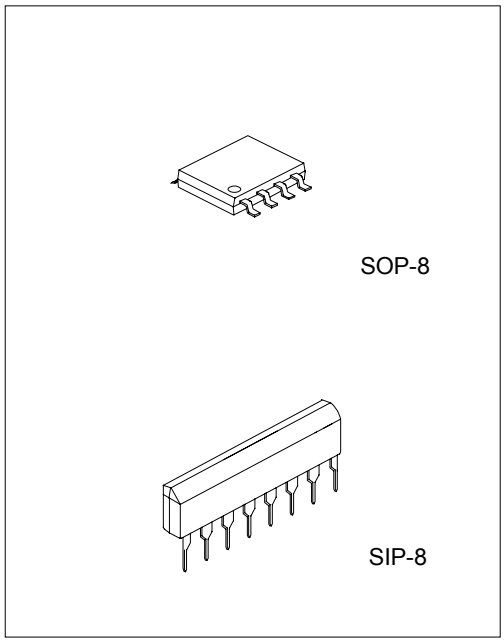
M7612

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

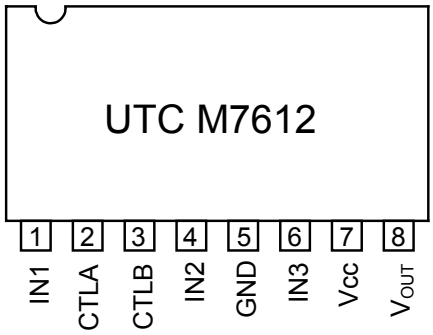
*3-input / 1-output switches.
*Built-in mute 6dB amplifier and 75Ω driver.
*Large input impedance (20kΩ Typ.).
*Wide operating supply voltage range
(4.5V ~ 13.0V for SIP-8 package)
(4.5V ~ 9.5V for SOP-8 package).
*Low power dissipation (103mW Typ.).
*Excellent frequency characteristics (10MHz, 0dB Typ.).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

■ ORDERING INFORMATION

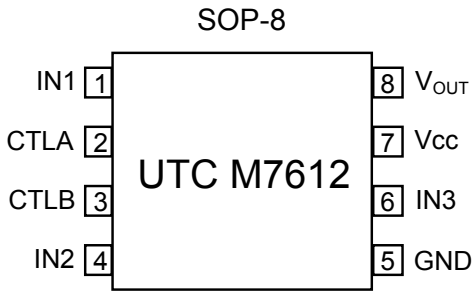
Ordering Number		Package	Packing
Normal	Lead Free Plating		
M7612-S08-T	M7612L-S08-T	SOP-8	Tube
M7612-S08-R	M7612L-S08-R	SOP-8	Tape Reel
M7612-G08-T	M7612L-G08-T	SIP-8	Tube

■ 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.)

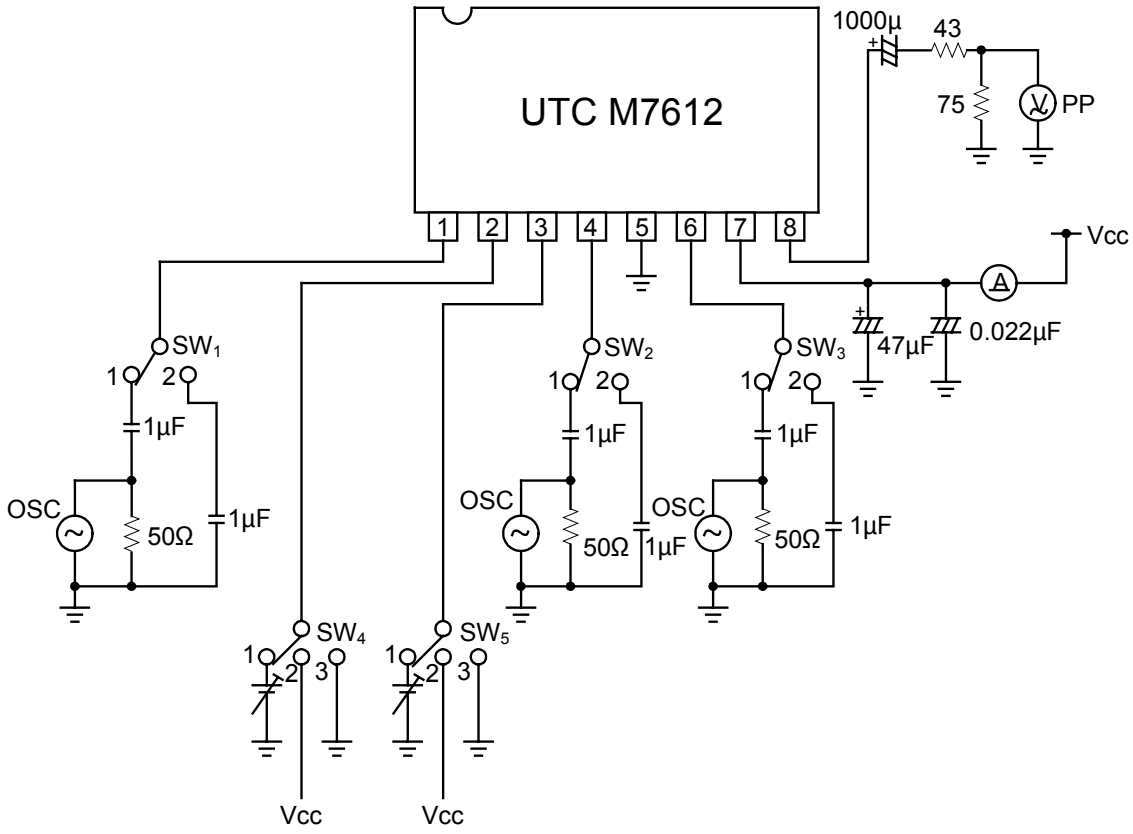
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage Range	SIP-8	V_{CC}		4.5		13.0	V
	SOP-8			4.5		9.5	V
Supply Current		I_{CC}			20.5	29.0	mA
Maximum Output Level		V_{OM}	f=1kHz, THD=0.5%	3.0	3.5		Vp-p
Voltage Gain		G_V	f=1MHz, V_{IN}=1.0Vp-p	5.5	6.0	6.5	dB
Interchannel Crosstalk		C_T	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

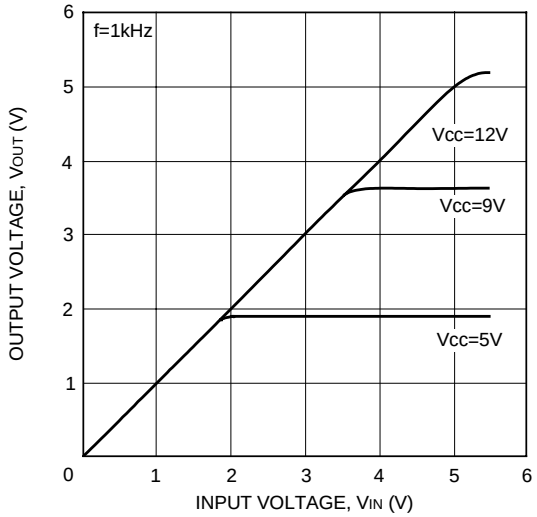


■ TEST NOTES

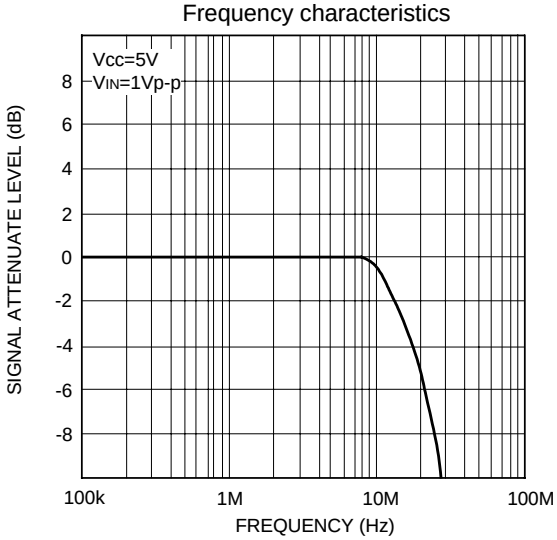
1. The output impedance is approximately 32Ω. Therefore, to ensure output matching, connect an external resistor of 43Ω.
2. Connect a distortion meter to the output, and input a f = 1kHz sine wave. Adjust the input level until the output distortion is 0.5%. This output voltage at this time multiplied 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