

LOW VOLTAGE VIDEO AMPLIFIER WITH LPF

■ GENERAL DESCRIPTION

The NJW1351 is a Low Voltage Video Amplifier with LPF circuit. By the internal charge pump circuit, output capacitor is unnecessary.

The NJW1351 features low power and small package, and is suitable for low power design on downsizing of portable video system and system with video output.

Moreover, the following voltage gain variations are arranged.

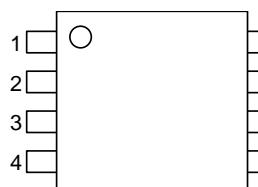
- NJW1350 (Gain=12dB)
- NJW1352 (Gain=9dB)
- NJW1353 (Gain=16dB)

■ FEATURES

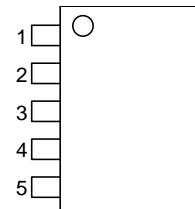
- Operating Voltage 2.5 to 3.45V
- Output coupling capacitor-less
- 6dB amplifier
- Internal 75Ω Driver Circuit (2-system drive)
- 6th order LPF -38dB at 19MHz typ
- Power Save Circuit
- Bi-CMOS Technology
- Package Outline MSOP8(TVSP8)*, SON10

*MEET JEDEC MO-187-DA / THIN TYPE

■ PIN CONFIGURATION



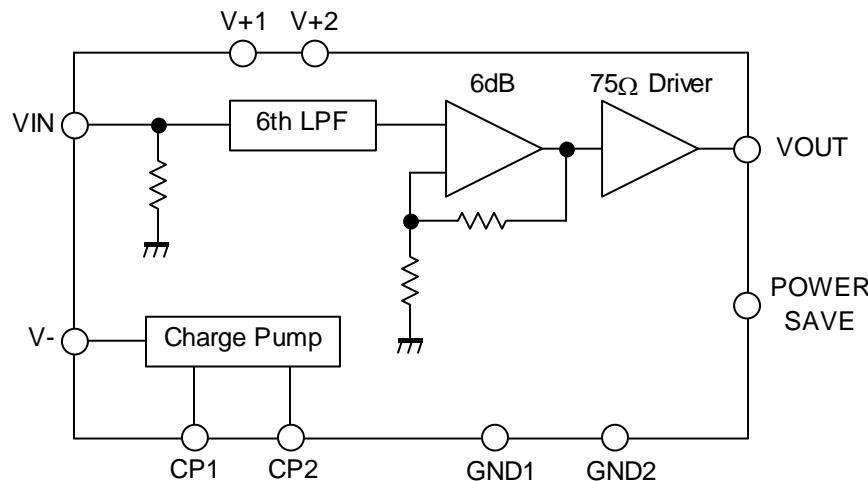
NJW1351RB1 (MSOP8)



NJW1351KK1 (SON10)

- | | |
|---------------|---------------|
| 1: CP1 | 10: 1: CP1 |
| 2: V+ | 2: V+2 |
| 3: VIN | 3: V+1 |
| 4: Power Save | 4: VIN |
| 5: VOUT | 5: Power Save |
| 6: GND | 6: VOUT |
| 7: V- | 7: GND1 |
| 8: CP2 | 8: GND2 |
| | 9: V- |

■ BLOCK DIAGRAM



(NOTE)

TVSP8: V+1 and V+2 are the same pins, and GND1 and GND2 are the same pins.

■ PACKAGE OUTLINE



NJW1351RB1
MSOP8(TVSP8)



NJW1351KK1

NJW1351

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|----------------|-------------------------------|------|
| Supply Voltage | V ⁺ | 3.55 | V |
| Power Dissipation | P _D | MSOP8(TVSP8):320 SON10:250 | mW |
| Operating Temperature Range | Topr | -40 to +85 | °C |
| Storage Temperature Range | Tstg | -55 to +125 | °C |

■ RECOMMENDED OPERATING CONDITION (Ta=25°C)

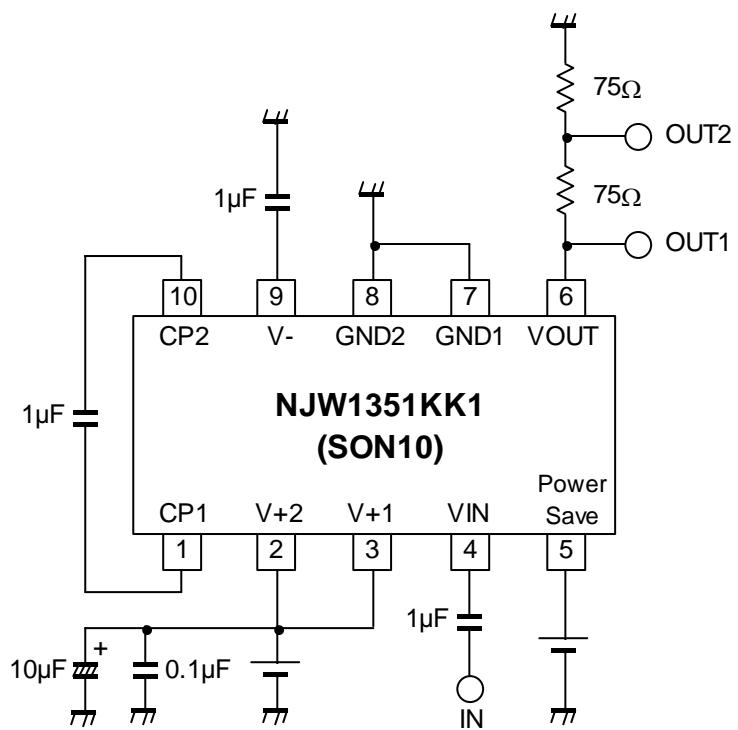
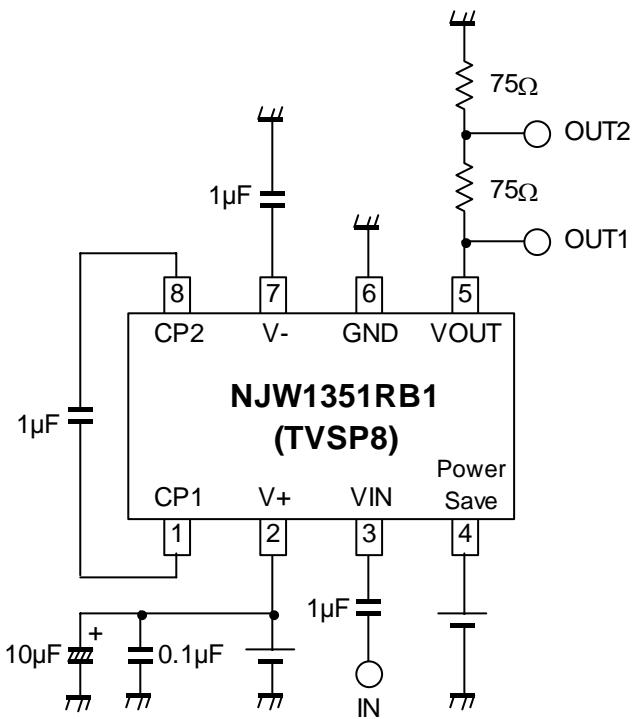
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--------|----------------|------|------|------|------|
| Operating Voltage | Vopr | | 2.5 | - | 3.45 | V |

■ ELECTRICAL CHARACTERISTICS (V⁺=3.0V, R_L=150Ω, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|---------------------|--|-------|-------|----------------|------------------|
| Operating Current | I _{CC} | No Signal | - | 14.0 | 20.0 | mA |
| Operating Current at Power Save | I _{save} | No Signal, Power Save Mode | - | 0 | 1.0 | μA |
| Maximum Output Voltage Swing | V _{om} | f=100kHz, THD=1% | 4.5 | 5.2 | - | V _{p-p} |
| Voltage Gain | G _v | V _{in} =100kHz, 1.0V _{p-p} , Input Sine Signal | 6.0 | 6.4 | 6.8 | dB |
| Low Pass Filter Characteristic | G _{fy4.5M} | V _{in} =4.5MHz/100kHz, 1.0V _{p-p} | -0.75 | -0.05 | 0.25 | dB |
| | G _{fy8M} | V _{in} =8MHz/100kHz, 1.0V _{p-p} | -7.0 | -3.0 | -1.0 | |
| | G _{fy19M} | V _{in} =19MHz/100kHz, 1.0V _{p-p} | - | -38 | -23 | |
| Differential Gain | DG | V _{in} =1.0V _{p-p} , 10step Video Signal | - | 0.5 | - | % |
| Differential Phase | DP | V _{in} =1.0V _{p-p} , 10step Video Signal | - | 0.5 | - | deg |
| S/N Ratio | SNv | 100kHz to 6MHz, V _{in} =1.0V _{p-p} 100% White Video Signal, R _L =75Ω | - | +70 | - | dB |
| Switching Noise Level | N _{swpl} | R _L =75Ω, 10% White Video Signal input | - | 4.0 | 7.0 | mV _{pp} |
| 2nd. Distortion | H _v | V _{in} =1.0V _{p-p} , Sine Signal , 3.58MHz, R _L =75Ω | - | -60 | - | dB |
| SW Change Voltage High Level | V _{thPH} | | 1.25 | - | V ⁺ | V |
| SW Change Voltage Low Level | V _{thPL} | | 0 | - | 0.45 | |

■ CONTROL TERMINAL

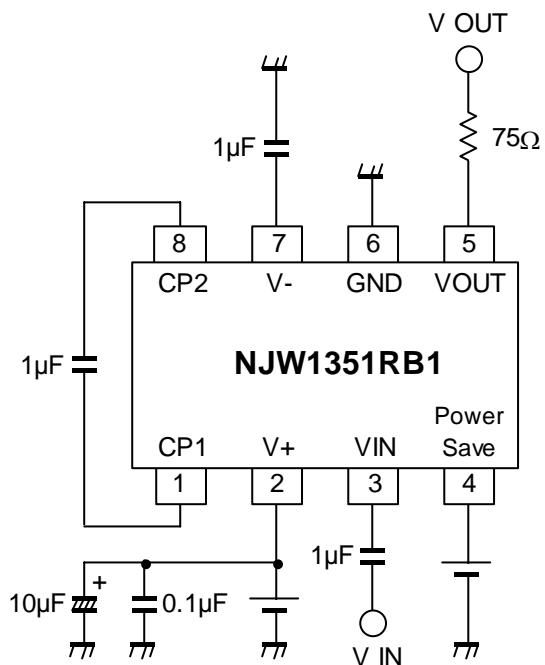
| PARAMETER | STATUS | NOTE |
|------------|--------|-----------------------|
| Power Save | H | Power Save: OFF |
| | L | Power Save: ON (Mute) |
| | OPEN | Power Save: ON (Mute) |

■ TEST CIRCUIT

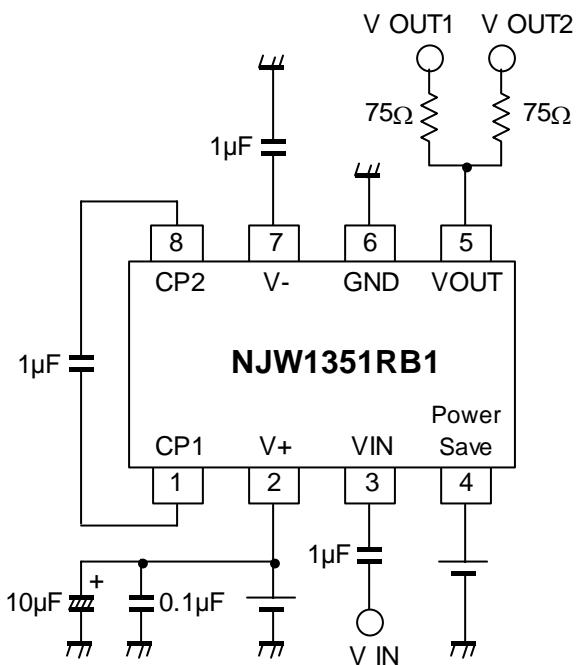
NJW1351

■ APPLICATION CIRCUIT (TVSP8)

(1) Standard circuit



(2) Two-line driving circuit



■ PIN FUNCTION (TVSP8)

| PIN NO. | PIN NAME | INSIDE EQUIVALENT CIRCUIT |
|---------|------------------|---------------------------|
| 1 | CP1 | |
| 2 | V ⁺ | - |
| 3 | V _{in} | |
| 4 | Power Save | |
| 5 | V _{out} | |
| 6 | GND | - |
| 7 | V ⁻ | - |
| 8 | CP2 | |

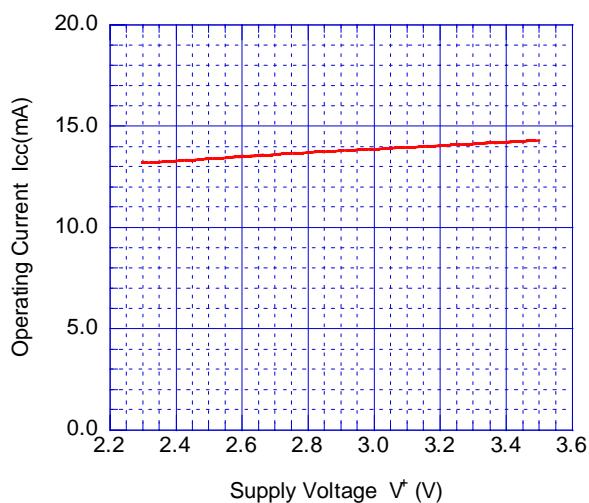
NJW1351

■ PIN FUNCTION(SON10)

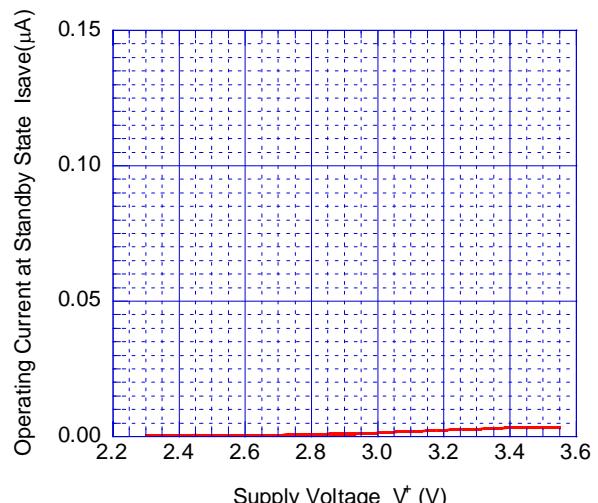
| PIN NO. | PIN NAME | INSIDE EQUIVALENT CIRCUIT |
|---------|------------|---------------------------|
| 1 | CP1 | |
| 2,3 | V+2,V+1 | - |
| 4 | Vin | |
| 5 | Power Save | |
| 6 | Vout | |
| 7,8 | GND1,GND2 | - |
| 9 | V- | - |
| 10 | CP2 | |

■ TYPICAL CHARACTERISTICS

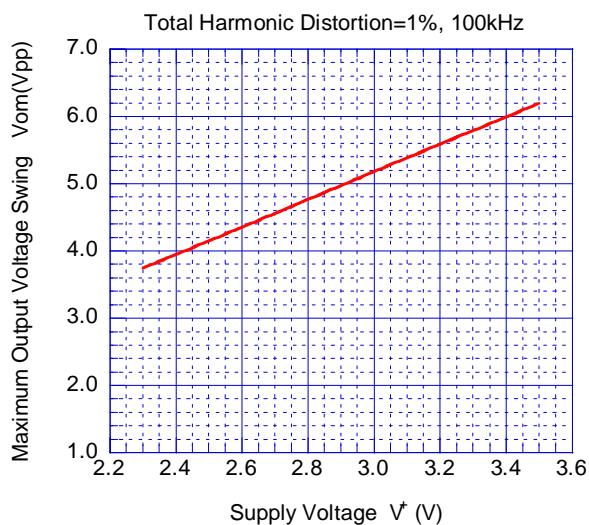
Operating Current vs. Supply Voltage



Operating Current at Standby State vs. Supply Voltage

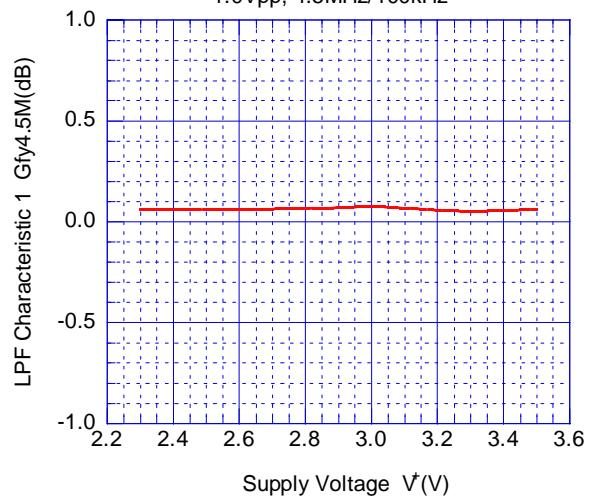


Maximum Output Voltage Swing vs. Supply Voltage



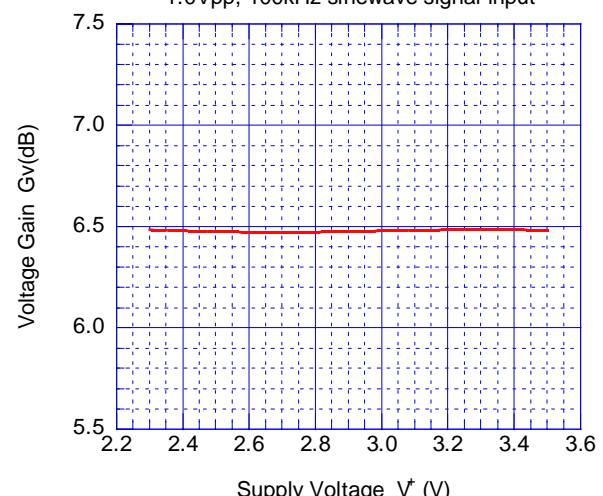
Low Pass Filter Characteristic 1 vs. Supply Voltage

1.0Vpp, 4.5MHz/100kHz



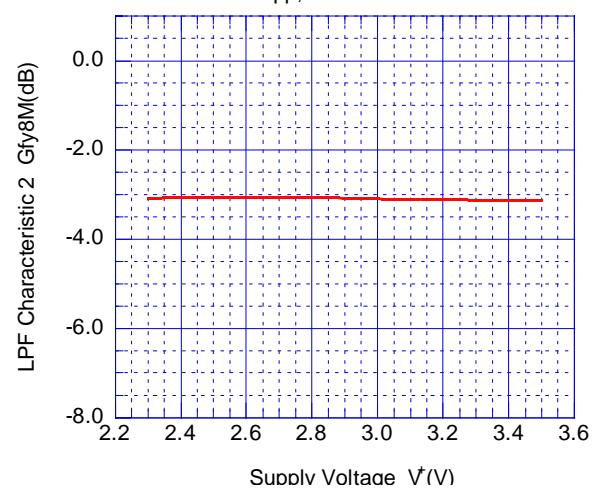
Voltage Gain vs. Supply Voltage

1.0Vpp, 100kHz sinewave signal input



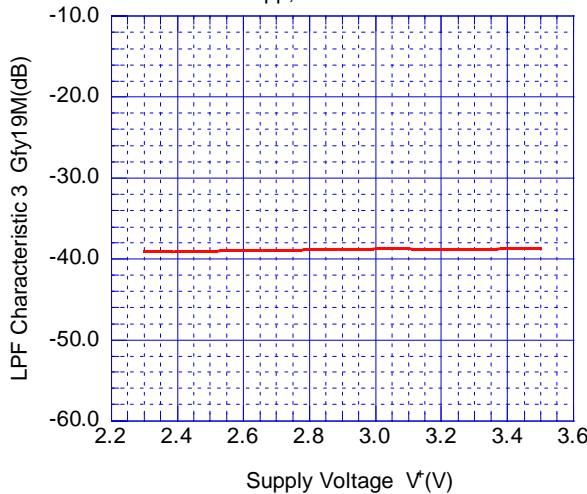
Low Pass Filter Characteristic 2 vs. Supply Voltage

1.0Vpp, 8MHz/100kHz

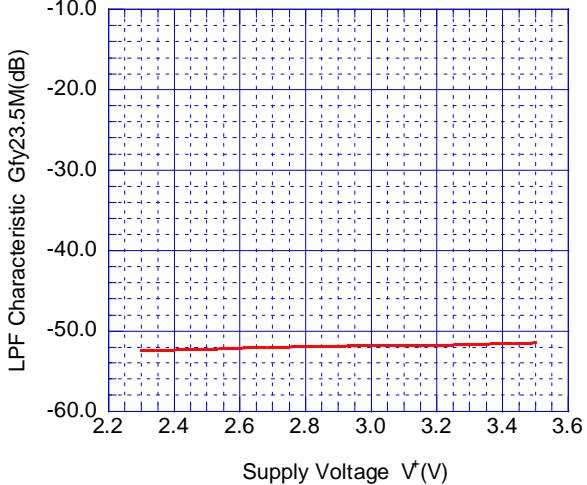


TYPICAL CHARACTERISTICS

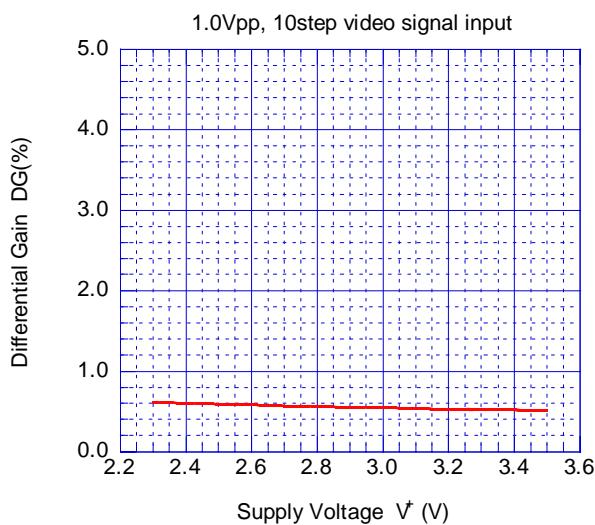
Low Pass Filter Characteristic 3 vs. Supply Voltage
1.0Vpp, 19MHz/100kHz



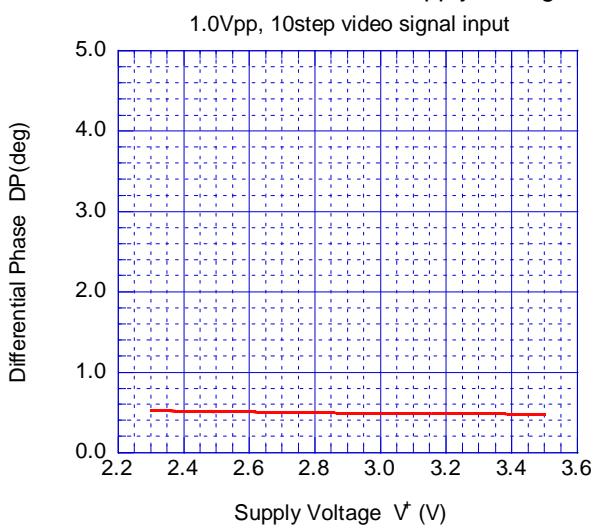
Low Pass Filter Characteristic vs. Supply Voltage
1.0Vpp, 23.5MHz/100kHz



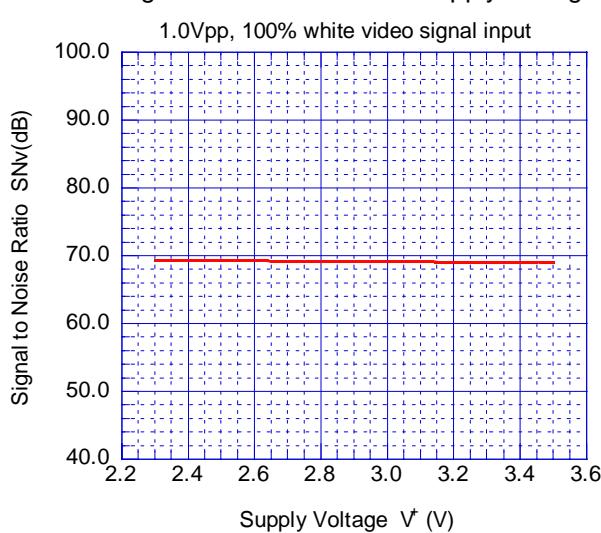
Differential Gain vs. Supply Voltage



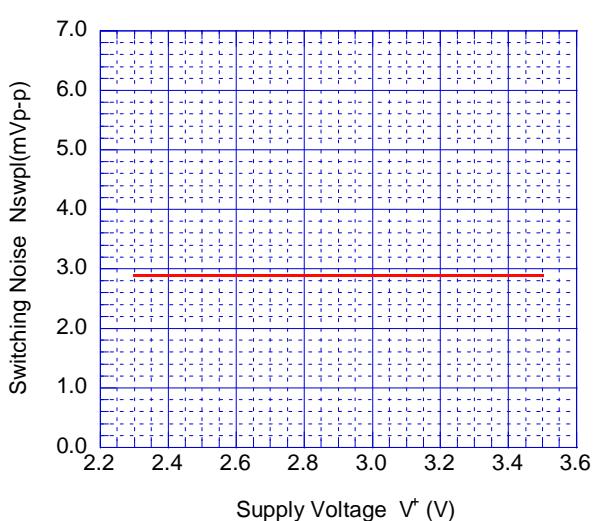
Differential Phase vs. Supply Voltage



Signal to Noise Ratio vs. Supply Voltage

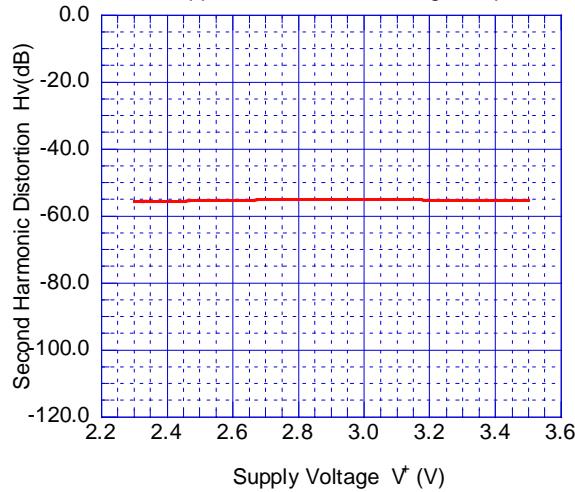


Switching Noise Level vs. Supply Voltage

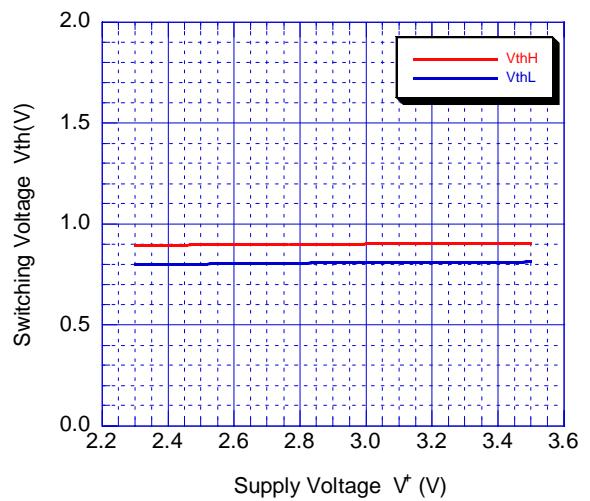


■TYPICAL CHARACTERISTICS

Second Harmonic Distortion vs. Supply Voltage
1.0Vpp, 3.58MHz sinewave signal input

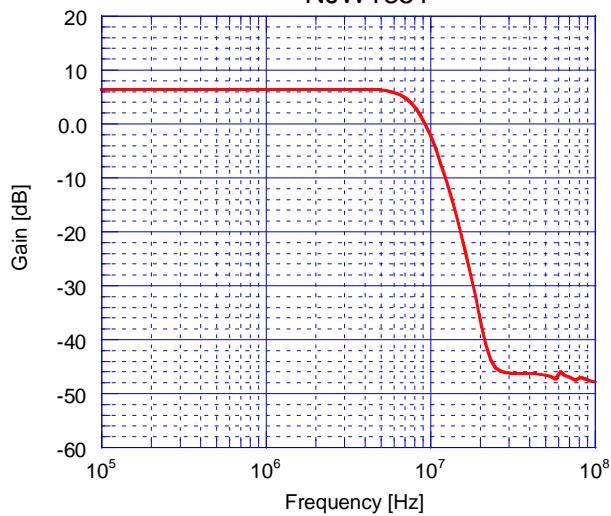


Switching Voltage Level vs. Supply Voltage

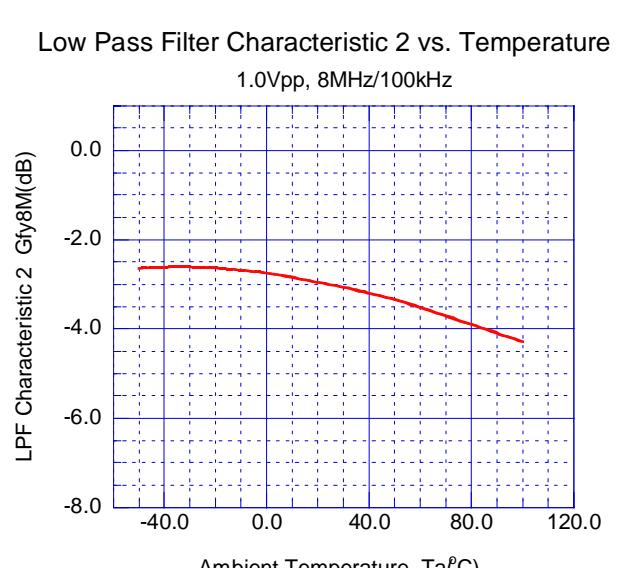
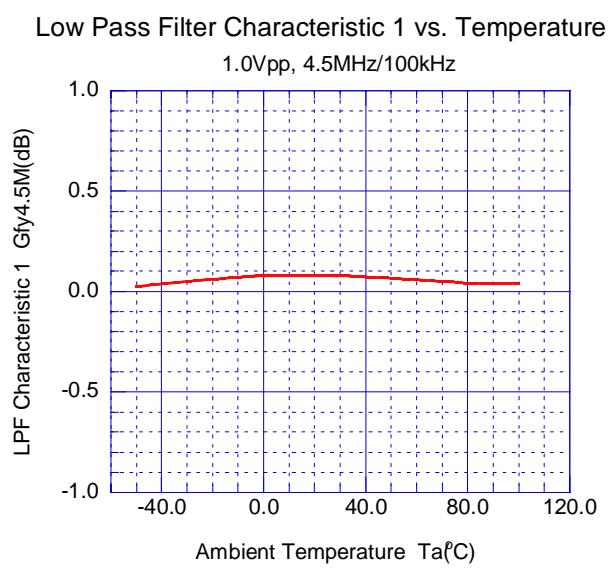
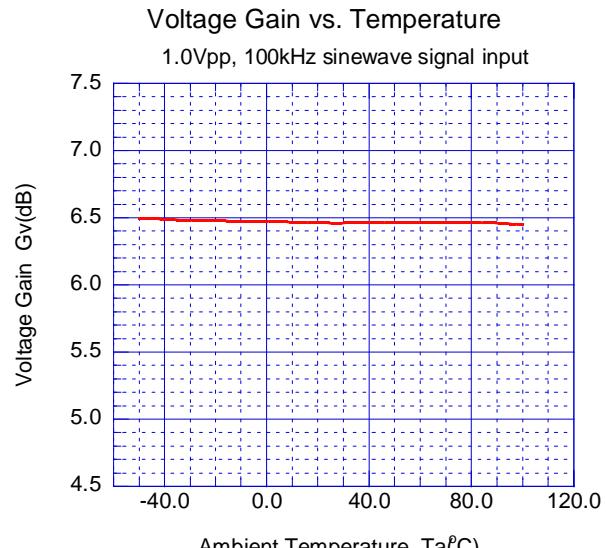
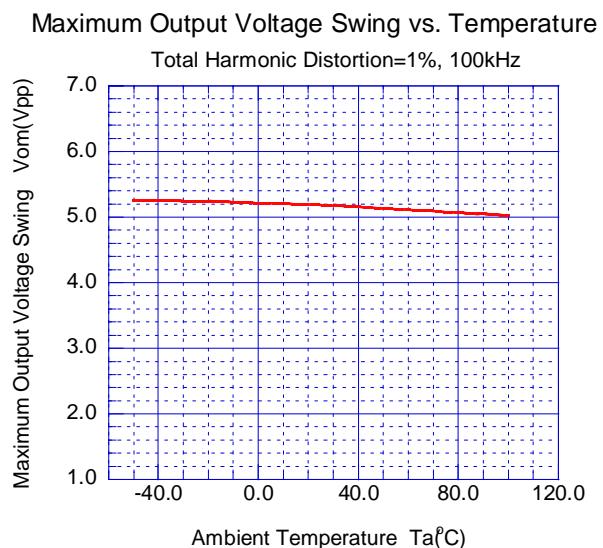
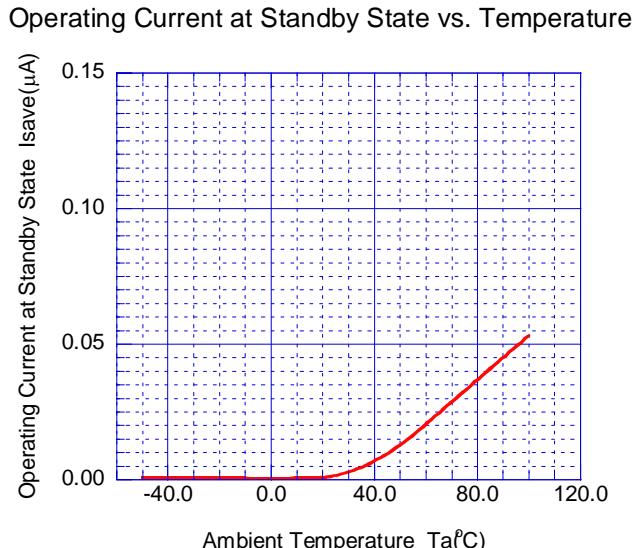
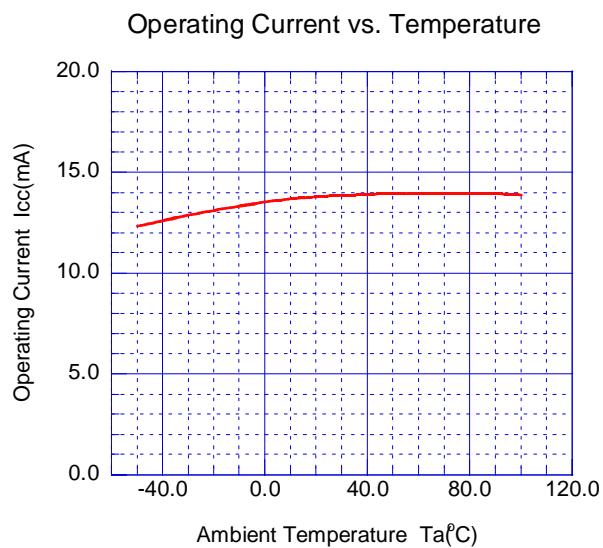


Voltage Gain vs. Frequency

NJW1351



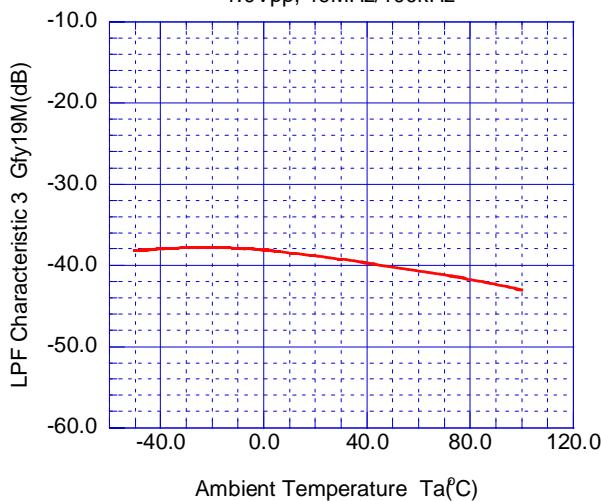
TYPICAL CHARACTERISTICS



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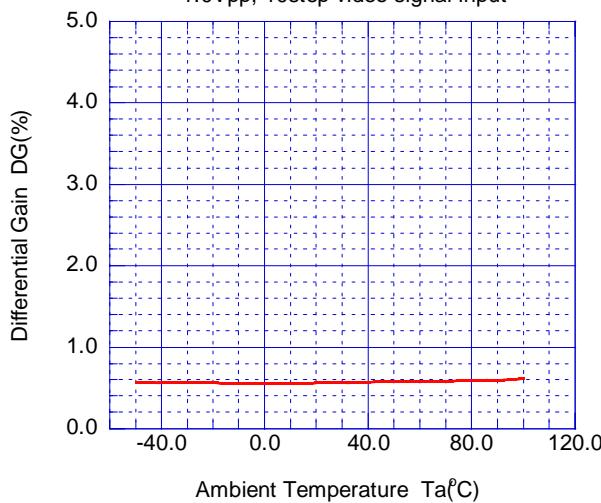
Low Pass Filter Characteristic 3 vs. Temperature

1.0Vpp, 19MHz/100kHz



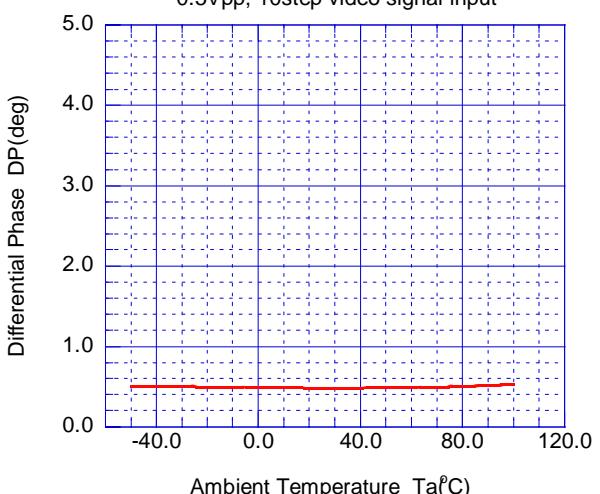
Differential Gain vs. Temperature

1.0Vpp, 10step video signal input



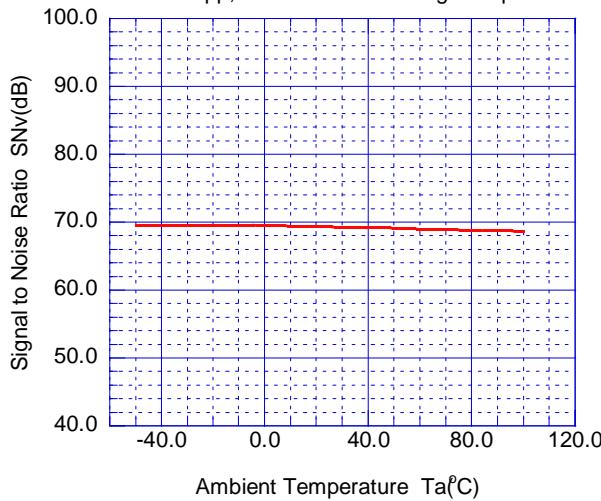
Differential Phase vs. Temperature

0.5Vpp, 10step video signal input

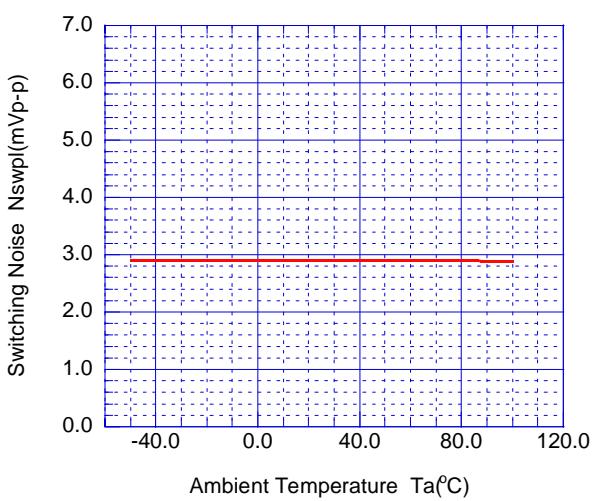


Signal to Noise Ratio vs. Temperature

1.0Vpp, 100% white video signal input



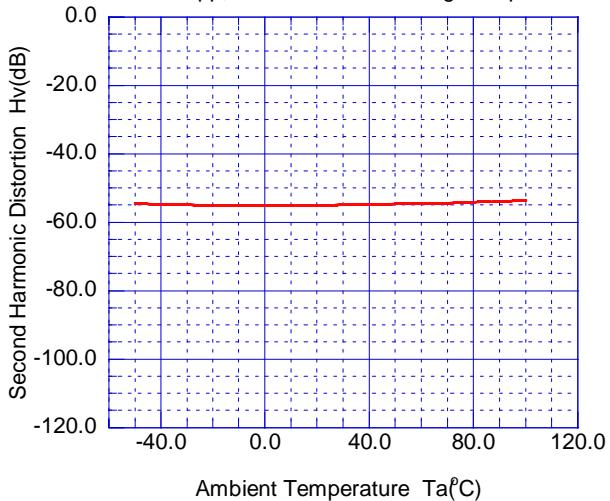
Switching Noise Level vs. Temperature



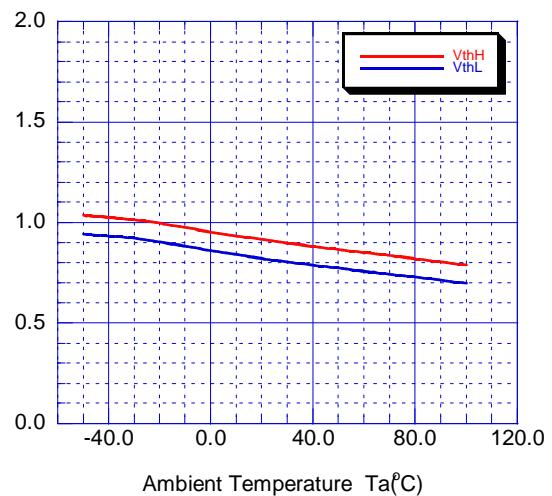
■TYPICAL CHARACTERISTICS

Second Harmonic Distortion vs. Temperature

1.0Vpp, 3.58MHz sinewave signal input



Switching Voltage Level vs. Temperature



[CAUTION]

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[NJW1351RB1-TE1](#) [NJW1351RB1-TE2](#) [NJW1351KK1-TE3](#)

ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибуторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибуторских договоров

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- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помочь разработчикам, и инженерам.

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- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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