

## SELECTABLE GAIN TYPE LOW VOLTAGE VIDEO AMPLIFIER WITH LPF

### ■ GENERAL DESCRIPTION

The **NJM2560** is a Low Voltage Video Amplifier contained LPF circuit. Internal 75Ω driver is easy to connect TV monitor directly. The **NJM2560** can respond to various input voltage by gain switch.

The **NJM2560** features low power and small package, and is suitable for low power design on downsizing of DSC and DVC.

### ■ PACKAGE OUTLINE



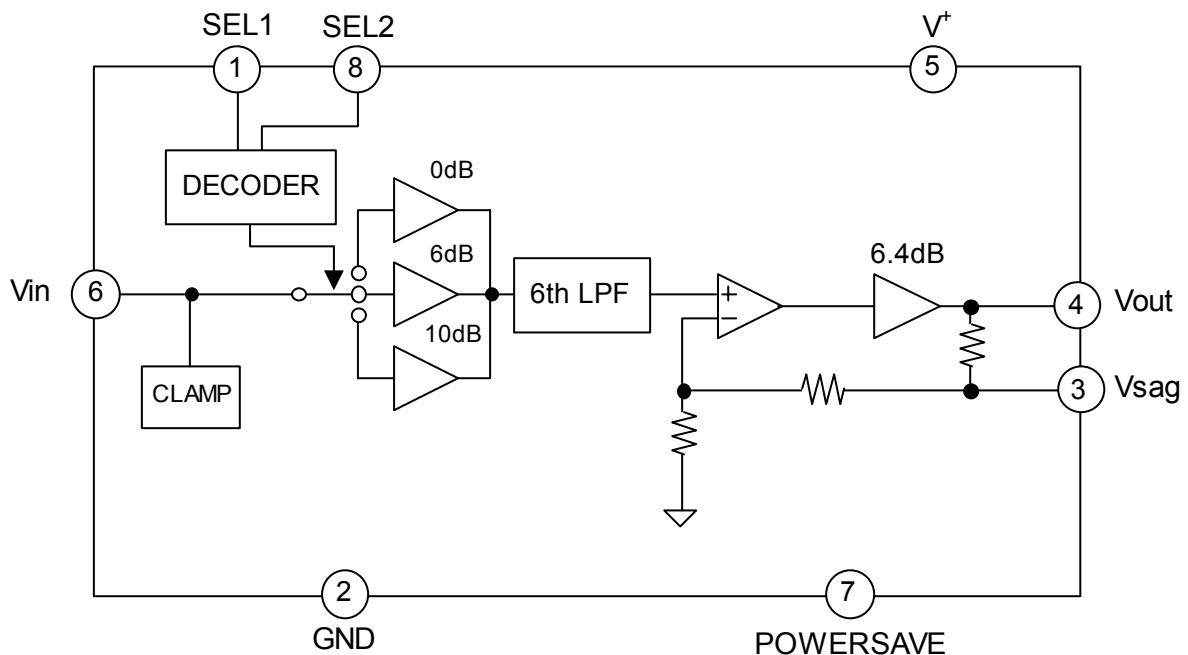
**NJM2560RB1**

( MSOP8 (TVSP8) )

### ■ FEATURES

- Operating Voltage            2.8 to 5.5V
  - Internal LPF                 -29dB at 19MHz typ.
  - Internal gain switch        6dB, 12dB, and 16dB
  - Internal 75Ω driver circuit (2-system drive)
  - Internal Power Save circuit
  - Package Outline            MSOP8 (TVSP8)\*
- \*MEET JEDEC MO-187-DA / THIN TYPE

### ■ BLOCK DIAGRAM



# NJM2560

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

| PARAMETER                   | SYMBOL         | RATING      | UNIT |
|-----------------------------|----------------|-------------|------|
| Supply Voltage              | V <sup>+</sup> | 7.0         | V    |
| Power Dissipation           | P <sub>D</sub> | 320         | mW   |
| Operating Temperature Range | Topr           | -40 to +85  | °C   |
| Storage Temperature Range   | Tstg           | -40 to +125 | °C   |

## ■ ELECTRICAL CHARACTERISTICS (V<sup>+</sup>=3.0V, RL=150Ω, Ta=25°C, Select 6dB unless otherwise specified)

| PARAMETER                    | SYMBOL          | TEST CONDITION   | MIN. | TYP. | MAX.           | UNIT |
|------------------------------|-----------------|--|------|------|----------------|------|
| Supply Current               | I <sub>CC</sub> | No signal  | -    | 9.0  | 12.0           | mA   |
| Supply Current at Power save | Isave           | Power save mode  | -    | 50   | 60             | uA   |
| Maximum Output Level 1       | Vomv1           | Select 6dB, f=100kHz, THD=1%                                 | 2.2  | 2.5  | -              | Vp-p |
| Maximum Output Level 2       | Vomv2           | Select 12dB, f=100kHz, THD=1%                                | 2.2  | 2.5  | -              | Vp-p |
| Maximum Output Level 3       | Vomv3           | Select 16dB, f=100kHz, THD=1%                                | 2.2  | 2.5  | -              | Vp-p |
| Voltage Gain 1               | Gv6             | Select 6dB, Vin=100kHz, 1.0Vp-p, Sin-signal                  | 6.0  | 6.4  | 6.8            | dB   |
| Voltage Gain 2               | Gv12            | Select 12dB, Vin=100kHz, 0.5Vp-p, Sin-signal                 | 12.0 | 12.4 | 12.8           | dB   |
| Voltage Gain 3               | Gv16            | Select 16dB, Vin=100kHz, 0.3Vp-p, Sin-signal                 | 16.0 | 16.4 | 16.8           | dB   |
| LPF Characteristics 1        | Gfy4.5M1        | Select 6dB, Vin=4.5MHz/100kHz, 1.0Vp-p                       | -0.6 | -0.1 | 0.4            | dB   |
|                              | Gfy19M1         | Select 6dB, Vin=19MHz/100kHz, 1.0Vp-p                        | -    | -29  | -19            |      |
| LPF Characteristics 2        | Gfy4.5M2        | Select 12dB, Vin=4.5MHz/100kHz, 0.5Vp-p                      | -0.6 | -0.1 | 0.4            | dB   |
|                              | Gfy19M2         | Select 12dB, Vin=19MHz/100kHz, 0.5Vp-p                       | -    | -29  | -19            |      |
| LPF Characteristics 3        | Gfy4.5M3        | Select 16dB, Vin=4.5MHz/100kHz, 0.3Vp-p                      | -0.7 | -0.1 | 0.3            | dB   |
|                              | Gfy19M3         | Select 16dB, Vin=19MHz/100kHz, 0.3Vp-p                       | -    | -29  | -19            |      |
| Differential Gain 1          | DG1             | Select 6dB, Vin=1.0Vp-p, 10step video signal                 | -    | 0.8  | -              | %    |
| Differential Gain 2          | DG2             | Select 12dB, Vin=0.5Vp-p, 10step video signal                | -    | 1.4  | -              | %    |
| Differential Gain 3          | DG3             | Select 16dB, Vin=0.3Vp-p, 10step video signal                | -    | 2.0  | -              | %    |
| Differential Phase           | DP              | Vin=1.0Vp-p, 10step video signal                             | -    | 0.5  | -              | deg  |
| S/N Ratio                    | SNv             | Vin=1.0Vp-p, 100% White video signal, RL=75Ω, 100KHz to 6MHz | -    | +60  | -              | dB   |
| 2 <sup>nd</sup> Distortion   | Hv              | Vin=1.0Vp-p, 3.58MHz Sin Video signal, RL=75Ω                | -    | -45  | -              | dB   |
| SW High Level                | VthH            |  | 1.8  | -    | V <sup>+</sup> | V    |
| SW Low Level                 | VthL            |  | 0    | -    | 0.3            |      |

## ■ CONTROL TERMINAL FUNCTION

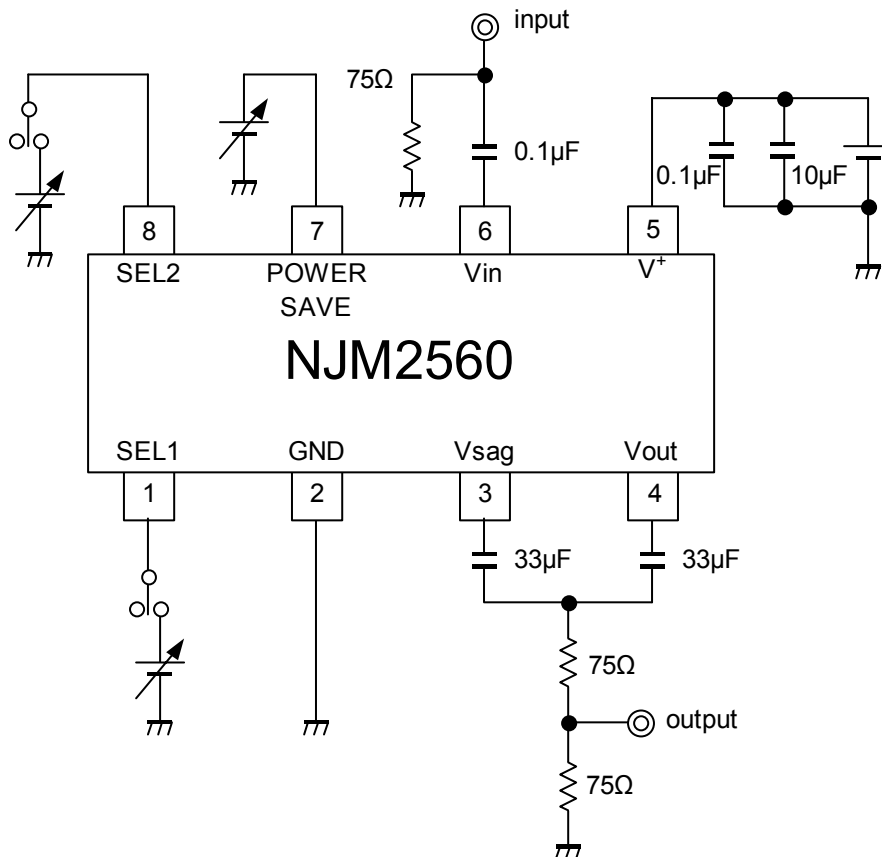
### POWER SAVE

| TERMINAL   | CONTROL | STATE           |
|------------|---------|-----------------|
| Power Save | H       | Power Save: OFF |
|            | L       | Power Save: ON  |
|            | OPEN    | Power Save: ON  |

### VOLTAGE GAIN

| TERMINAL | SEL 1      | SEL 2    | STATE |
|----------|------------|----------|-------|
| SEL      | L / OPEN   | L / OPEN | 6dB   |
|          | H          | L / OPEN | 12dB  |
|          | Don't care | H        | 16dB  |

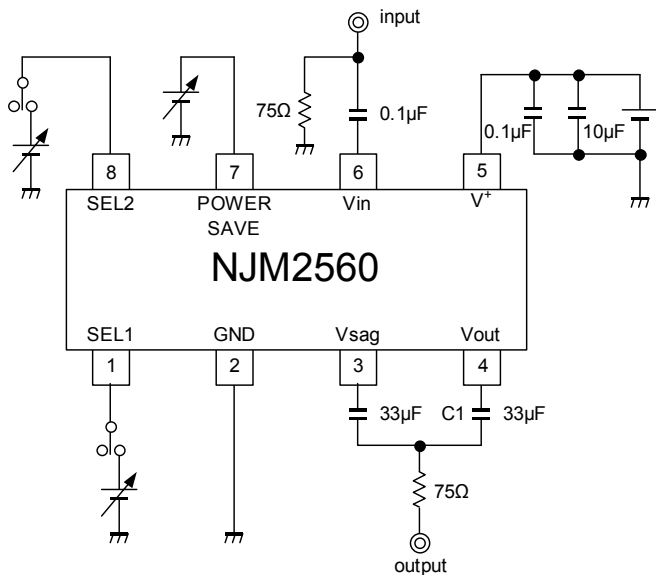
## ■ TEST CIRCUIT



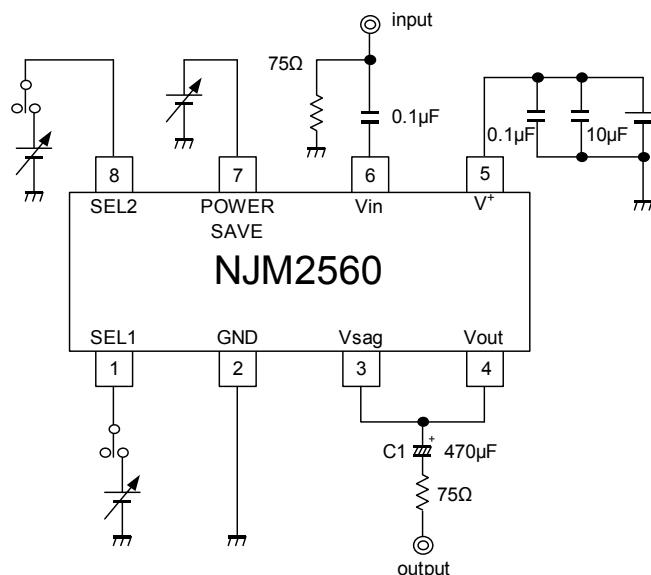
# NJM2560

## ■ APPLICATION CIRCUIT

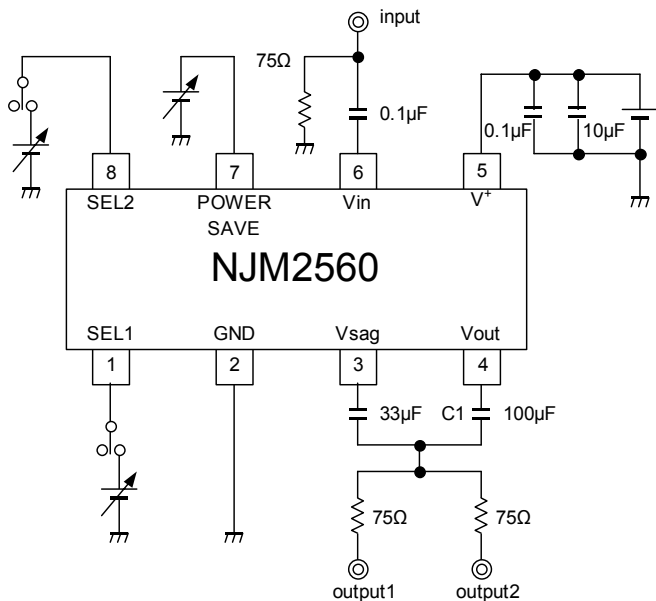
### (1) Standard circuit



### (2) SAG correction unused circuit



### (3) Two-line driving circuit



#### (1) Standard circuit

The SAG correction reduces output coupling capacitor values.  
 The capacitor of C1 (33μF) is recommended for the portable application.  
 However, the 33μF capacitor may deteriorate SAG, and lose synchronization by luminance fluctuation.  
 Adjust the C1 value, checking the waveform containing a lot of low frequency components like a bounce waveform (In case of worst condition). Change the capacitor of C1 into a large value to improve SAG.

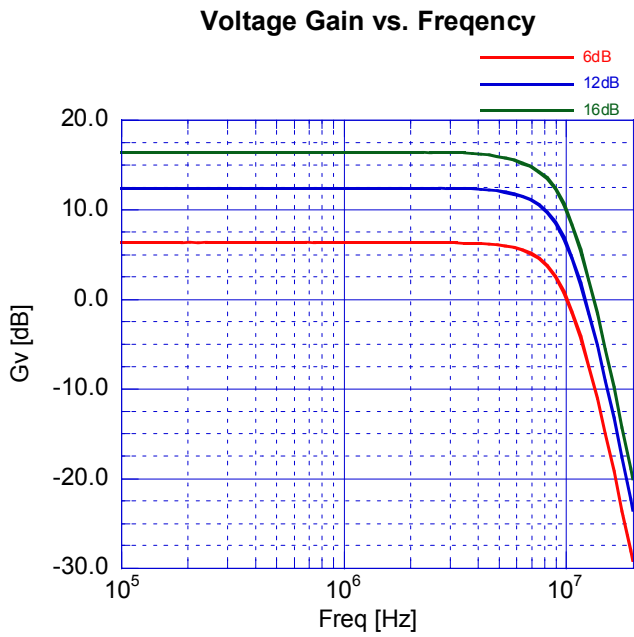
#### (2) SAG correction unused circuit

Cancel the SAG correction to improve lost synchronization.  
 Connect the coupling capacitor after connecting the Vout pin and Vsag pin. The recommended value is 470μF or more.

#### (3) Two-line driving circuit

The NJM2560 drives two-line load of 150Ω.  
 The capacitance value of C1 should be 100μF or more, because SAG is deteriorated than a standard circuit.

## ■ TYPICAL CHARACTERISTICS



**[CAUTION]**  
 The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.