

## LOW VOLTAGE VIDEO AMPLIFIER WITH LPF

### ■GENERAL DESCRIPTION

The NJW1350 is a Low Voltage Video Amplifier with LPF circuit. By the internal charge pump circuit, output capacitor is unnecessary.

The NJW1350 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.

- NJW1351(Gain=6dB)
- NJW1352(Gain=9dB)
- NJW1353(Gain=16dB)

### ■PACKAGE OUTLINE



**NJW1350RB1**  
**MSOP8(TVSP8)**

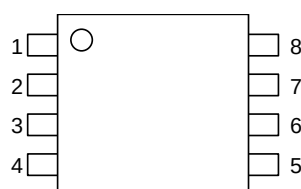


**NJW1350KK1**

### ■FEATURES

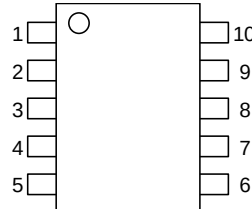
- Operating Voltage 2.5 to 3.45V
  - Output coupling capacitor-less
  - 12dB amplifier
  - Internal 75Ω Driver Circuit (2-system drive)
  - 6<sup>th</sup> order LPF -38dB at 19MHz typ
  - Power Save Circuit
  - Bi-CMOS Technology
  - Package Outline MSOP8(TVSP8)\*, SON10
- \*MEET JEDEC MO-187-DA / THIN TYPE

### ■PIN CONFIGURATION



**NJW1350RB1(TVSP8)**

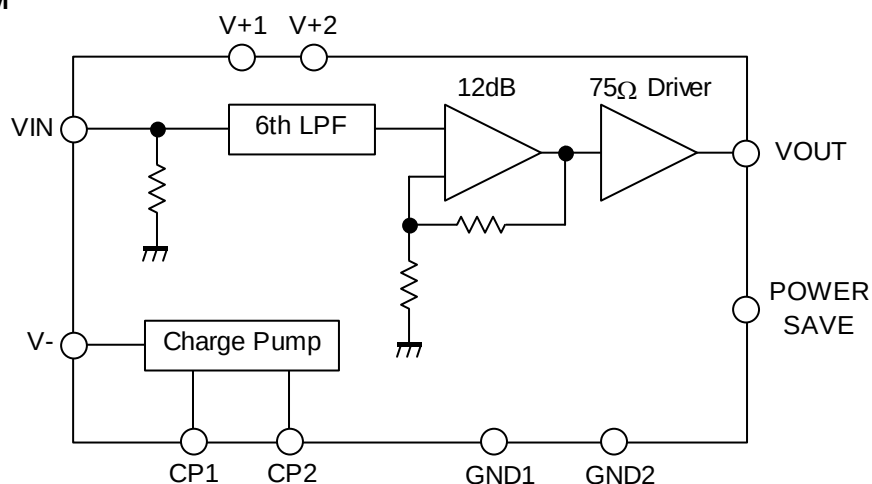
- 1: CP1
- 2: V+
- 3: VIN
- 4: Power Save
- 5: VOUT
- 6: GND
- 7: V-
- 8: CP2



**NJW1350KK1(SON10)**

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

### ■BLOCK DIAGRAM



(NOTE)

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

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

| PARAMETER                   | SYMBOL         | RATINGS                | UNIT |
|-----------------------------|----------------|------------------------|------|
| Supply Voltage              | V <sup>+</sup> | 3.55                   | V    |
| Power Dissipation           | P <sub>D</sub> | TVSP8:320<br>SON10:250 | mW   |
| Operating Temperature Range | Topr           | -40 to +85             | °C   |
| Storage Temperature Range   | Tstg           | -55 to +125            | °C   |

## ■RECOMMENDED OPEARATING CONDITION(Ta=25°C)

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

## ■ELECTRICAL CHARACTERISTICS (V<sup>+</sup>=3.0V,R<sub>L</sub>=150Ω,Ta=25°C)

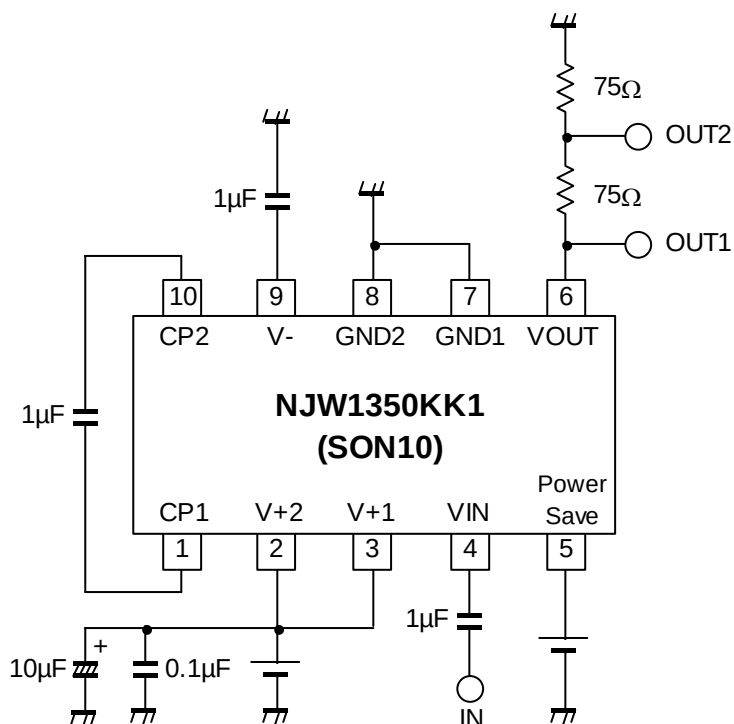
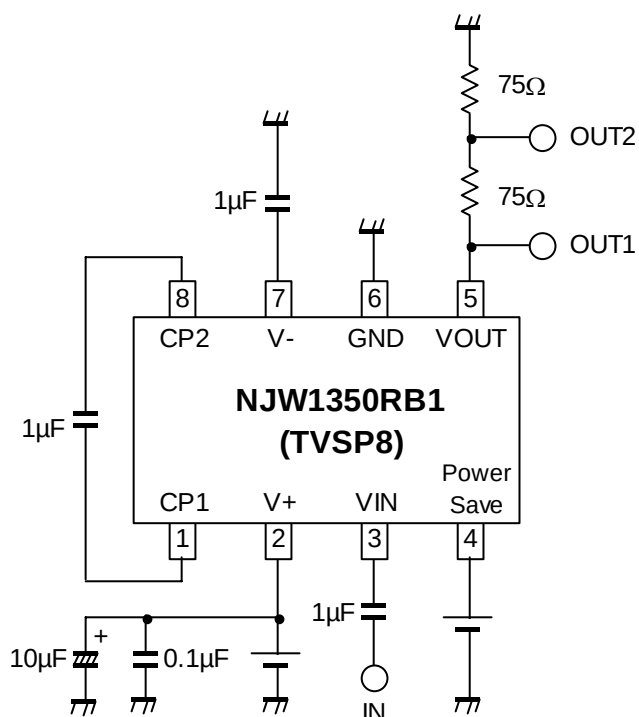
| PARAMETER                       | SYMBOL               | TEST CONDITION                                                                           | MIN.  | TYP.  | MAX.           | UNIT |
|---------------------------------|----------------------|------------------------------------------------------------------------------------------|-------|-------|----------------|------|
| Operating Current               | I <sub>CC</sub>      | No Signal                                                                                | -     | 14.0  | 20.0           | mA   |
| Operating Current at Power Save | I <sub>save</sub>    | No Signal, Power Save Mode                                                               | -     | 0     | 1.0            | uA   |
| Maximum Output Voltage Swing    | V <sub>om</sub>      | f=100kHz, THD=1%                                                                         | 4.5   | 5.2   | -              | Vp-p |
| Voltage Gain                    | G <sub>v</sub>       | V <sub>in</sub> =100kHz, 0.5Vp-p,<br>Input Sine Signal                                   | 11.6  | 12.0  | 12.4           | dB   |
| Low Pass Filter Characteristic  | G <sub>fy</sub> 4.5M | V <sub>in</sub> =4.5MHz/100kHz, 0.5Vp-p                                                  | -0.75 | -0.05 | 0.25           | dB   |
|                                 | G <sub>fy</sub> 8M   | V <sub>in</sub> =8MHz/100kHz, 0.5Vp-p                                                    | -7.0  | -3.0  | -1.0           |      |
|                                 | G <sub>fy</sub> 19M  | V <sub>in</sub> =19MHz/100kHz, 0.5Vp-p                                                   | -     | -38   | -23            |      |
| Differential Gain               | DG                   | V <sub>in</sub> =0.5Vp-p, 10step Video Signal                                            | -     | 0.5   | -              | %    |
| Differential Phase              | DP                   | V <sub>in</sub> =0.5Vp-p, 10step Video Signal                                            | -     | 0.5   | -              | deg  |
| S/N Ratio                       | SN <sub>v</sub>      | 100kHz to 6MHz, V <sub>in</sub> =0.5Vp-p<br>100% White Video Signal, R <sub>L</sub> =75Ω | -     | +70   | -              | dB   |
| Switching Noise Level           | N <sub>swpl</sub>    | R <sub>L</sub> =75Ω,<br>10% White Video Signal input                                     | -     | 4.0   | 7.0            | mVpp |
| 2nd. Distortion                 | H <sub>v</sub>       | V <sub>in</sub> =0.5Vp-p, Sine Signal ,<br>3.58MHz, R <sub>L</sub> =75Ω                  | -     | -60   | -              | dB   |
| SW Change Voltage High Level    | V <sub>thPH</sub>    | Active                                                                                   | 1.25  | -     | V <sup>+</sup> | V    |
| SW Change Voltage Low Level     | V <sub>thPL</sub>    | Non-active                                                                               | 0     | -     | 0.45           |      |

## ■CONTROL TERMINAL

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

\*Please refer to the NJW1351 data sheet for the example of the characteristic.

## ■TEST CIRCUIT



[CAUTION]  
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