

## 2-INPUT 1-OUTPUT VIDEO SWITCH

### ■ GENERAL DESCRIPTION

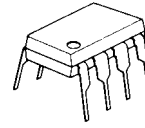
The **NJM2533** is a video switch for VCR, TV, and others.  
It contains two bias-type inputs and one buffer-type output.

### ■ FEATURES

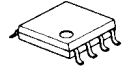
- Operating Voltage (+4.75V to +13V)
- Low Operating Current (MAX : 3.7mA)
- Crosstalk (-70dB)
- 2-Input, 1-Output
- Bipolar Technology
- Package Outline

DIP8, DMP8, SIP8, SSOP8

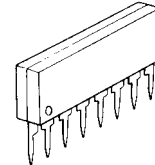
### ■ PACKAGE OUTLINE



**NJM2533D**



**NJM2533M**

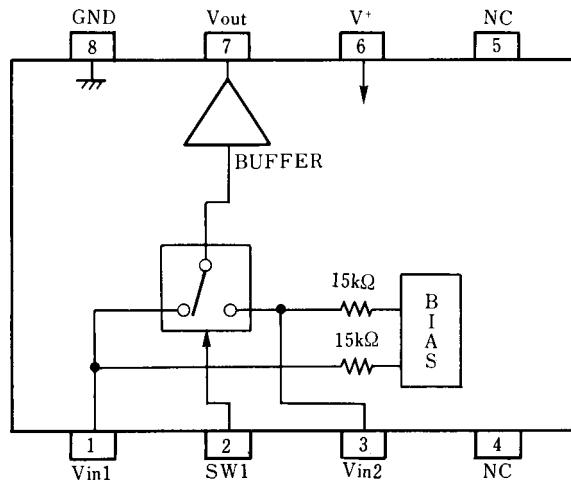


**NJM2533L**



**NJM2533V**

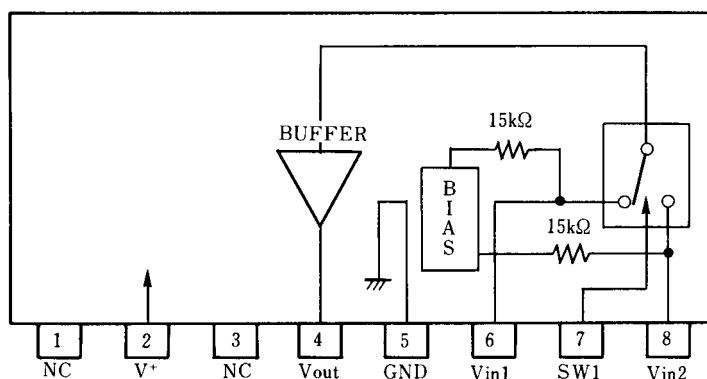
### ■ PIN CONFIGURATION



#### PIN FUNCTION

- 1 : Vin1
- 2 : SW1
- 3 : Vin2
- 4 : NC
- 5 : NC
- 6 : V<sup>+</sup>
- 7 : V<sub>OUT</sub>
- 8 : GND

**NJM2533D**  
**NJM2533M**  
**NJM2533V**



#### PIN FUNCTION

- 1 : NC
- 2 : V<sup>+</sup>
- 3 : NC
- 4 : V<sub>OUT</sub>
- 5 : GND
- 6 : Vin1
- 7 : SW1
- 8 : Vin2

**NJM2533L**

# NJM2533

## ■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+$	+15	V
Power Dissipation	$P_D$	(DIP-8) 500 (DMP-8) 300 (SIP-8) 800 (SSOP-8) 250	mW
Operating Temperature Range	$T_{opr}$	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +125	$^\circ\text{C}$

## ■ ELECTRICAL CHARACTERISTICS

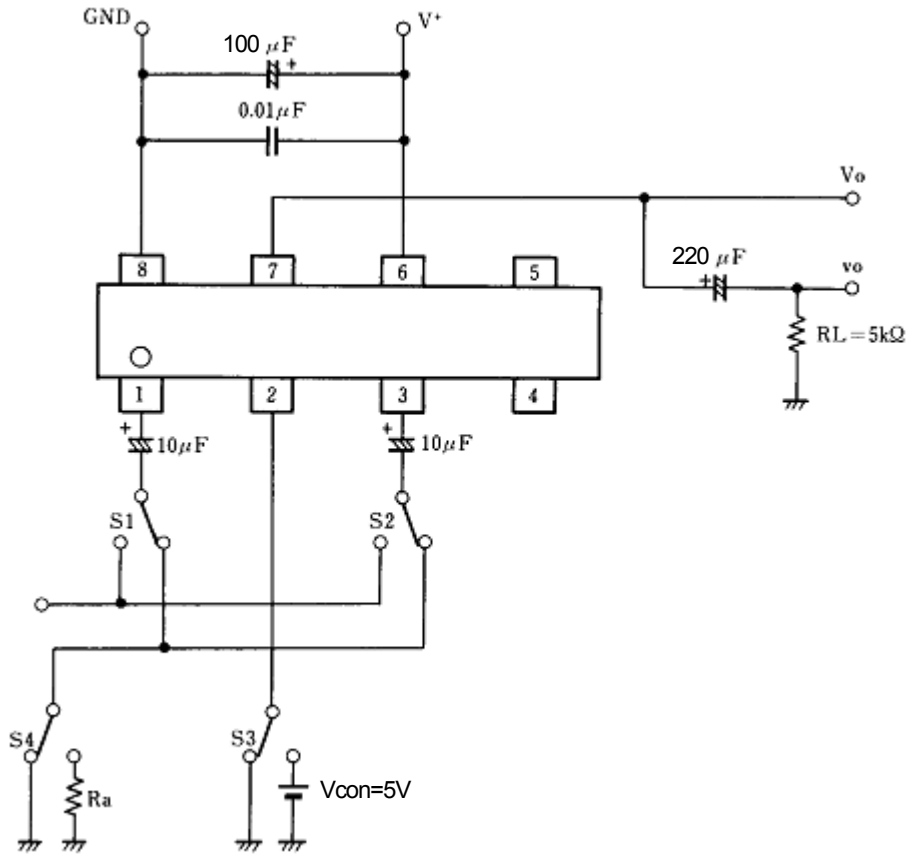
( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	$V^+$		+4.5	-	+13.0	V
Operating Current	$I_{CC}$		-	2.7	3.7	mA
Frequency Characteristics	$G_f$	$V_{IN} = 2V_{PP}$ , $V_O = 10\text{MHz}/100\text{kHz}$	-1.0	0	+1.0	dB
Voltage Gain	$G_v$	$V_{IN} = 2V_{PP}$ , 100kHz	-0.5	0	+0.5	dB
Total Harmonic Distortion	THD	$V_{IN} = 2.5V_{PP}$ , 1kHz	-	0.05	0.1	%
Differential Gain	DG	$V_{IN} = 2V_{PP}$ , Standard staircase signal, APL = 50%	-	0.2	3.0	%
Differential Phase	DP	$V_{IN} = 2V_{PP}$ , Standard staircase signal, APL = 50%	-	0.2	3.0	deg
Output Offset Voltage	$V_{off}$		-15	0	+15	mV
Crosstalk	CT	$V_{IN} = 2V_{PP}$ , 4.3MHz	-	-70	-60	dB
Switching Voltage	$V_{CH}$		2.4	-	-	V
	$V_{CL}$		-	-	0.8	V
Input Impedance	$R_i$		-	30	-	k $\Omega$
Output Impedance	$R_o$		-	25	-	$\Omega$
Input Bias Voltage	$V_{IN}$		-	2.5	-	V

## ■ CONTROL SIGNAL-OUTPUT SIGNAL

SW1	OUTPUT SIGNAL
L	$V_{IN1}$
H	$V_{IN2}$

## ■ TEST CIRCUIT



Terminal DC voltage at test circuit ( $T_a=25^\circ\text{C}$ )

Terminal name	Vin1	Vin2	Vout
DC voltage (V)	$V^+/2$	$V^+/2$	$V^+/2 - 0.7$

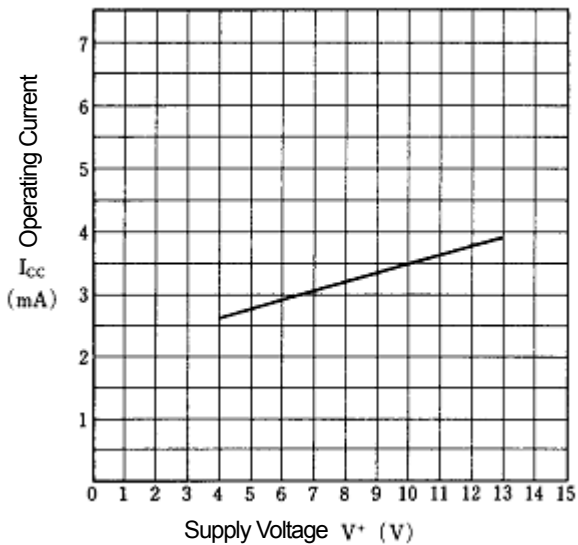
# NJM2533

## ■ TERMINAL DESCRIPTION (Terminal number indicates the DIP , DMP, SSOP)

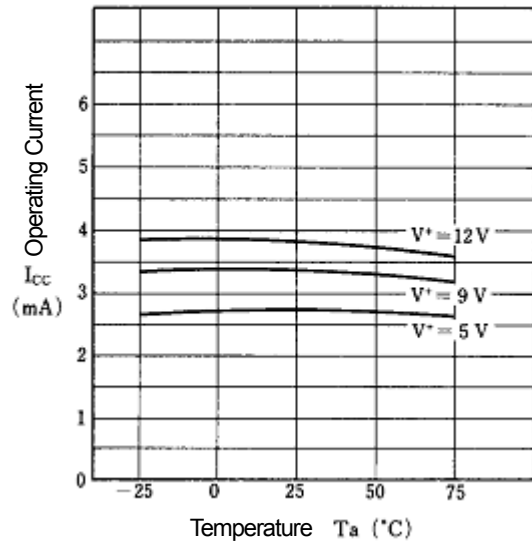
No.	SYMBOL	EQUIVALENT CIRCUIT	No.	SYMBOL	EQUIVALENT CIRCUIT
1	V <sub>IN1</sub>		5	NC	
2	SW1		6	V <sup>+</sup>	
3	V <sub>IN2</sub>		7	V <sub>OUT</sub>	
4	NC		8	GND	

## ■ TYPICAL CHARACTERISTICS

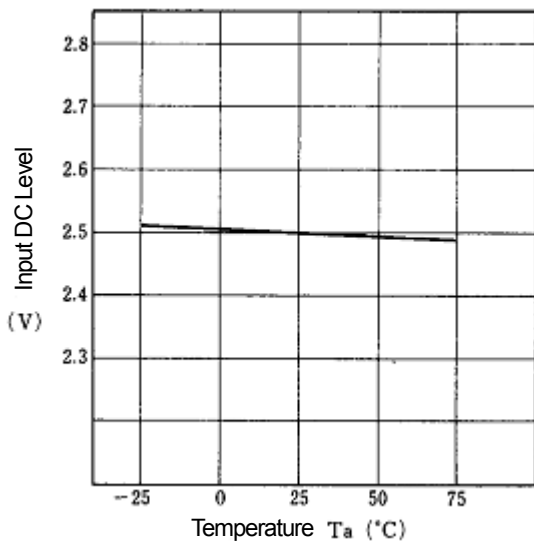
Operating Current vs. Supply Voltage  
( $T_a = 25^\circ\text{C}$ )



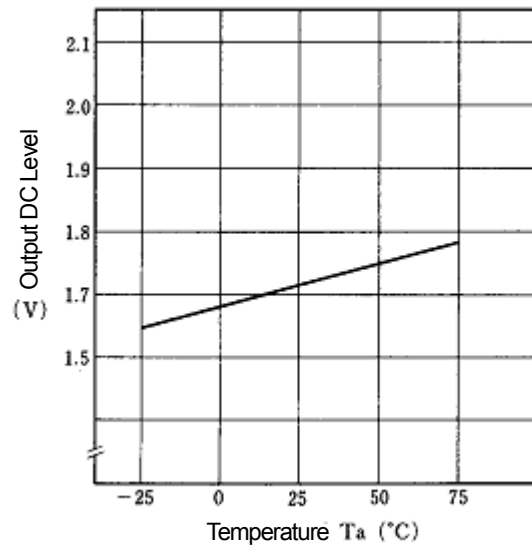
Operating Current vs. Temperature  
( $T_a = 25^\circ\text{C}$ )



Input DC Level vs. Temperature  
( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

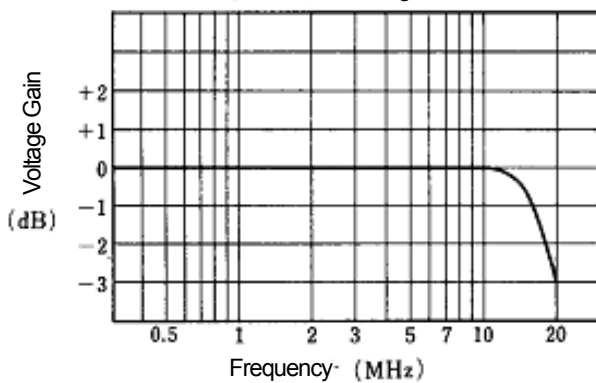


Output DC Level vs. Temperature  
( $V^+ = 5\text{V}$ )



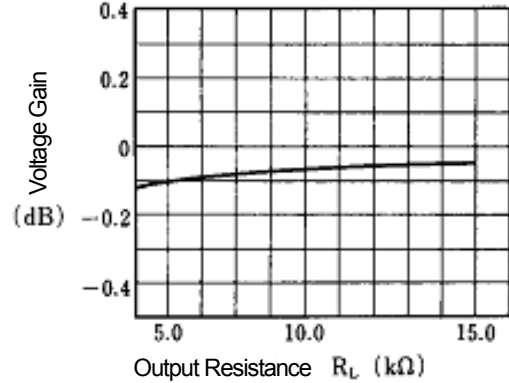
Voltage Gain vs. Frequency

( $V^+ = 5\text{V}$ ,  $2V_{p-p}$  Sin signal,  $R_L = 5\text{k}\Omega$ )

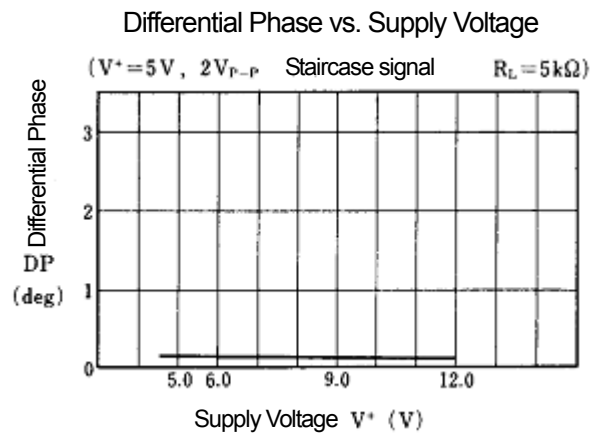
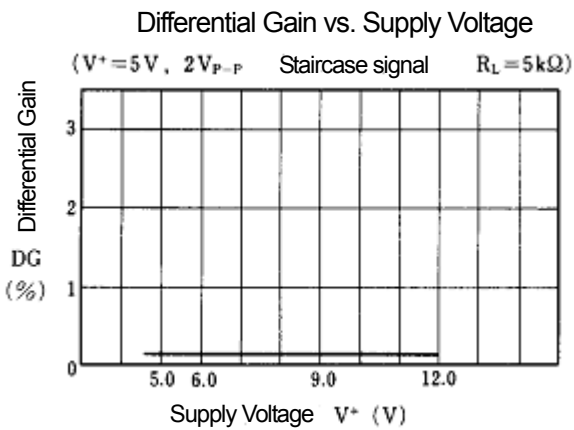
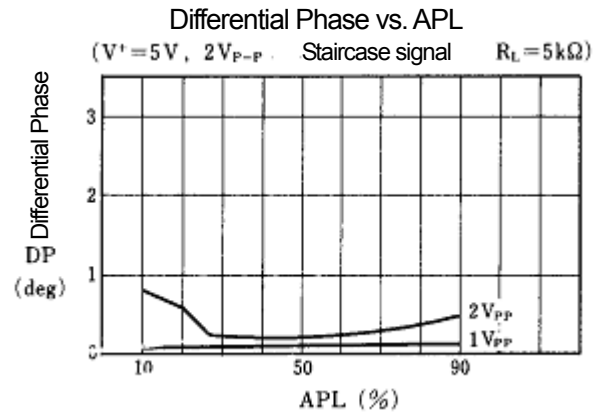
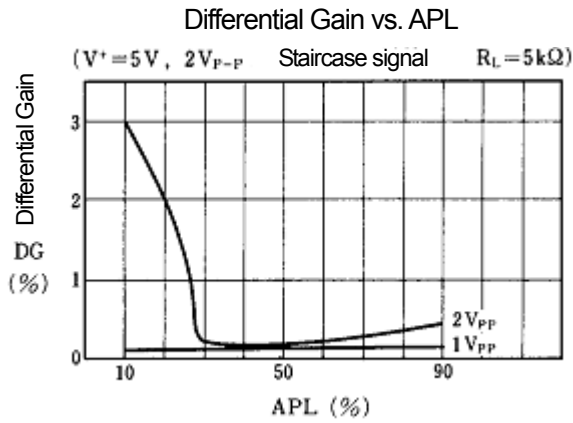
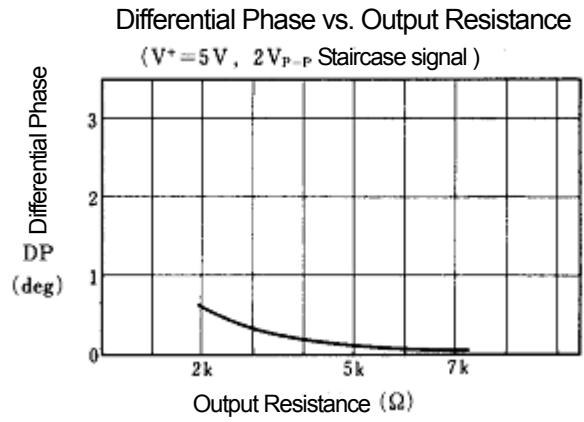
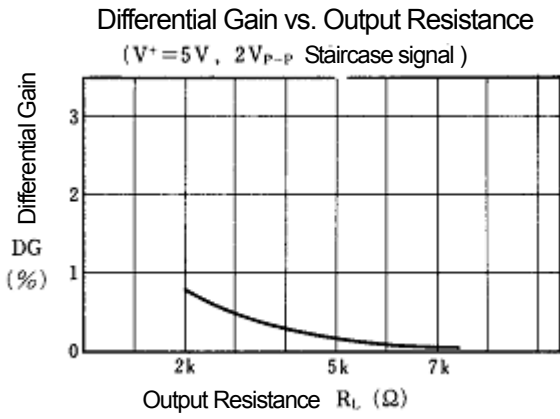


Voltage Gain vs. Output Resistance

( $V^+ = 5\text{V}$ ,  $2V_{p-p}$  Sin signal)

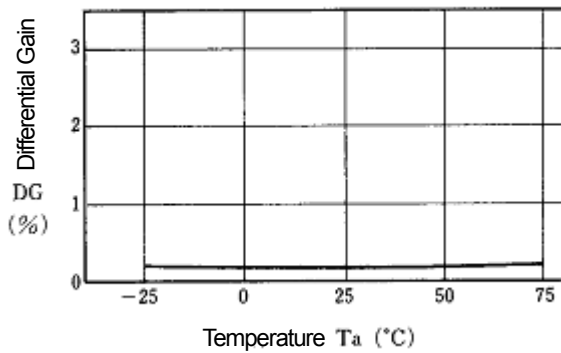


## ■ TYPICAL CHARACTERISTICS

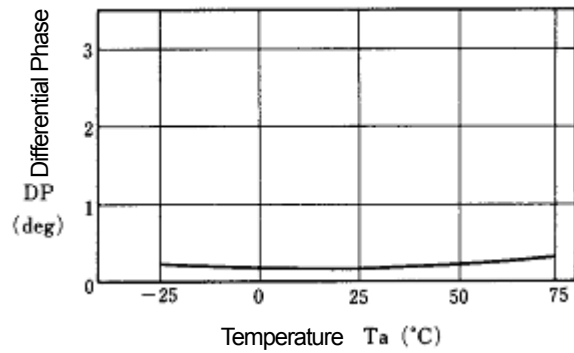


## ■ TYPICAL CHARACTERISTICS

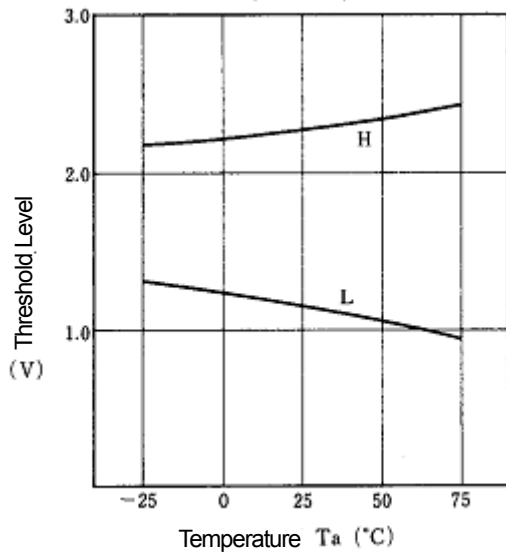
Differential Gain vs. Temperature  
( $V^+ = 5V$ ,  $2V_{P-P}$  Staircase signal)



Differential Phase vs. Temperature  
( $V^+ = 5V$ ,  $2V_{P-P}$  Staircase signal)

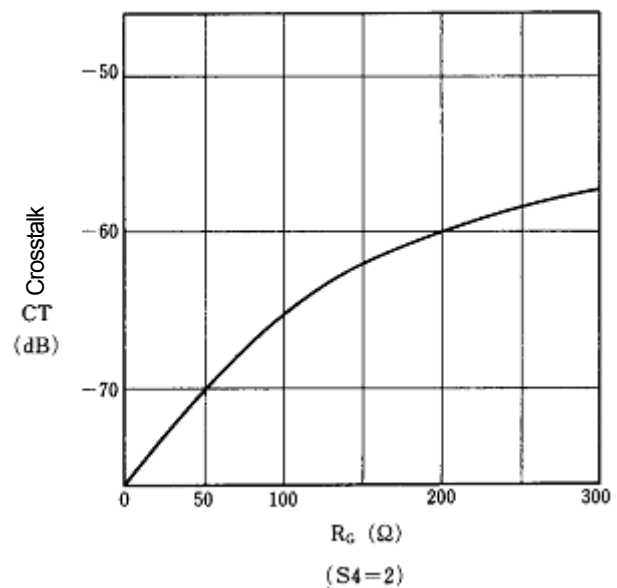


Threshold Level vs. Temperature  
( $V^+ = 5V$ )

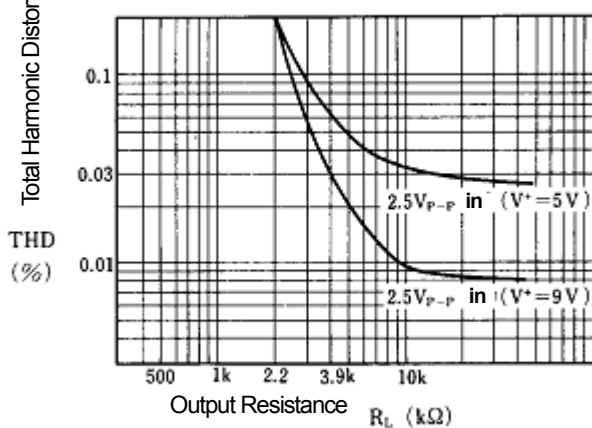


Crosstalk vs.  $R_G$

( $V^+ = 5V$ , 4.43MHz  $2V_{P-P}$  Sin signal)

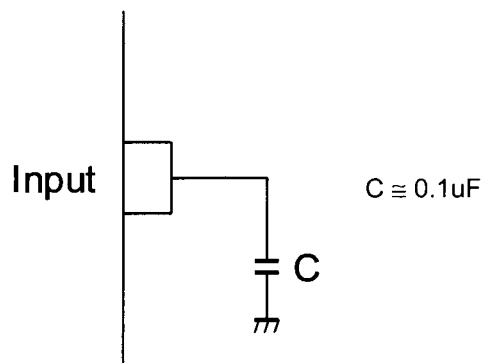


Total Harmonic Distortion vs. Output Resistance  
(1kHz Sin signal)



## ■ APPLICATION

This IC requires 0.1 $\mu$ F capacitor between INPUT and GND for bias type input at mute mode.



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