

VIDEO EQUALIZER

■ GENERAL DESCRIPTION

NJM2258 is the IC functioning the gain high pass correction, as well as for equalizing function of wave distortion correction, generated by bright signal of group delay feature like low band filter. It has internalizing REC line, one circuit, and then the playback line 2 circuit.

■ FEATURES

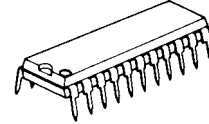
- 5V Spec, (Recommended Operating Voltage Range)
- Wide Band Width, 10MHz
- REC / PLAYBACK Change over function attached
- Package Outline SDIP22
- Bipolar Technology

■ APPLICATION

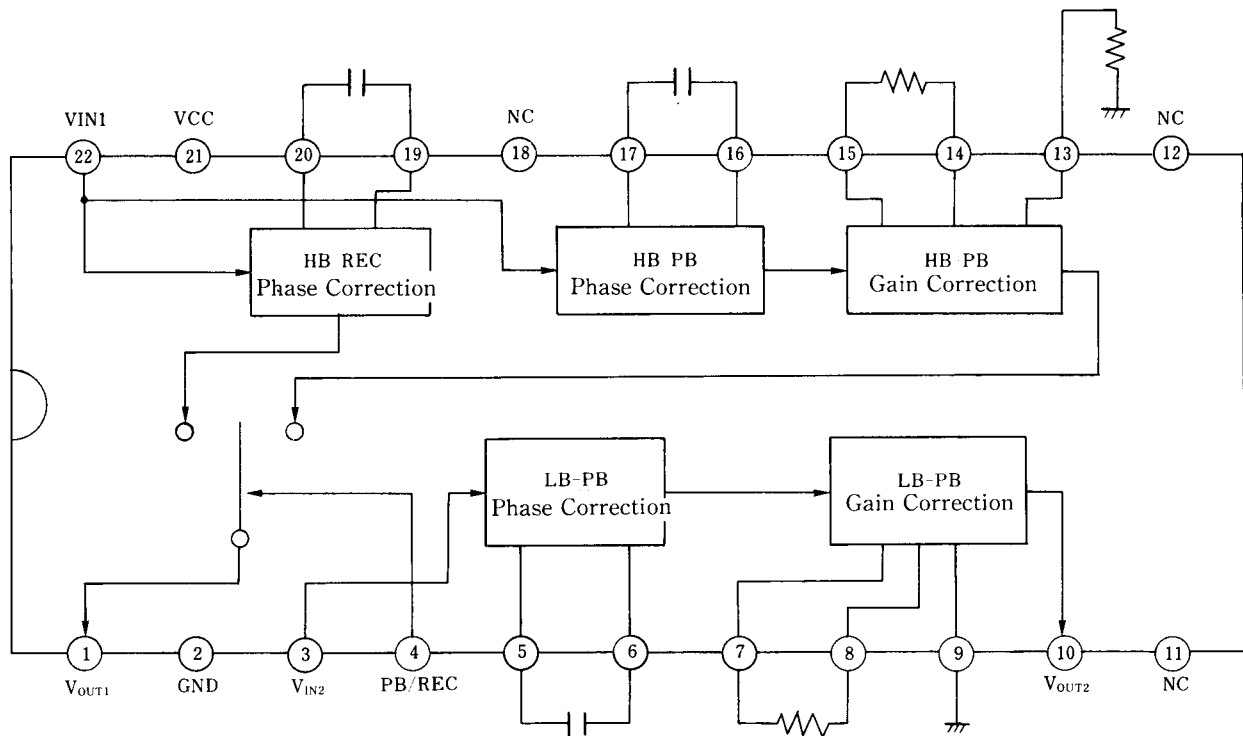
- VCR (S-VHS compatible)
- Video Camera
- Laser Disc

■ BLOCK DIAGRAM

■ PACKAGE OUTLINE



NJM2258L



NJM2258

■ ABSOLUTE MAXIMUM RATINGS

($T_a=25^\circ\text{C}$)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|-----------|-------------|------------------|
| Supply Voltage | V^+ | 7 | V |
| Power Dissipation | P_D | 700 | mW |
| Operating Temperature Range | T_{opr} | -20 to +75 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -40 to +125 | $^\circ\text{C}$ |

■ ELECTRICAL CHARACTERISTICS

($V^+ = 5\text{V}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|--------|----------------|------|------|------|------|
| Operating Current | I_P | No Signal | - | 26 | 34 | mA |

HB-REC

| | | | | | | |
|-----------------------------|--------------|---|------|------|------|----|
| Phase Positive Gain | G_{af} | $f_{IN} = 100\text{KHz}$ 19PINOUT | -1 | 0 | +1 | dB |
| Phase Negative Gain | G_{ar} | $f_{IN} = 100\text{KHz}$ 20PINOUT | -6.4 | -5.4 | -4.4 | dB |
| 19pin Impedance | AT19 | $f_{IN} = 100\text{KHz}$ | -7.0 | -6.0 | -5.0 | dB |
| Output Gain LOW | G_{al} | $f_{IN} = 100\text{KHz}$ | -1 | 0 | +1 | dB |
| Output Gain HIGH | G_{ah} | $f_{IN} = 5\text{MEGHZ}$ | -1 | 0 | +1 | dB |
| Output Gain f Feature | ΔG_a | $G_{ah} - G_{al}$ | -1 | 0 | +1 | dB |
| Output Secondary Distortion | DA2 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -40 | -30 | dB |
| Output the third Distortion | DA3 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -36 | -30 | dB |

HB-PB

| | | | | | | |
|-----------------------------|--------------|---|------|------|------|----|
| Positive Phase Gain | G_{bf} | $f_{IN} = 100\text{KHz}$ 16PINOUT | -1 | 0 | +1 | dB |
| Negative Phase Gain | G_{br} | $f_{IN} = 100\text{KHz}$ 17PINOUT | -0.2 | 0.8 | 1.8 | dB |
| 16 Impedance | AT16 | $f_{IN} = 100\text{KHz}$ | -7.0 | -6.0 | -5.0 | dB |
| Output Gain | G_{ca} | $f_{IN} = 100\text{KHz}$ | -6.1 | -5.0 | -4.0 | dB |
| 15-14 Impedance | ΔG_c | 15PIN-14PIN = 1.7K Ω | 4.5 | 5.5 | 6.5 | dB |
| Output Gain LOW | G_{cbl} | $f_{IN} = 100\text{KHz}$ | -1 | 0 | +1 | dB |
| Output Gain HIGH | G_{cbh} | $f_{IN} = 5\text{MEGHZ}$ | 2 | 3 | 4 | dB |
| Output Gain f Feature | ΔG_b | $G_{cbh} - G_{cbl}$ | 2 | 3 | 4 | dB |
| Output Secondary Distortion | DC2 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -30 | -25 | dB |
| Output the third Distortion | DC3 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -27 | -22 | dB |

LB-PB

| | | | | | | |
|-----------------------------|--------------|---|------|------|------|----|
| Positive Phase Gain | G_{df} | $f_{IN} = 100\text{KHz}$ 6PINOUT | -1 | 0 | +1 | dB |
| Negative Phase Gain | G_{dr} | $f_{IN} = 100\text{KHz}$ 5PINOUT | -0.2 | 0.8 | 1.8 | dB |
| 6 Impedance | AT6 | $f_{IN} = 100\text{KHz}$ | -7.0 | -6.0 | -5.0 | dB |
| Output Gain | G_{da} | $f_{IN} = 100\text{KHz}$ | -6.1 | -5.1 | -4.1 | dB |
| 7-8 Impedance | ΔG_d | 7PIN - 8PIN = 1.7K Ω | 4.5 | 5.5 | 6.5 | dB |
| Output Gain LOW | G_{dbl} | $f_{IN} = 100\text{KHz}$ | | +1 | 0 | dB |
| Output Gain HIGH | G_{dbh} | $f_{IN} = 5\text{MEGHZ}$ | -1 | 0 | +1 | dB |
| Output Gain f Feature | ΔG_e | $G_{dbh} - G_{dbl}$ | -1 | 0 | +1 | dB |
| Output Secondary Distortion | DE2 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -35 | -28 | dB |
| Output the third Distortion | DE3 | $f_{IN} = 5\text{MEG}$ $V_{IN} = 1.0V_{PP}$ | | -36 | -30 | dB |

■ TERMINAL FUNCTION

| PIN | PIN NAME | SYMBOL | FUNCTION |
|-----|------------------------------|-----------------|--|
| 1 | HB-REC / PB OUT | VOUT1 | HB type (S-VHS) Correction Output Pin |
| 2 | GND | GND | Ground |
| 3 | LB-PB IN | VIN2 | LB type, (VHS) play-back signal Input Pin |
| 4 | HB-REC / PB Change over | PB REC | HB type, Change-over output of REC signal or Play-back signal High makes play-back signal output, and low makes REC signal output. |
| 5 | LB-PB Phase Correction Pin 1 | LPC1 | Connecting capacitor between Pin 5 to 6, which helps to give feature of correcting the group delay. |
| 6 | LB-PB Phase Correction Pin 2 | LPC2 | Connecting capacitor between Pin 5 to 6, which helps to give feature of correcting the group delay. |
| 7 | LB-PB Gain Correction Pin 1 | LGC1 | Setting up Gain by connecting resistor between Pin 7 to 8. |
| 8 | LB-PB Gain Correction Pin 2 | LGC2 | Setting up Gain by connecting resistor between Pin 7 to 8. |
| 9 | LB-PB Gain Correction Pin 3 | LP | Connecting L-C parallel resonance between pin 9 to GND, helps to give High band keeping, and if not required of keeping connect to GND. |
| 10 | LB-PB OUT | VOUT2 | LB type Output pin |
| 11 | N.C | | N.C pin |
| 12 | N.C | | N.C pin |
| 13 | LB-PB Gain Correction Pin 3 | HP | Connecting L-C parallel resonance between pin 13 to GND, helps to give High band keeping, and if not required of keeping connect to GND. |
| 14 | LB-PB Gain Correction Pin 2 | HPG1 | Setting up Gain by connecting resistor between Pin 14 to 15. |
| 15 | LB-PB Gain Correction Pin 1 | HPG2 | Setting up Gain by connecting resistor between Pin 14 to 15. |
| 16 | LB-PB Phase Correction Pin 2 | HPC1 | Connecting Capacitor between Pin 16 to 17, which helps to give feature of correcting the group delay. |
| 17 | LB-PB Phase Correction Pin 1 | HPC2 | Connecting Capacitor between Pin 16 to 17, which helps to give feature of correcting the group delay. |
| 18 | N.C | | N.C pin |
| 19 | LB-PB Phase Correction Pin 2 | HRC1 | Connecting Capacitor between Pin 19 to 20, which helps to give feature of correcting the group delay. |
| 20 | LB-PB Phase Correction Pin 1 | HRC2 | Connecting Capacitor between Pin 19 to 20, which helps to give feature of correcting the group delay. |
| 21 | V ⁺ | V _{CC} | Voltage Source. |
| 22 | HB-REC / PB IN | | HB type Input pin. |

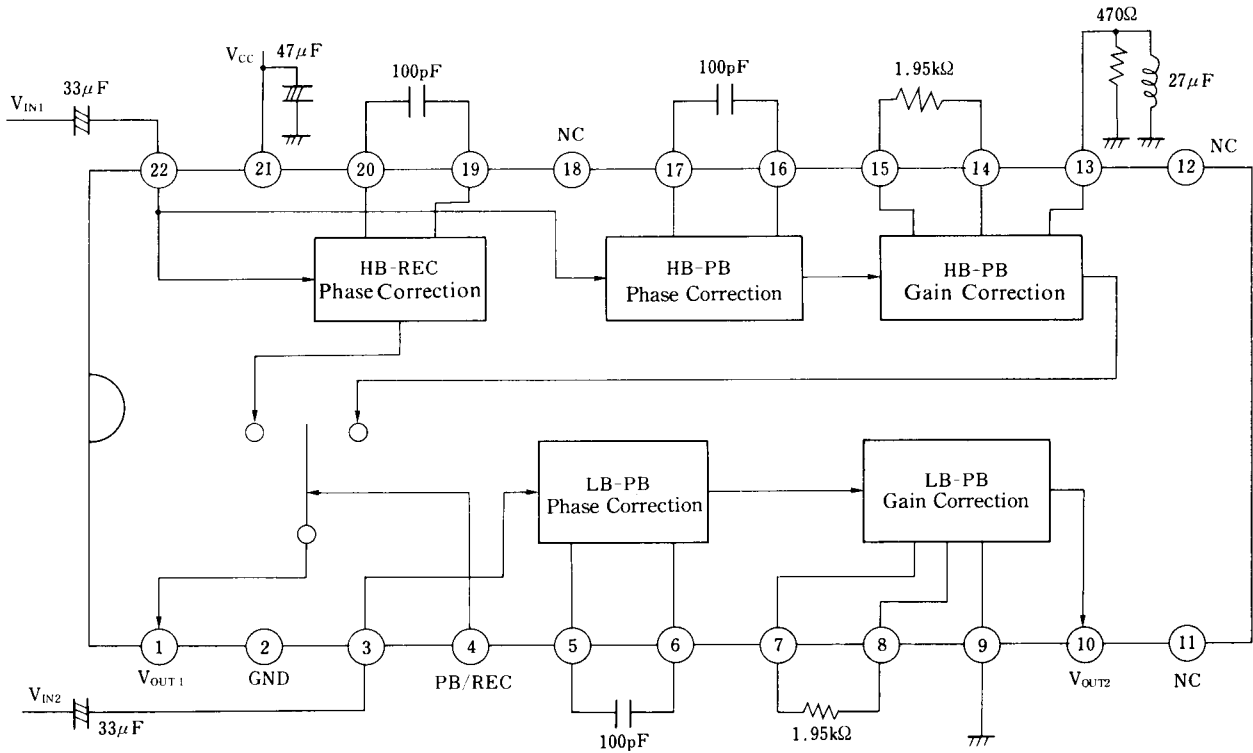
NJM2258

■ TEST CONDITION

| PARAMETER | SW-CONDITION | | | | | | | | | | | | | TEST PIN | TEST CONDITION |
|--------------|--------------|---|---|---|---|---|---|---|---|----|----|----|----|----------|---------------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | |
| I_P | a | a | b | b | b | a | b | b | b | b | b | b | a | | |
| GA_f | b | | | | | | | | | | | | | V19 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GA_r | | | | | | | | | | | | b | | V20 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| AT19 | | | | | | | | | | | a | | a | V19 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GA_l | | | | | | | | | | | b | a | | VOUT1 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GA_h | | | | | | | | | | | b | a | | VOUT1 | $f=5\text{MHz}, V=0.5V_{P-P}$ |
| DA2 | | | | | | | | | | | | c | | VOUT1 | $f=5\text{MHz}, V=1.0V_{P-P}$ |
| DA3 | | | | | | | | | | | | c | | VOUT1 | $f=5\text{MHz}, V=1.0V_{P-P}$ |
| GB_f | | | | | | | | | | | | | | V16 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GB_r | | | | | | | | | | | | | | V17 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| AT16 | | | | | | | | | | a | | | | V16 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GCA | a | | | | | | | | a | b | | | | VOUT1 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| ΔGCA | | | | | | | a | a | | | | | | VOUT1 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GCB_1 | | | | | a | | c | c | | | | | | VOUT1 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GCB_h | | | | | a | | c | c | | | | | | VOUT1 | $f=5\text{MHz}, V=0.5V_{P-P}$ |
| DC2 | | | | | b | | c | c | c | | | | | VOUT1 | $f=5\text{MHz}, V=1.0V_{P-P}$ |
| DC3 | | | | | b | | c | c | c | | | | | VOUT1 | $f=5\text{MHz}, V=1.0V_{P-P}$ |
| GDF | a | | | | | | | | | | b | a | | V6 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GDR | | | | | | | | | | | | | | V5 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| AT6 | | b | | | | | | | | | | | | V6 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GDA | | a | | | | | | | | | | | | VOUT2 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| ΔGD | | | a | a | | | | | | | | | | VOUT2 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GB_1 | | | c | c | | | | | | | | | | VOUT2 | $f=100\text{kHz}, V=0.5V_{P-P}$ |
| GB_h | | | c | c | | | | | | | | | | VOUT2 | $f=5\text{MHz}, V=0.5V_{P-P}$ |
| DE2 | | | c | c | | | | | | | | | | VOUT2 | $f=5\text{MHz}, V=1.0V_{P-P}$ |
| DE3 | | | c | c | | | | | | | | | | VOUT2 | $f=5\text{MHz}, V=1.0V_{P-P}$ |

NJM2258

APPLICATION CIRCUIT



[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.