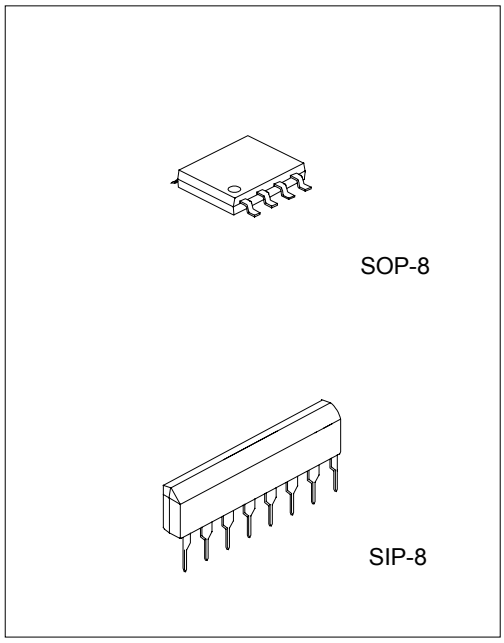
# M7612

**LINEAR INTEGRATED CIRCUIT**

# VIDEO SIGNAL SWITCHER




*Pb-free plating product number: M7612L

## ■ DESCRIPTION

The UTC **M7612** is three-channel analog multiplexes and designed for use in TV and video cassette recorders. It is characterized by a large dynamic range and wide operating frequency range.

## ■ FEATURES

*3-input / 1-output switches.
*Built-in mute 6dB amplifier and 75Ω driver.
*Large input impedance (20kΩ Typ.).
*Wide operating supply voltage range
(4.5V ~ 13.0V for SIP-8 package)
(4.5V ~ 9.5V for SOP-8 package).
*Low power dissipation (103mW Typ.).
*Excellent frequency characteristics (10MHz, 0dB Typ.).
*Wide dynamic range ($3.5V_{P-P}$ Typ.).
*Low interchannel crosstalk (– 65dB Typ., f = 4.43MHz).

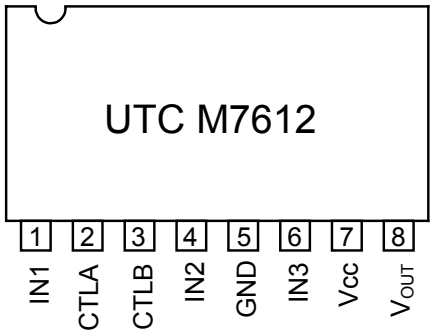
## ■ ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|---|---|---|---|
| Normal | Lead Free Plating | | |
| M7612-S08-T | M7612L-S08-T | SOP-8 | Tube |
| M7612-S08-R | M7612L-S08-R | SOP-8 | Tape Reel |
| M7612-G08-T | M7612L-G08-T | SIP-8 | Tube |

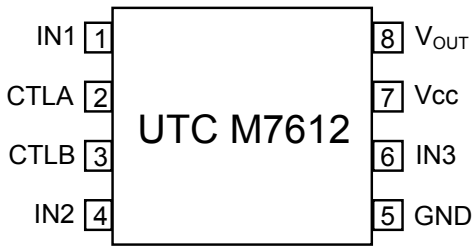

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## ■ PIN CONFIGURATIONS

SIP-8




SOP-8




## ■ TRUTH TABLE

| CTL A | CTL B | OUT |
|---|---|---|
| L (OPEN) | L (OPEN) | IN1 |
| L (OPEN) | H | IN2 |
| H | L (OPEN) | IN3 |
| H | H | MUTE |

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Power Supply Voltage | SIP-8 | $V_{CC}$ | 13.5 | V |
| | SOP-8 | | 10.0 | |
| Power Dissipation | SIP-8 | $P_D$ | 900 | mW |
| | SOP-8 | | 550 | |
| Operating Temperature | | $T_{OPR}$ | 0 ~ +70 | ℃ |
| Storage Temperature | | $T_{STG}$ | -40 ~ +150 | ℃ |

## ■ ELECTRICAL CHARACTERISTICS (Ta=25℃, Vcc=5V, unless otherwise specified.)

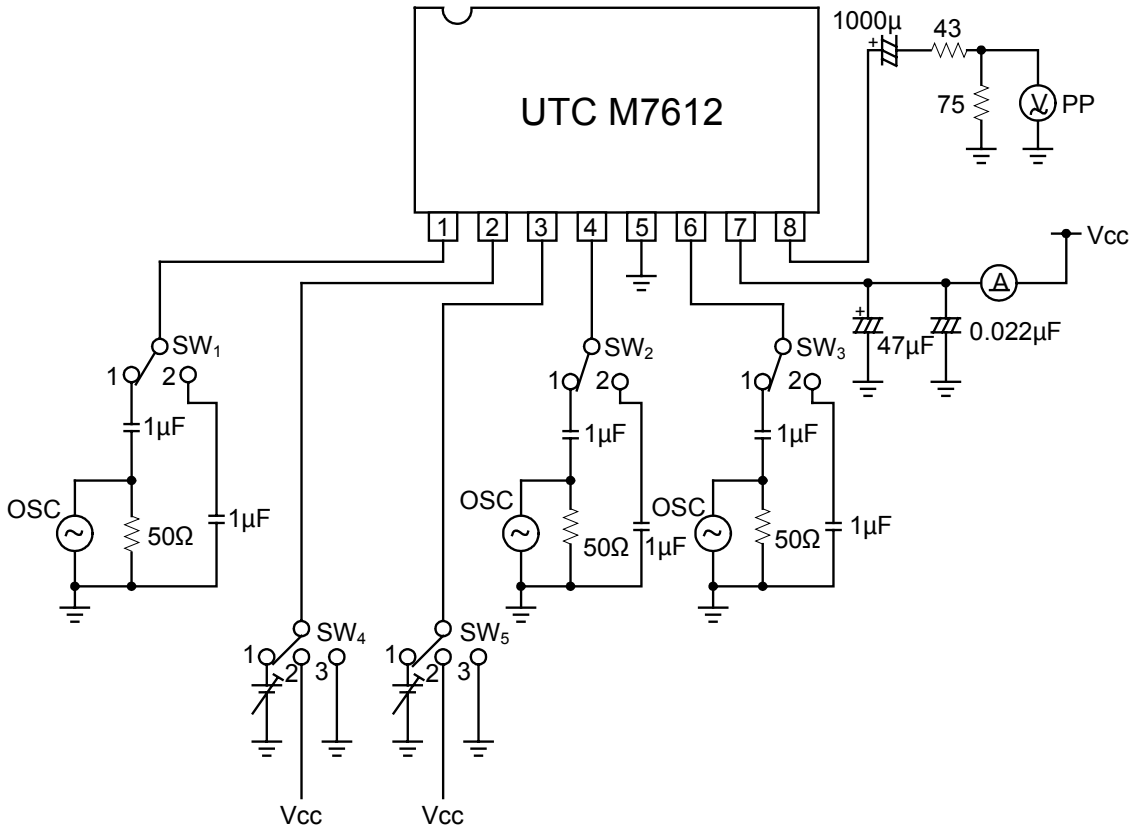
| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Operating Voltage Range | SIP-8 | $V_{CC}$ | | 4.5 | | 13.0 | V |
| | SOP-8 | | | 4.5 | | 9.5 | V |
| Supply Current | | $I_{CC}$ | | | 20.5 | 29.0 | mA |
| Maximum Output Level | | $V_{OM}$ | f=1kHz, THD=0.5% | 3.0 | 3.5 | | Vp-p |
| Voltage Gain | | $G_V$ | f=1MHz, $V_{IN}$=1.0Vp-p | 5.5 | 6.0 | 6.5 | dB |
| Interchannel Crosstalk | | $C_T$ | f=4.43MHz, $V_{IN}$=1.0Vp-p | | -65 | | dB |
| Frequency Characteristic | | $C_F$ | f=10MHz/1MHz, $V_{IN}$=1.0Vp-p | -3.0 | 0 | 1.0 | dB |
| Input Impedance | | $Z_{IN}$ | | 14 | 20 | 26 | kΩ |
| CTL Pin Switching Level A | | $V_{TH-A}$ | | 1.0 | 2.0 | 3.0 | V |
| CTL Pin Switching Level B | | $V_{TH-B}$ | | 1.0 | 2.0 | 3.0 | V |

*Not designed for radiation resistance.

## ■ MEASUREMENT CONDITIONS

| PARAMETER | | SYMBOL | SWITCH SETTINGS | | | | | MEASUREMENT METHOD |
|---|---|---|---|---|---|---|---|---|
| | | | $SW_1$ | $SW_2$ | $SW_3$ | $SW_4$ | $SW_5$ | |
| Current Dissipation | | $I_{CC}$ | 2 | 2 | 2 | 2 | 2 | Ammeter |
| Maximum Output Level | $I_{N1}$ | $V_{OM}$ | 1 | 2 | 2 | 3 | 3 | f=1kHz, THD=0.5% see Test Notes 2 |
| | $I_{N2}$ | $V_{OM}$ | 2 | 1 | 2 | 3 | 2 | |
| | $I_{N3}$ | $V_{OM}$ | 2 | 2 | 1 | 2 | 3 | |
| Voltage Gain | $I_{N1}$ | $G_V$ | 1 | 2 | 2 | 3 | 3 | f=1MHz, V=1Vp-p see Test Notes 3 |
| | $I_{N2}$ | $G_V$ | 2 | 1 | 2 | 3 | 2 | |
| | $I_{N3}$ | $G_V$ | 2 | 2 | 1 | 2 | 3 | |
| Interchannel Crosstalk | $I_{N1}$→$I_{N2}$ | $C_T$ | 1 | 2 | 2 | 3 | 2 | f=4.43MHz, V=1Vp-p see Test Notes 4 |
| | $I_{N1}$→$I_{N3}$ | $C_T$ | 1 | 2 | 2 | 2 | 3 | |
| | $I_{N1}$→MUTE | $C_T$ | 1 | 2 | 2 | 2 | 2 | |
| | $I_{N2}$→$I_{N3}$ | $C_T$ | 2 | 1 | 2 | 2 | 3 | |
| | $I_{N2}$→MUTE | $C_T$ | 2 | 1 | 2 | 2 | 2 | |
| | $I_{N3}$→MUTE | $C_T$ | 2 | 2 | 1 | 2 | 2 | |
| Frequency Characteristic | $I_{N1}$ | $G_F$ | 1 | 2 | 2 | 3 | 3 | f=10MHz/f=1MHz V=1Vp-p see Test Notes 5 |
| | $I_{N2}$ | $G_F$ | 2 | 1 | 2 | 3 | 2 | |
| | $I_{N3}$ | $G_F$ | 2 | 2 | 1 | 2 | 3 | |
| CTL Pin Switching Level | CTL A | $V_{TH}$ | 2 | 2 | 1 | 1 | 3 | see Test Notes 6 |
| | CTL B | $V_{TH}$ | 2 | 1 | 2 | 3 | 1 | |

## ■ TEST CIRCUIT

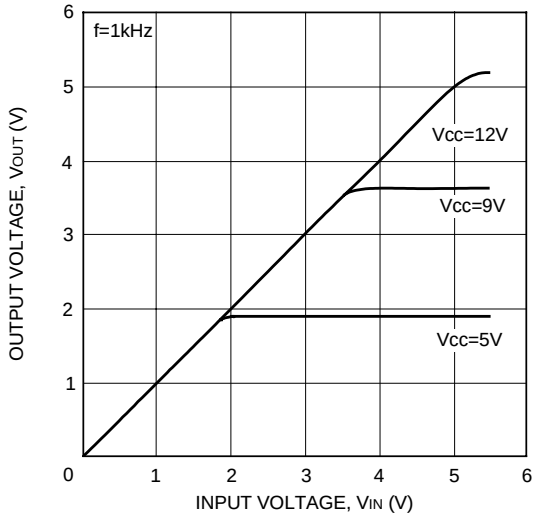



## ■ TEST NOTES

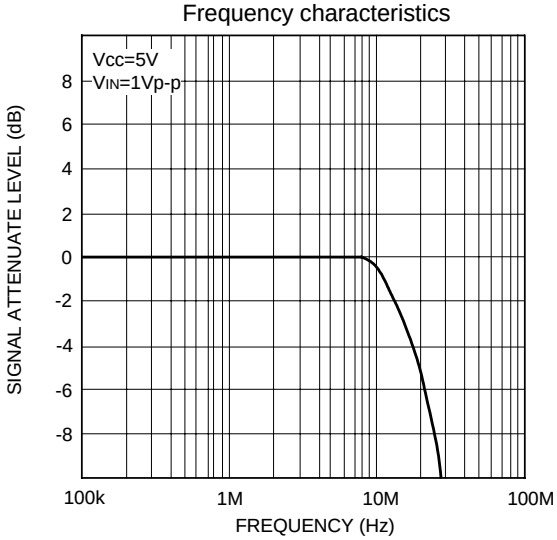
1. The output impedance is approximately 32Ω. Therefore, to ensure output matching, connect an external resistor of 43Ω.
2. Connect a distortion meter to the output, and input a f = 1kHz sine wave. Adjust the input level until the output distortion is 0.5%. This output voltage at this time multiplied by 2 is the maximum output level $V_{om}$ ($V_{P-P}$).
3. Input a $1V_{P-P}$, 1MHz sine wave. The voltage gain is given by $G_V = 20 \log (V_{OUT} / V_{IN}) + 6$.
4. Input a $1V_{P-P}$, 4.43MHz sine wave. The interchannel crosstalk is given by $C_T = 20 \log (V_{OUT} / V_{IN})$.
5. Input $1V_{P-P}$, 1MHz and 10MHz sine waves.
   The frequency characteristic is given by $G_F = 20 \log (V_{OUT}$ (f = 10MHz) / $V_{OUT}$ (f = 1MHz)).
6. Input a $1V_{P-P}$, 1MHz sine wave. Reduce the CTL pin voltage from $V_{CC}$. The CTL pin switching level ($V_{TH}$) is the CTL pin voltage at which the $V_{OUT}$ level drops below $20mV_{P-P}$.

## ■ TYPICAL CHARACTERISTIC

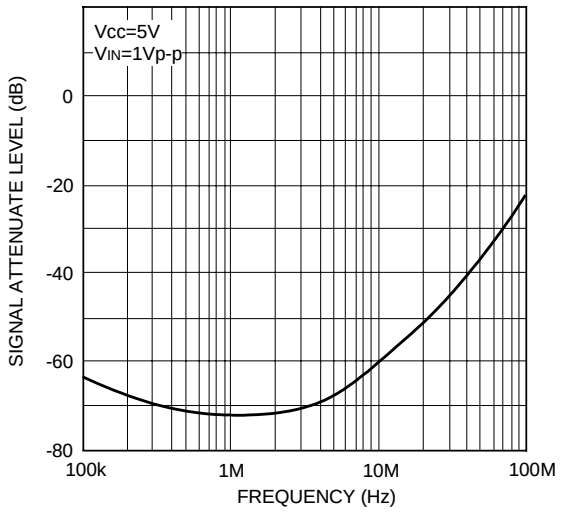
VIN vs. VOUT caracteristics




Frequency characteristics




Interchannel crosstalk




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