AN7374K, AN7376S

Dolby* B/C Type Noise Reduction IC

■ Overview

The AN7374K, AN7376S are 2-ch dolby B/C type noise reduction ICs. Filter circuits (MPX filter driver and spectral skewing, etc.) are incorporated in 28-pin package. It can configure with very few external parts.

■ Features

- Fewer external parts
- Spectral skewing circuit and anti-saturation circuit built-in.
- Available for double deck (Through signal output to REC output at PB mode.)
- Available for ±2 or 1 power supply

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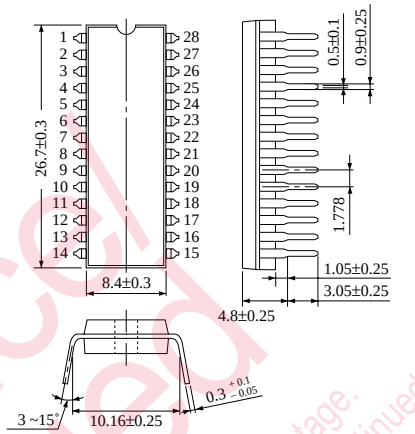
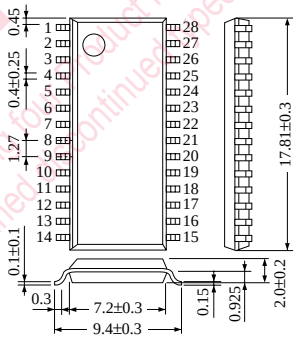
AN7374K Unit : mm



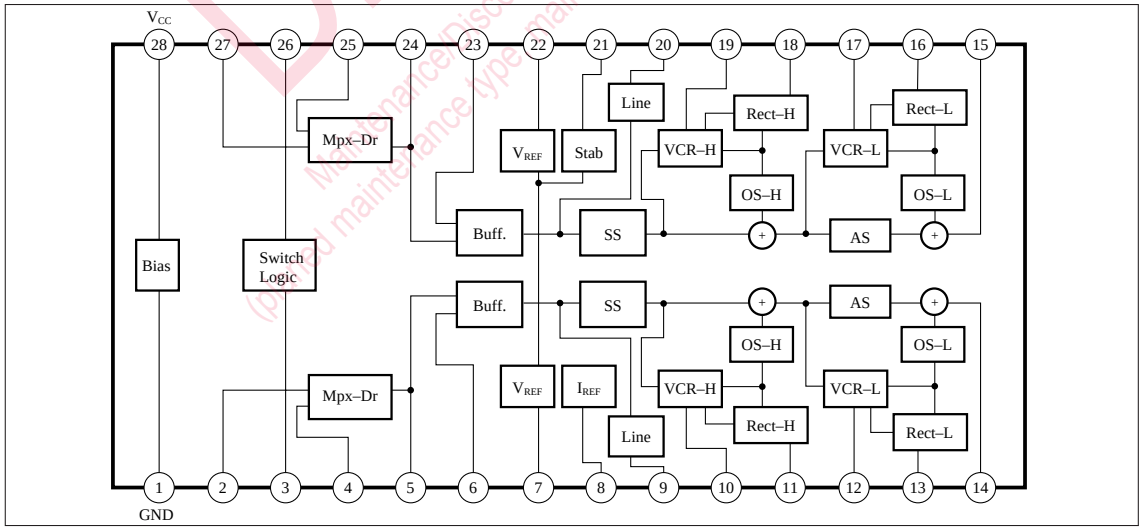
28-Lead Shrunk DIP Package (SDIP028-P-0400A)

AN7376S Unit : mm



28-Lead SOP Package (SOP028-P-0375A)

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	13.5	V
Supply Current	I_{CC}	22	mA
Power Dissipation	P_D	300	mW
Operating Ambient Temperature	T_{opr}	–30 ~ + 80	˚C
Storage Temperature	T_{stg}	–55 ~ + 150	˚C

■ Recommended Operating Range (Ta= 25˚C)

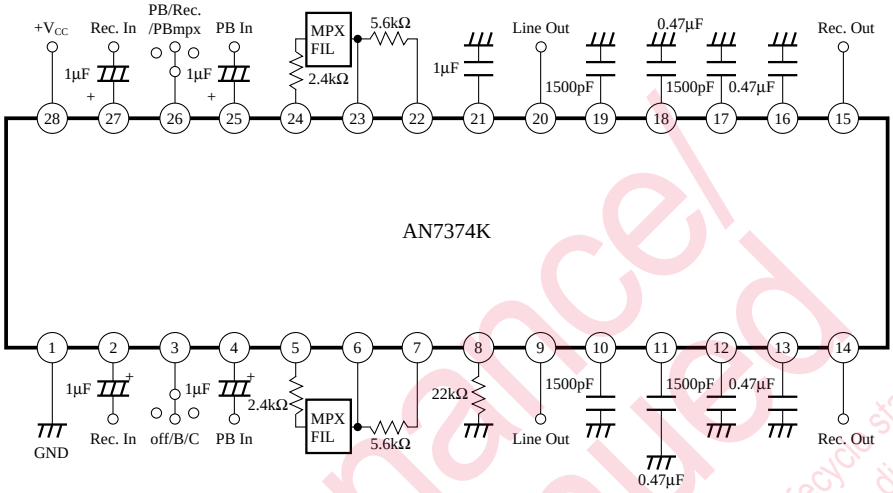
Parameter		Symbol	Range
Operating Supply Voltage Range	AN7374K	V_{CC}	9V ~ 13V or ± 4.5V ~ ±6.5V
	AN7376S		7V ~ 13V or ± 3.5V ~ ±6.5V

■ Electrical Characteristics (Ta=25˚C, V_{CC} =12V, In the Dolby Reference Level ; 388mVrms (= – 6dBm) REC – OUT)

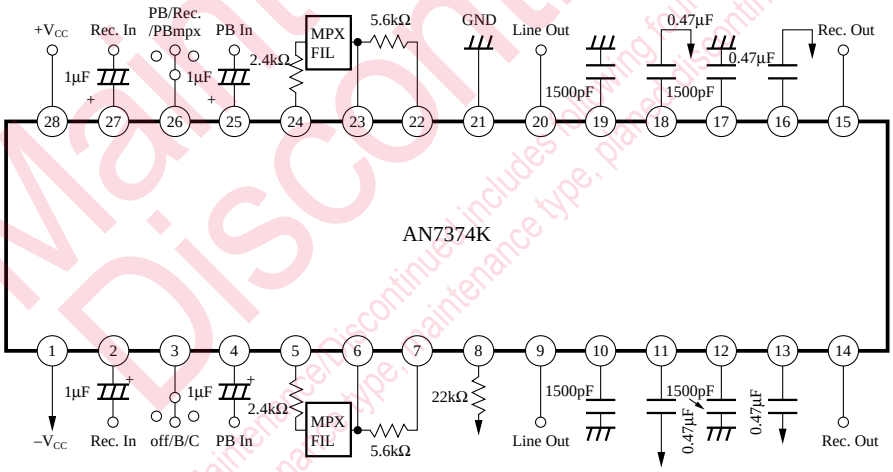
Parameter		Symbol	Condition R/P	Condition NR	Condition f(Hz)	Condition Others	min.	typ.	max.	Unit
Quiescent Current		I_{CQ}	R	off	—	No signal	12	15	19	mA
Rec.– IN to Rec.– OUT Gain		Grin	R	off	1k	V_{in} = 0dB	17	19	21	dB
PB – IN to Rec.– OUT Gain		Gpin	P	off	1k	V_{in} = 0dB	22	24	26	dB
MPX ON/OFF Gain Difference		DGmpx	P → Pm	off	1k	V_{in} = 0dB	– 1	0	1	dB
LINE – OUT Output Level	AN7374K	V_{lout}	P	off	1k	V_{in} = 0dB	500	580	670	mVrms
	AN7376S						330	388	450	mVrms
B Type Encode · Boost	1	B – R – 1	R	B	10k	V_{in} = – 40dB	9.4	10.4	11.9	dB
	2	B – R – 2	R	B	5k	V_{in} = – 30dB	6.7	8.2	9.7	dB
	3	B – R – 3	R	B	1k	V_{in} = – 25dB	4.2	5.7	7.2	dB
	4	B – R – 4	R	B	10k	V_{in} = 0dB	– 1.1	0.4	1.9	dB
C Type Encode · Boost	1	C – R – 1	R	C	1k	V_{in} = – 60dB	18.1	19.6	21.6	dB
	2	C – R – 2	R	C	5k	V_{in} = – 40dB	11.5	13.5	15.5	dB
	3	C – R – 3	R	C	300	V_{in} = – 30dB	8.7	10.7	12.7	dB
	4	C – R – 4	R	C	5k	V_{in} = – 25dB	3.5	5.5	7.5	dB
	5	C – R – 5	R	C	15k	V_{in} = 0dB	– 8.3	– 6.3	– 4.3	dB
Signal · Handling	AN7374K	$V_{Omax.}$	R	off	1k	THD = 1% V_{CC} = 9.0V	12	14	—	dB
	AN7376S					THD = 1% V_{CC} = 7.0V	12	14	—	dB
Distortion	off	THD_{off}	R	off	1k	V_{in} = 0dB	—	0.02	0.15	%
	C	THD – C	R	C	1k	V_{in} = 0dB	—	0.13	0.3	%
SN Ratio		S/N	R	C	—	R_g = 5.1kΩ CCIR/ARM	60.0	62.5	—	dB
Crosstalk	Rec.→PB	CT – R – P	P	off	1k	V_{in} = 0dB	—	– 80	—	dB
	PB→Rec.	CT – P – R	R	off	1k	V_{in} = 0dB	—	– 80	—	dB
	Ch.→Ch.	CT – C – C	R	off	1k	V_{in} = 0dB	—	– 80	—	dB
Mode Switching Offset		V_{off}	R	off →C	—	No signal	– 70	0	70	mV
Channel Balance		D – G_V	R	off	1k	V_{in} = 0dB	– 1.0	0	1.0	dB
Mode Control Voltage	PB	V_C – P				Pin26 Applied Voltage	9.0	—	12.5	V
	Rec.	V_C – R					5.0	—	7.0	V
	PBmpx	V_C – Pm					– 0.5	—	3.0	V
NR Control Voltage	C	V_C – C				Pin3 Applied Voltage	9.0	—	12.5	V
	B	V_C – B					5.0	—	7.0	V
	off	V_C – off					– 0.5	—	3.0	V

■ Application Circuits

• For 1 Power Supply



• For ±2 Power Supply



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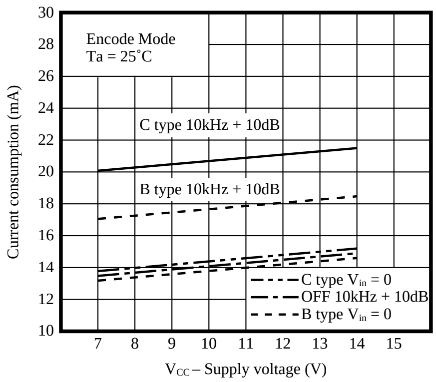
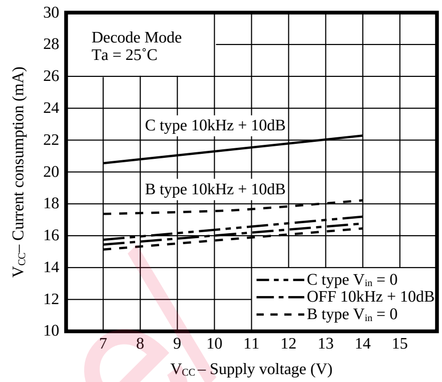
TEL : 03-3584-0039

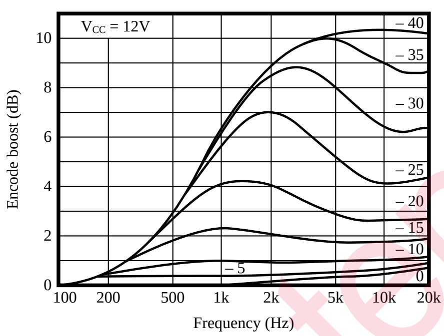
Current consumption



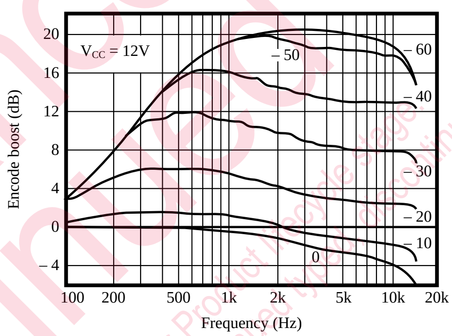
Current consumption



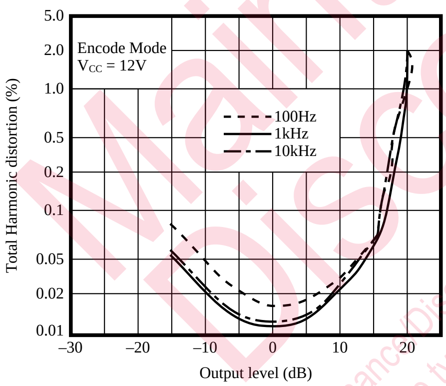
B type encode characteristics



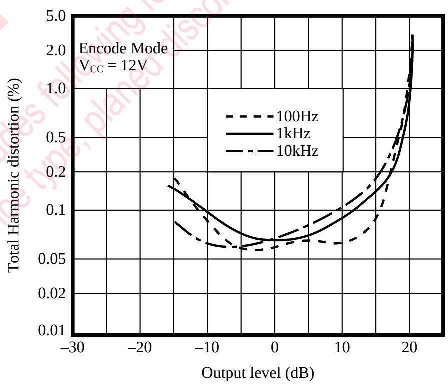
C type encode characteristics



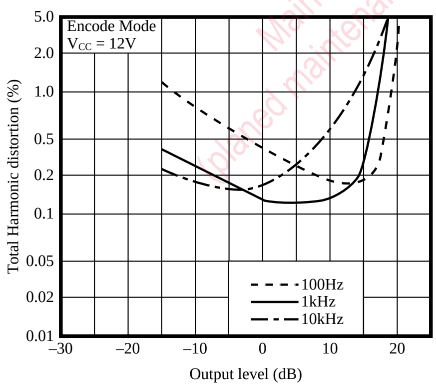
NR OFF total harmonic distortion



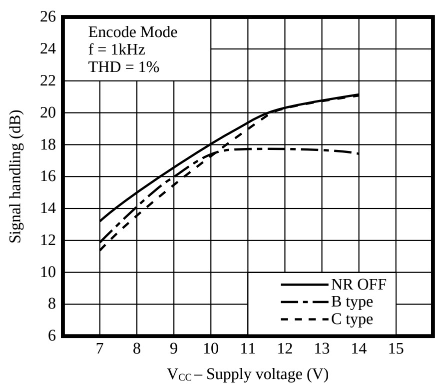
B type total harmonic distortion



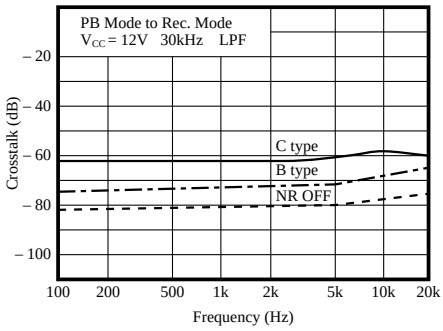
C type total harmonic distortion



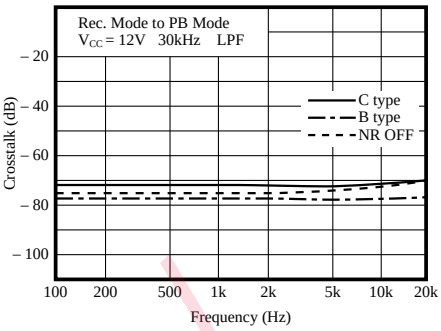
Signal handling



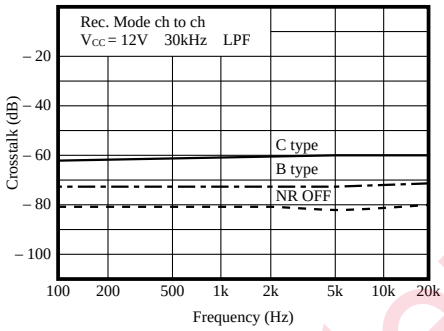
Crosstalk



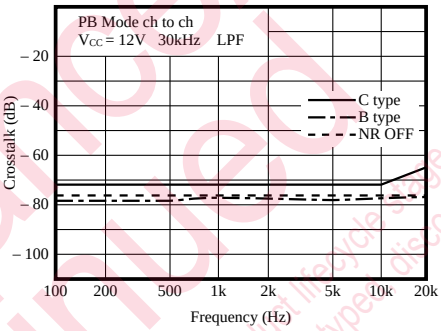
Crosstalk



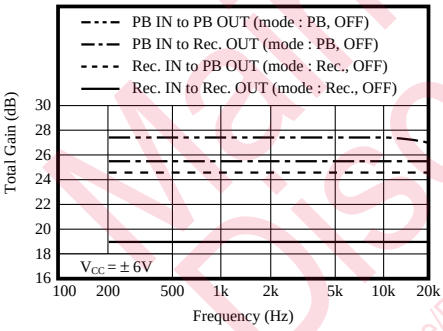
Crosstalk



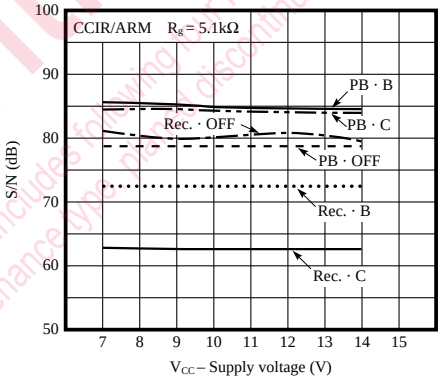
Crosstalk



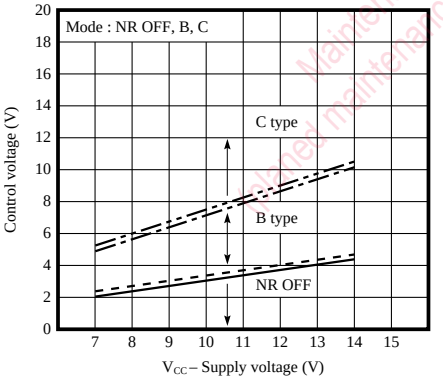
Total Gain



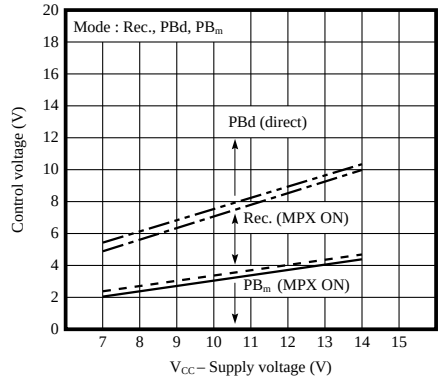
S/N



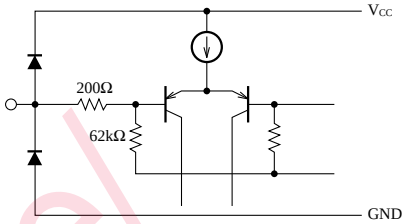
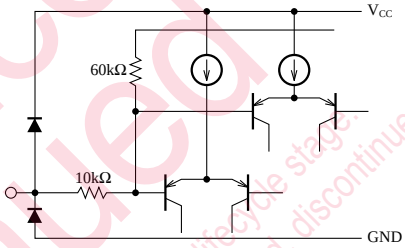
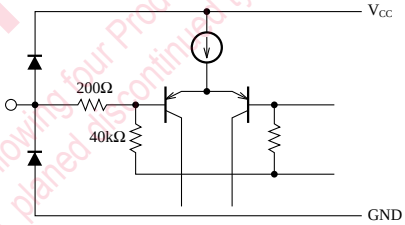
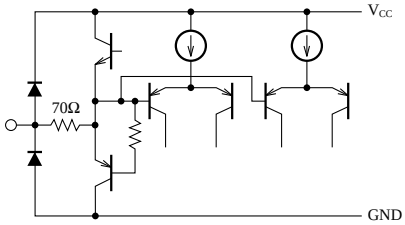
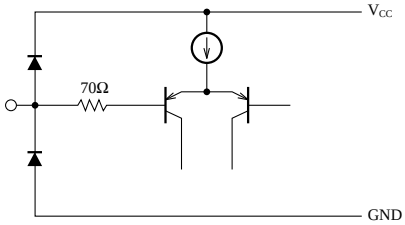
NR control voltage threshold



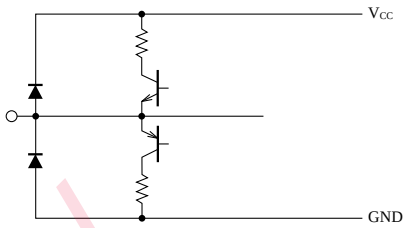
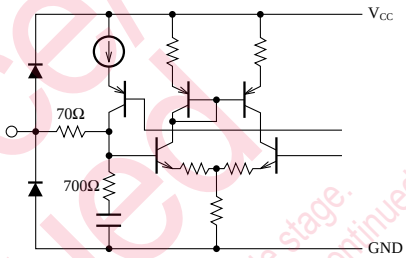
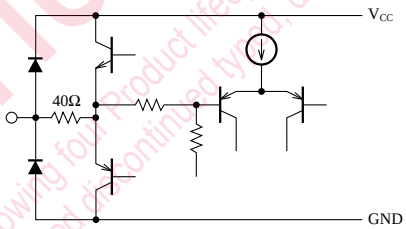
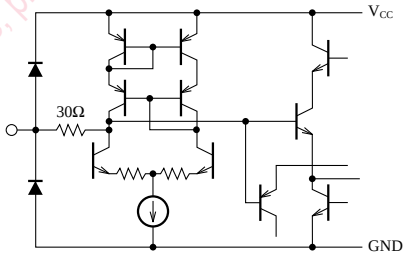
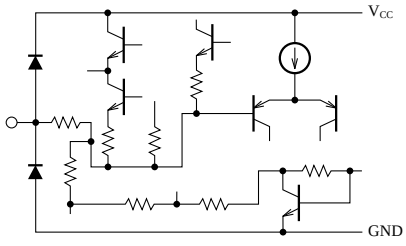
NR control voltage threshold



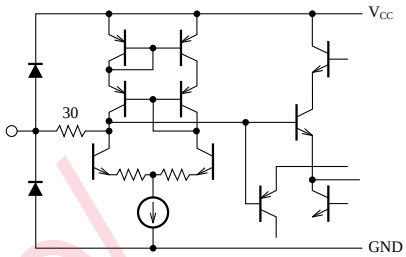
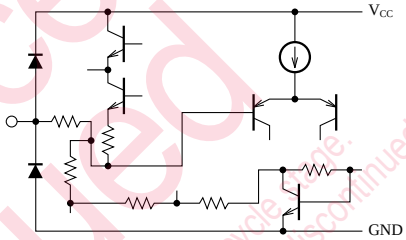
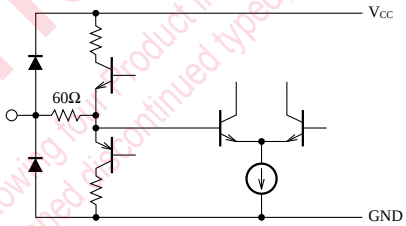
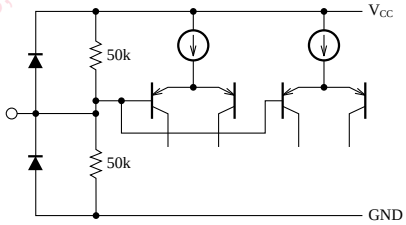
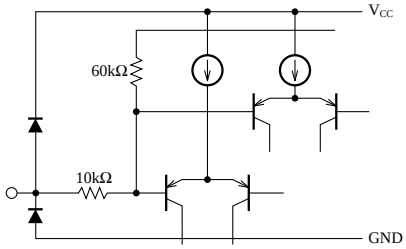
■ Pin Description

Pin No.	Pin Name	Input Impedance Pin Voltage	Pin Description	Equivalent Circuit
1	GND	0	Single Supply : Ground Pin	———
2, 27	Rec. IN	62kΩ $V_{CC}/2$	Record Input Pin	
3	OFF/B/C	70kΩ $V_{CC}/2$	C-type/B-type/NR OFF Changeover Switching Pin	
4, 25	PB IN	40kΩ $V_{CC}/2$	Playback Input Pin	
5, 24	MPX OUT	70Ω $V_{CC}/2$	MPX Drive Amp. Output Pin	
6, 23	MPX IN	≈∞ $V_{CC}/2$	MPX Gain Aux. Amp. Input Pin	

■ Pin Description (Cont.)

Pin No.	Pin Name	Input Impedance Pin Voltage	Pin Description	Equivalent Circuit
7, 22	V_{REF}	≈ 0 $V_{CC}/2$	Reference Voltage Output Pin	
8	I_{REF}	≈∞ 1.2V	Internal Resistor Error Calibration Pin	
9, 20	LINE OUT	40 $V_{CC}/2$	Playback Output Pin	
10, 19	VCR H	— $V_{CC}/2$	HLS Side Chain Control Resistor Pin	
11, 18	RECT H	— 0.5V	HLS Control Signal Smoothing Pin	

■ Pin Description (Cont.)

Pin No.	Pin Name	Input Impedance Pin Voltage	Pin Description	Equivalent Circuit
12, 17	VCR L	— $V_{CC}/2$	LLS Side Chain Control Resistor Pin	
13, 16	RECT L	— 0.5V	LLS Control Signal Smoothing Pin	
14, 15	Rec. OUT	60Ω $V_{CC}/2$	Record Output Pin	
21	VRIN	25kΩ $V_{CC}/2$	Reference Voltage Input/Ripple Rejection Pin	
26	PB/Rec. /PBmpx	70kΩ $V_{CC}/2$	Playback/Record/Playback – mpx MODE Switching Pin	
28	V_{CC}	—	Supply Voltage Pin	————

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(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.