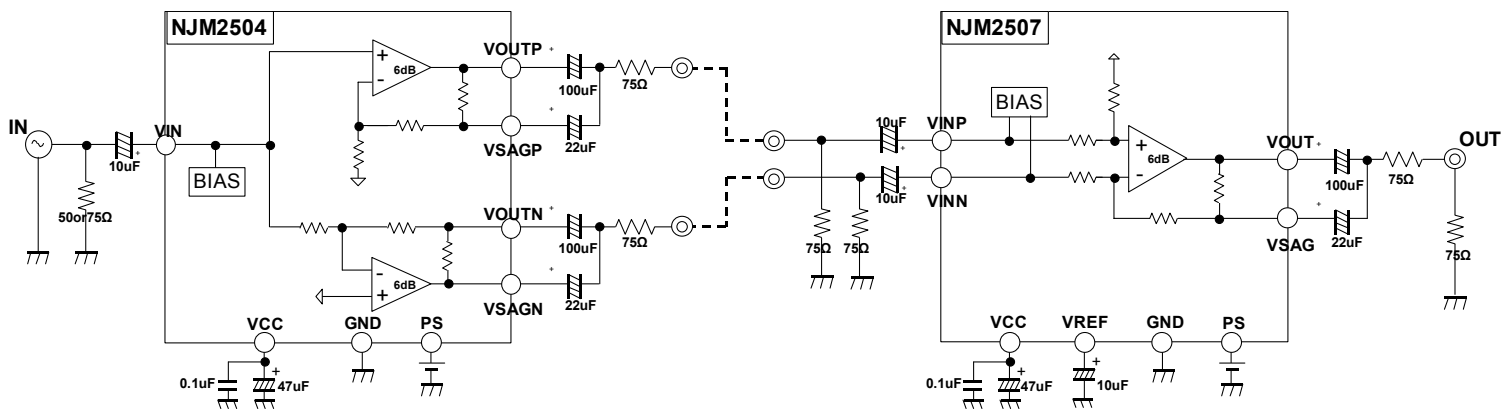
NJM2507

■**APPLICATION CIRCUIT**

When the receiver is single end input, the NJM2507 becomes GND noise isolator on the transmitter.
Connect GND of the receiver to Vref terminal of the NJM2507. (Note1)
The NJM2507 outputs signal that has canceled the GND noise, because GND reference is the receiver. (Note2)

NJM2507
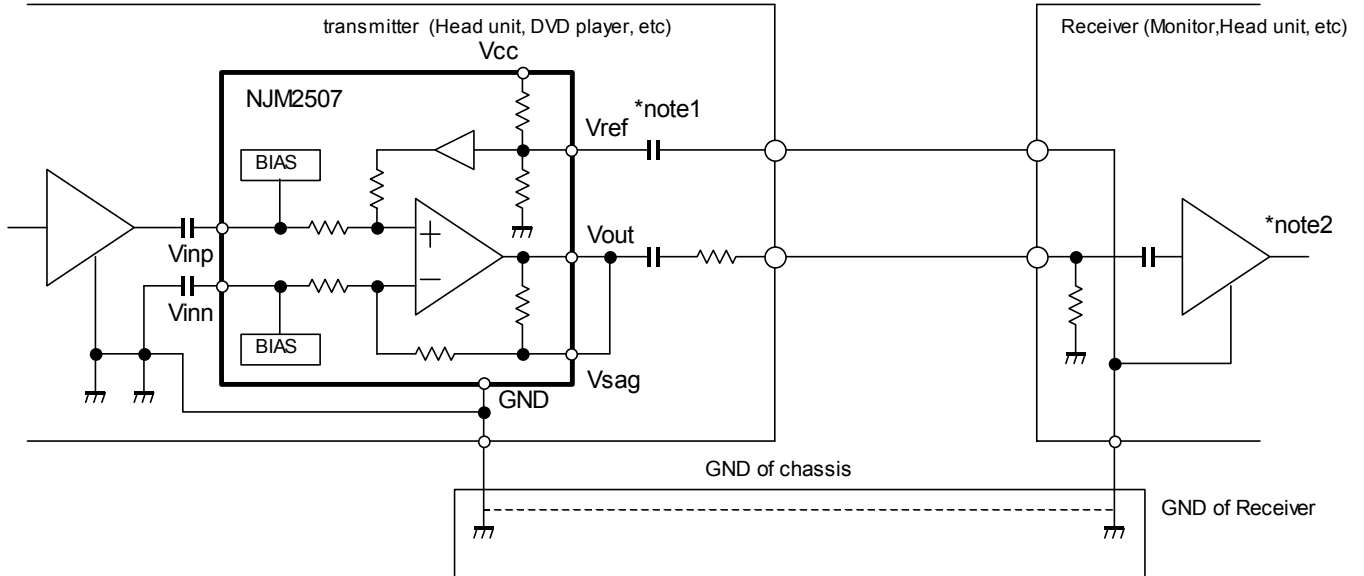
■ EQUIVALENT CIRCUIT(Vcc=5V)

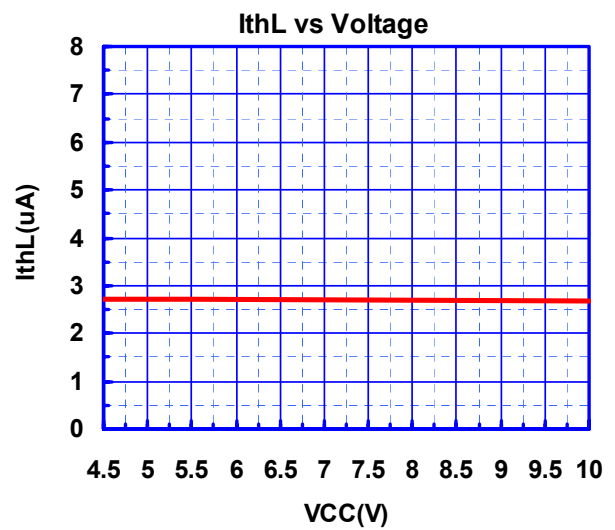| PIN No.	PIN NAME	EQUIVALENT CIRCUIT	DC VOLTAGE
1	Vcc	-	-
2	Power Save		-
3 4	VINP VINN		2.5V
5	VREF		2.5V
6	GND	-	-
7	VSAG		2.5V
8	VOUT		2.5V

NJM2507

■**TYPICAL CHARACTERISTICS**

Gain vs Frequency (VINP)

Gain vs Frequency (VINN)

CMRR vs Frequency
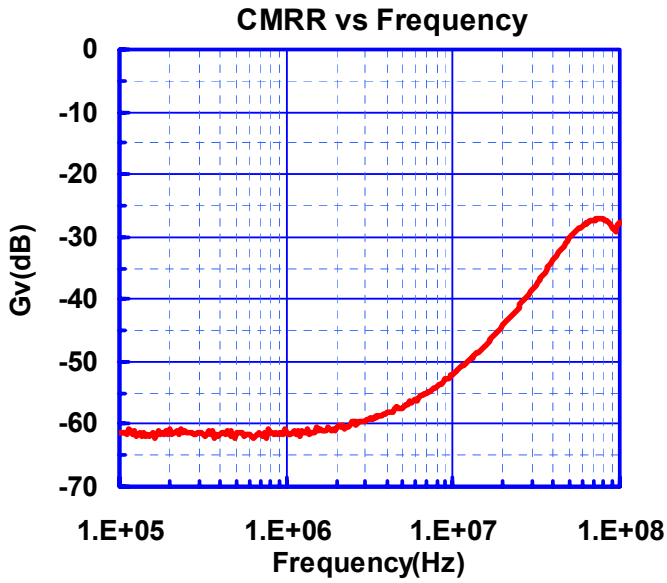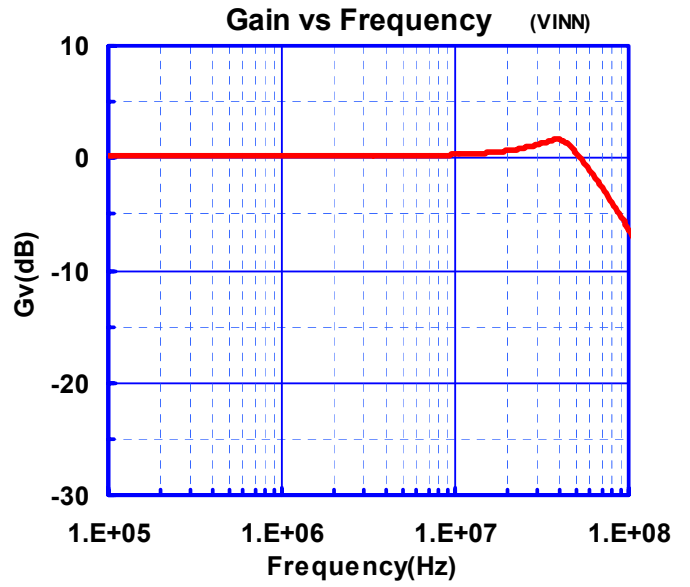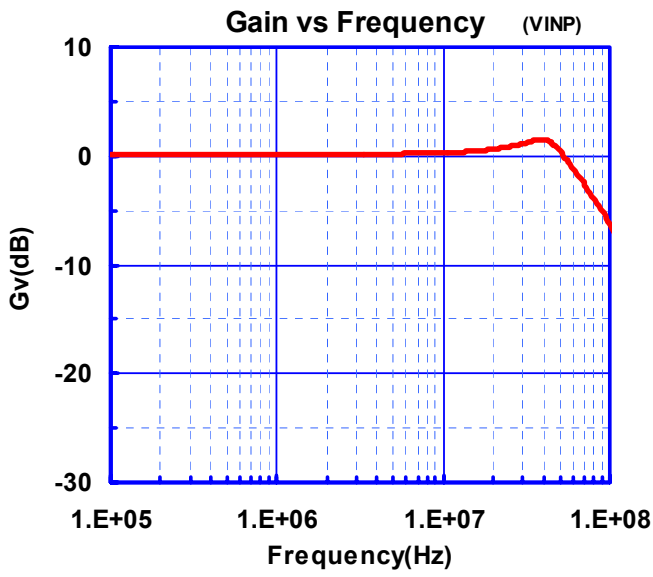
■TYPICAL CHARACTERISTICS

ICC vs Voltage
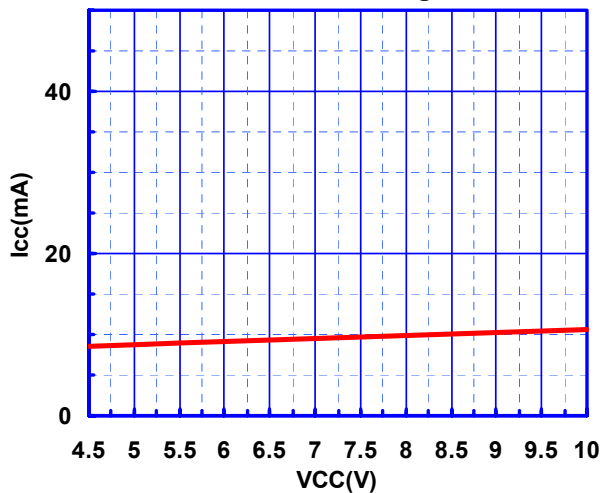
Isave vs Voltage
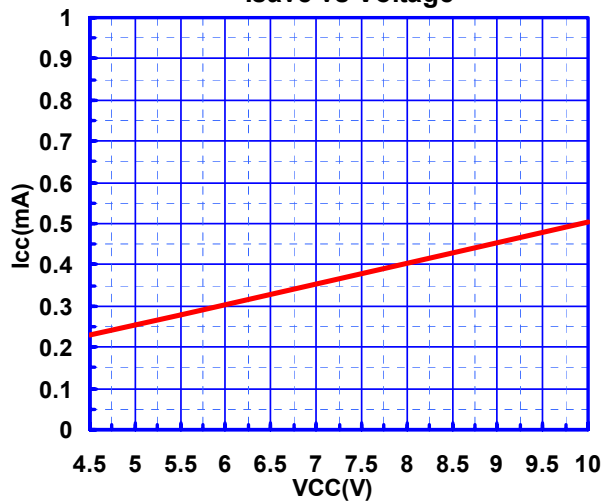
VOM vs Voltage   (VINP)
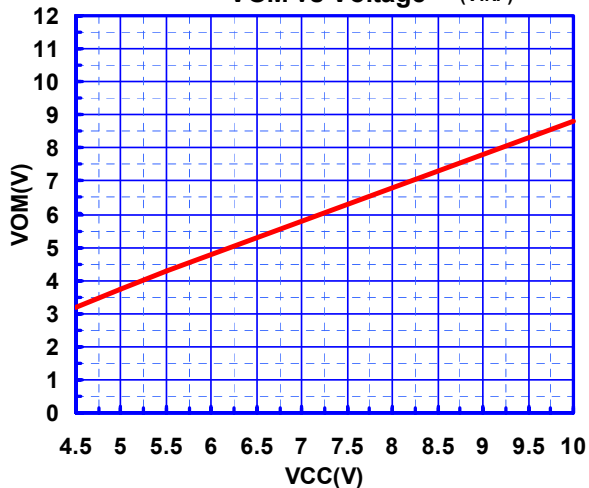
VOM vs Voltage   (VINN)
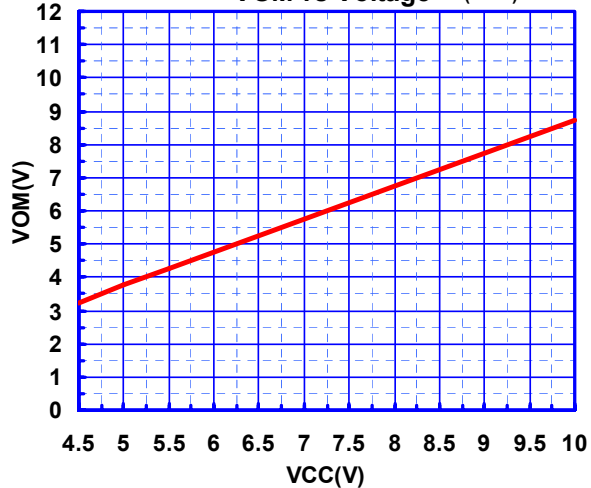
Gv vs Voltage   (VINP)
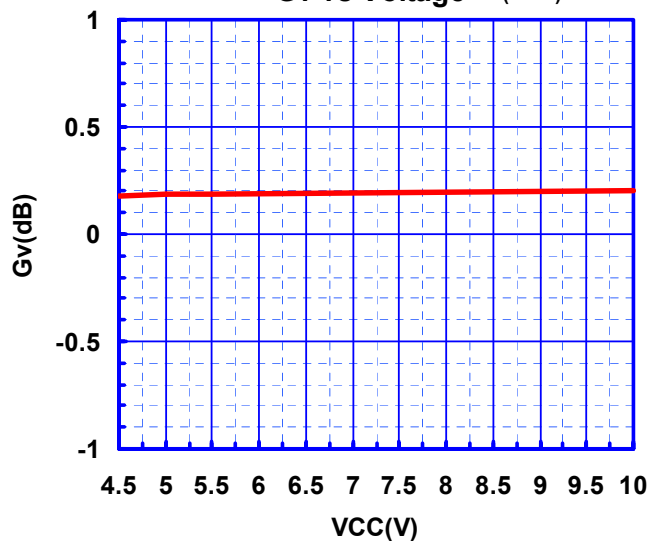
Gv vs Voltage   (VINN)
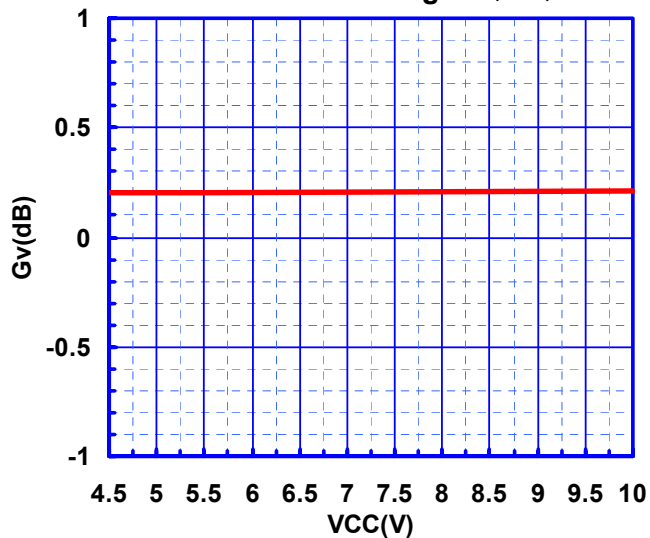
NJM2507

■TYPICAL CHARACTERISTICS

Gf vs Voltagel (VINP)

Gf(dB) vs VCC(V)

Gf vs Voltage (VINN)

Gf(dB) vs VCC(V)

DG vs Voltage (VINP)

DG(%) vs VCC(V)

DG vs Voltage (VINN)

DG(%) vs VCC(V)

DP vs Voltagel (VINP)

DP(deg) vs VCC(V)

DP vs Voltagel (VINN)

DP(deg) vs VCC(V)

■TYPICAL CHARACTERISTICS

VthH vs Voltage

VthL vs Voltage

IthH vs Voltage

IthL vs Voltage

CMRR vs Voltage
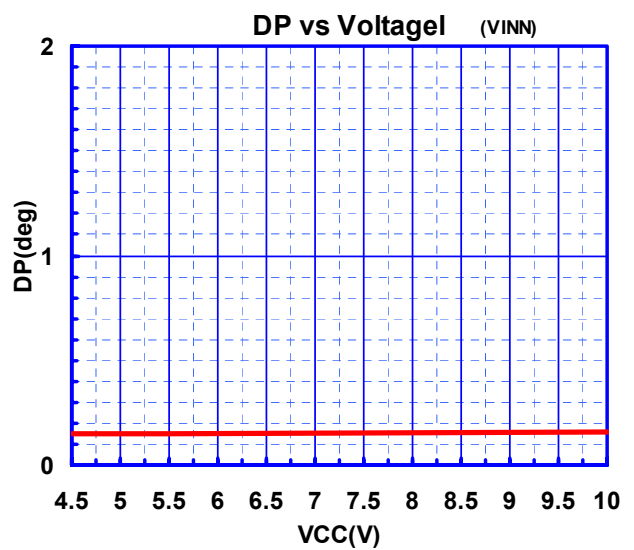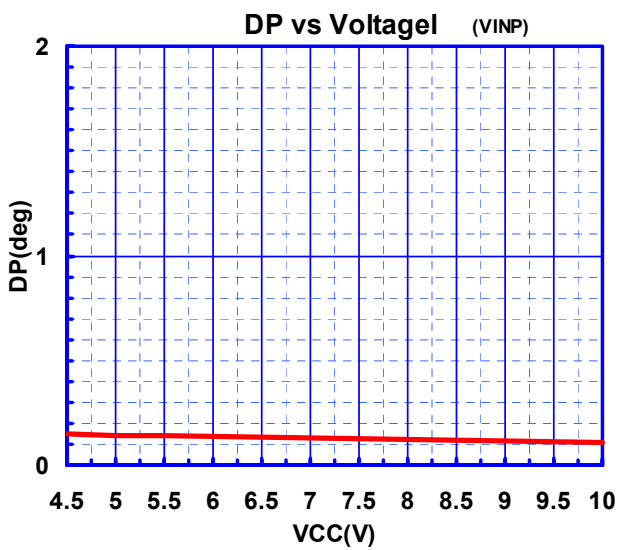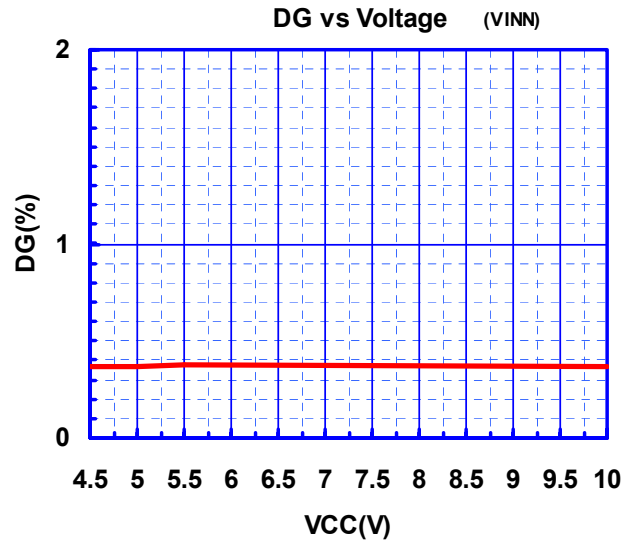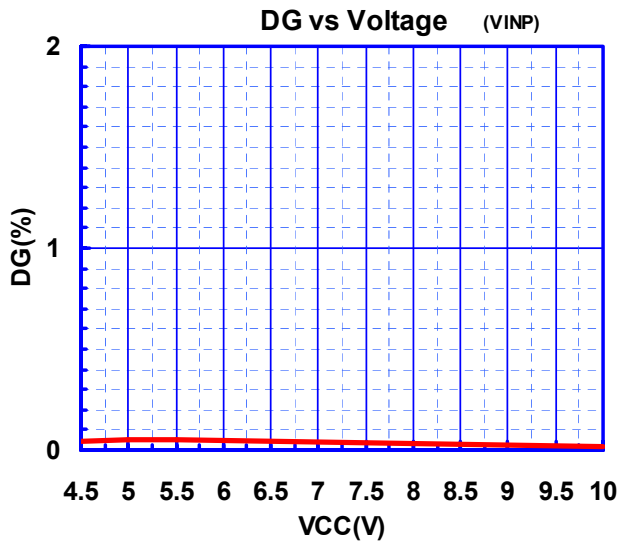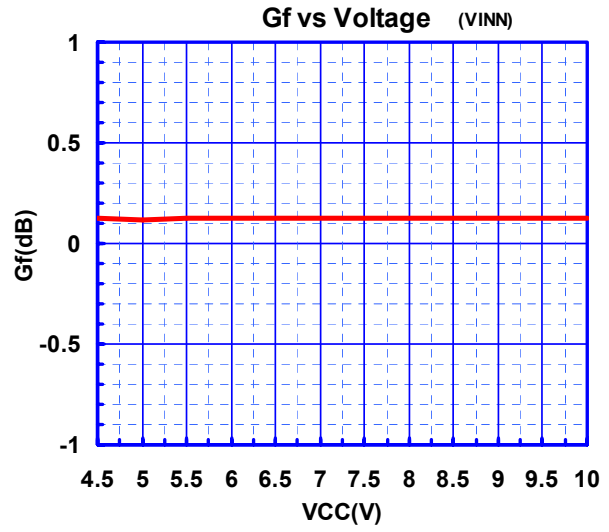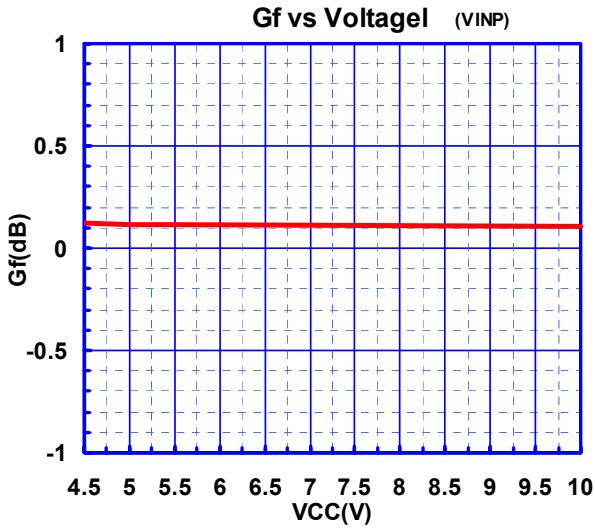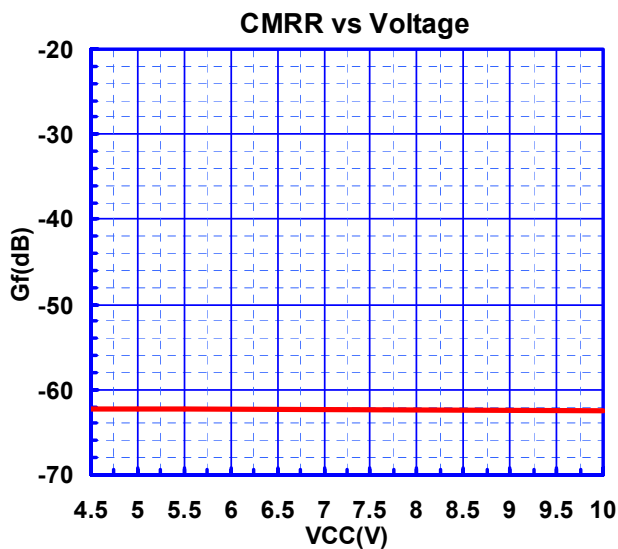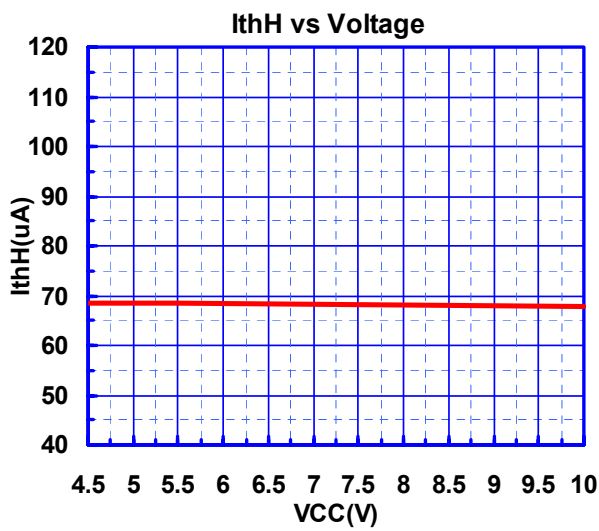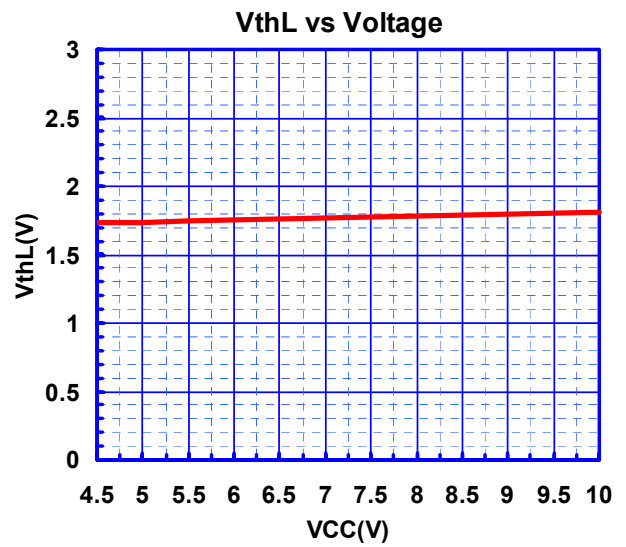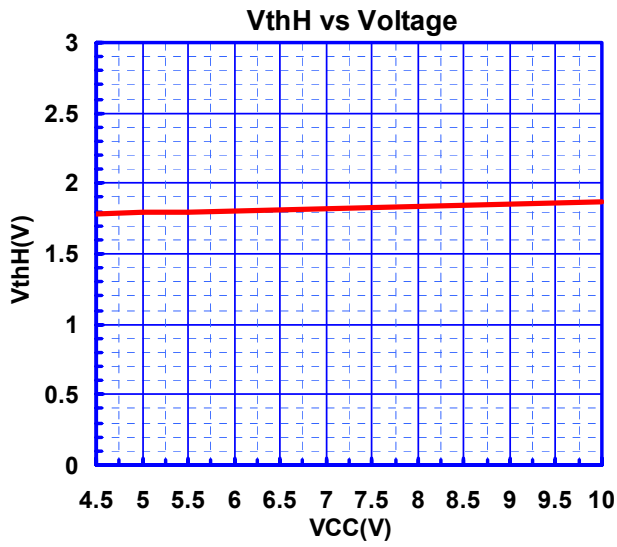
NJM2507

■TYPICAL CHARACTERISTICS
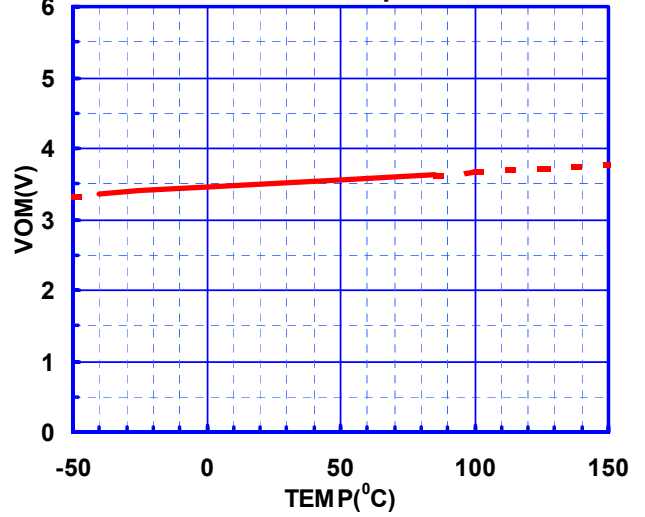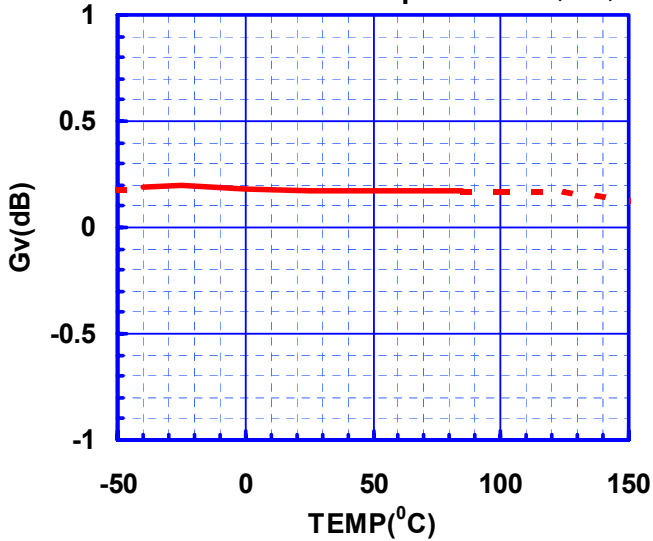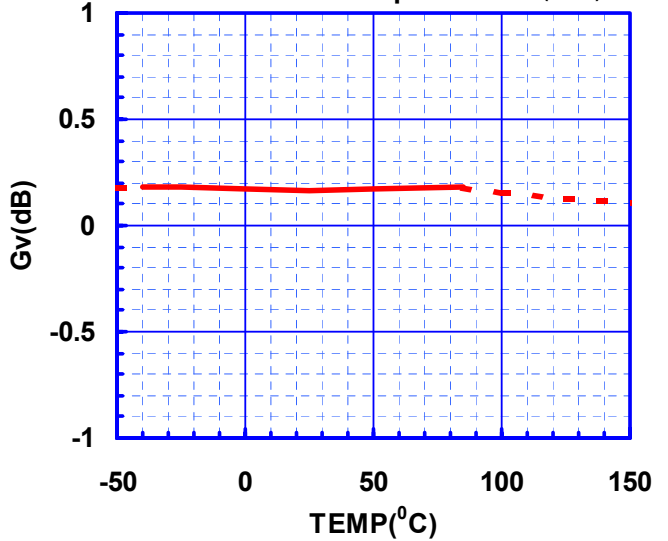
ICC vs Temperature
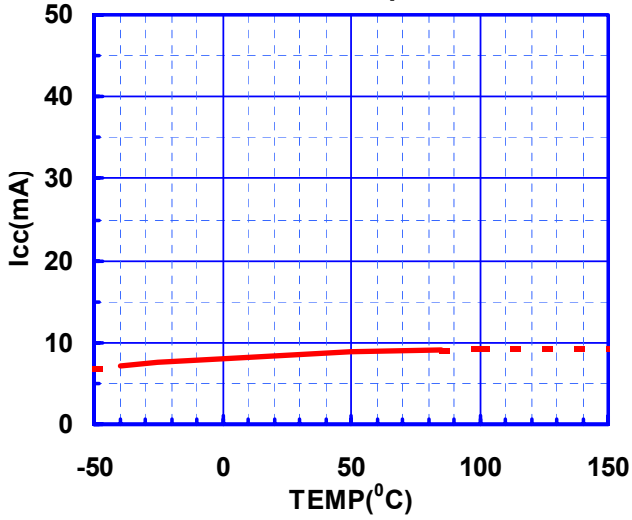
Isave vs Temperature
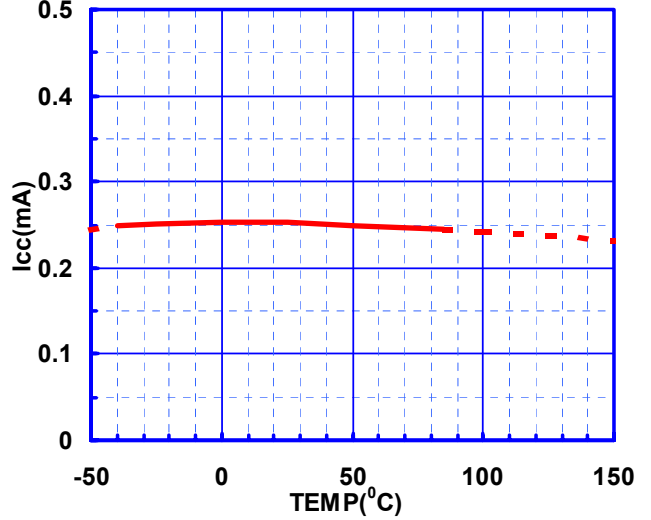
VOM vs Temperature (VINP)
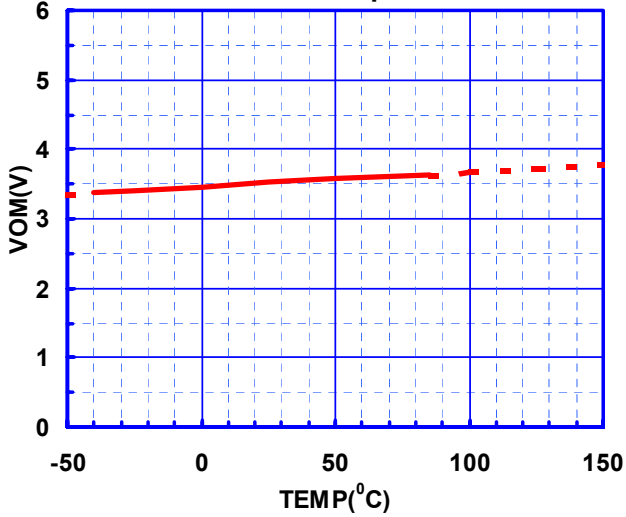

VOM vs Temperature (VINN)

Gv vs Temperature (VINP)

Gv vs Temperature (VINN)

Ver.6

■TYPICAL CHARACTERISTICS

Gf vs Temperature (VINP)

Gf vs Temperature (VINN)
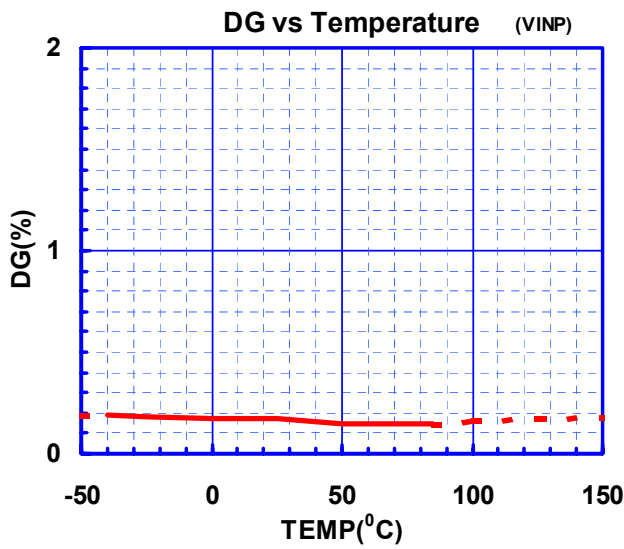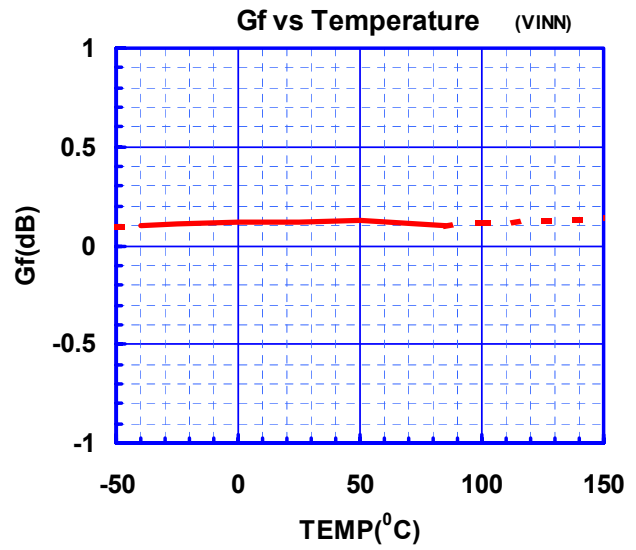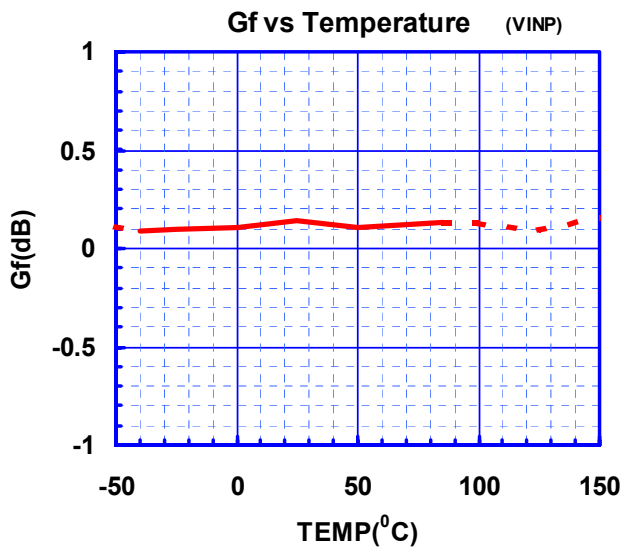

DG vs Temperature (VINP)

DG vs Temperature (VINN)
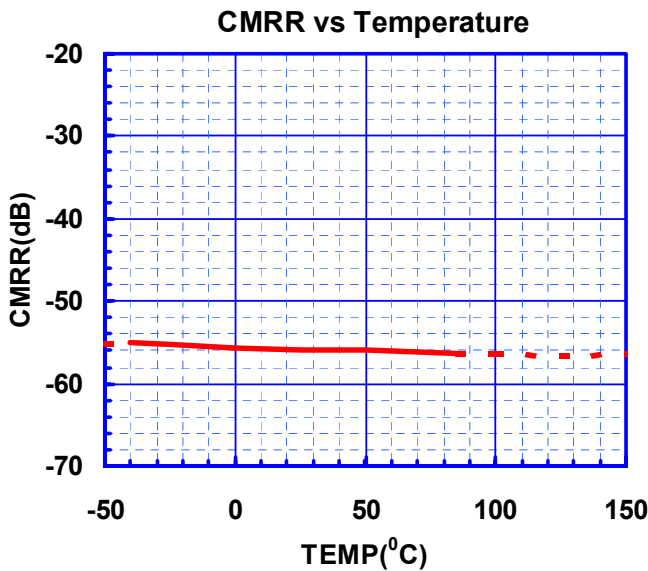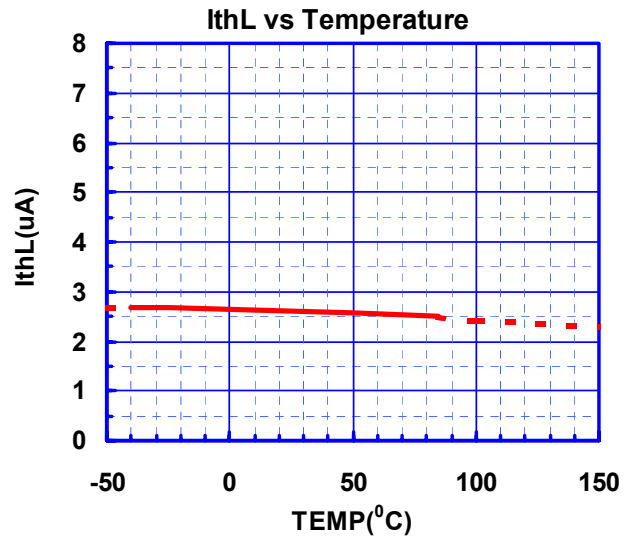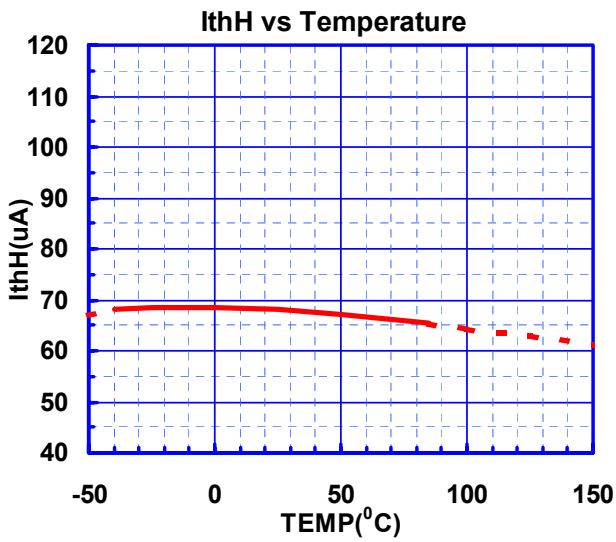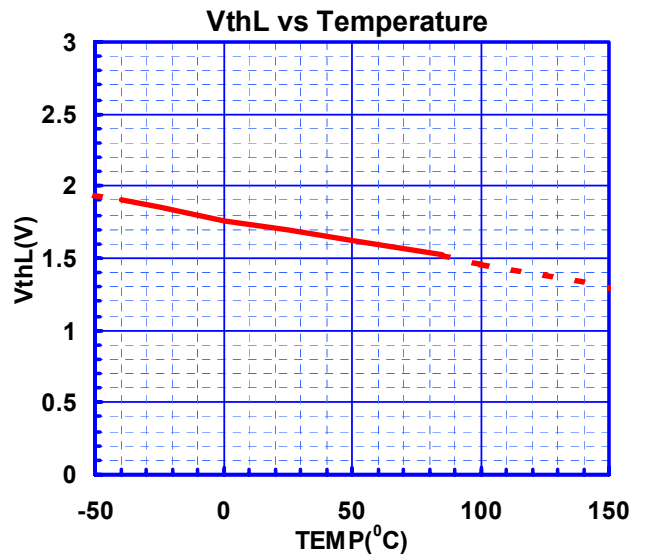

DP vs Temperature (VINP)

DP vs Temperature (VINN)

■**TYPICAL CHARACTERISTICS**

VthH vs Temperature

VthL vs Temperature

IthH vs Temperature

IthL vs Temperature

CMRR vs Temperature
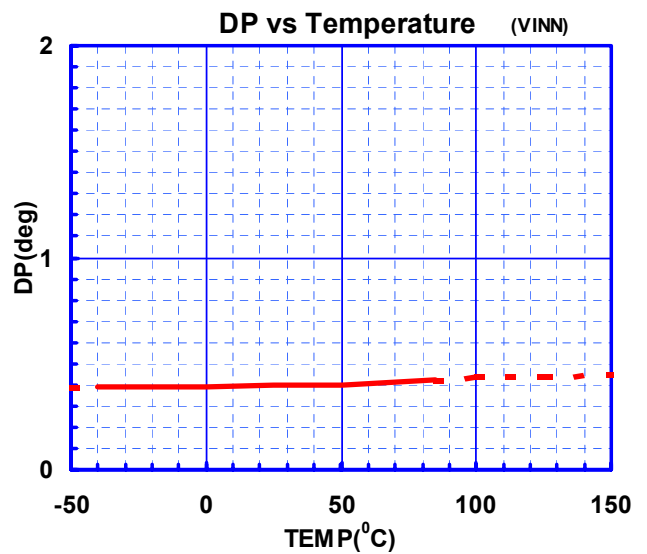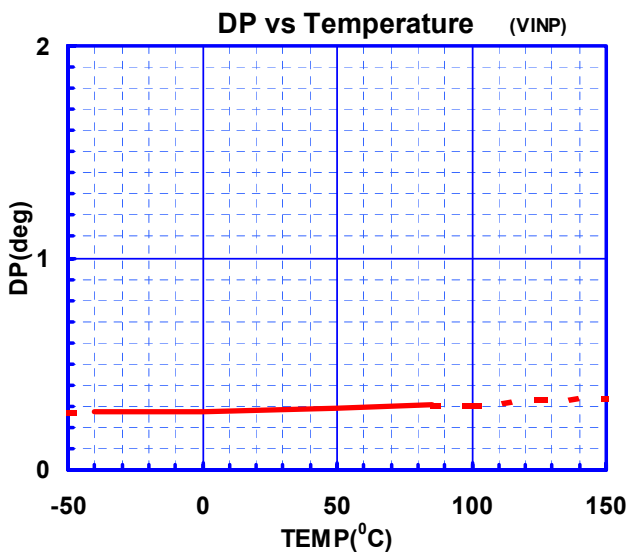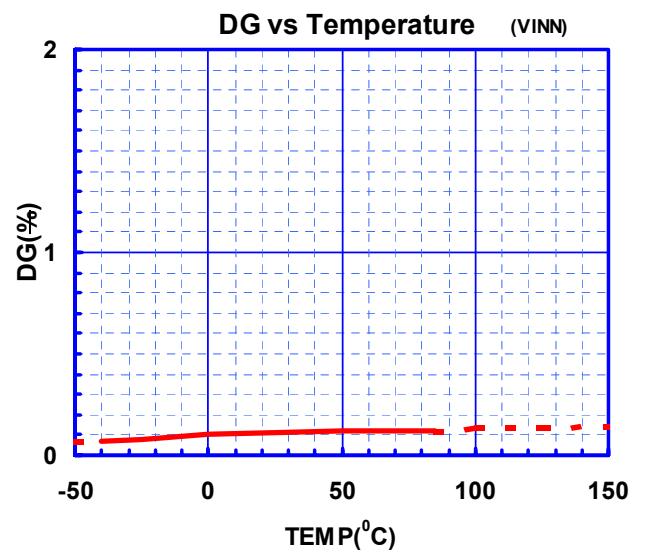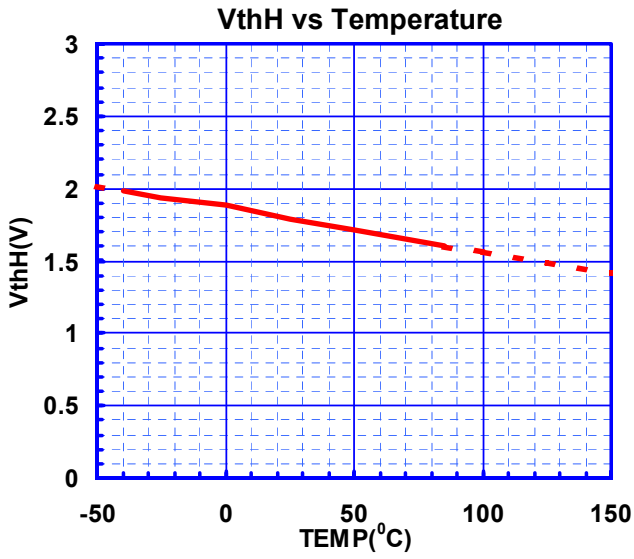
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