

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.

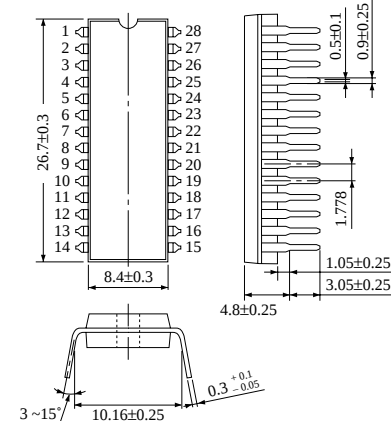
Features

- 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

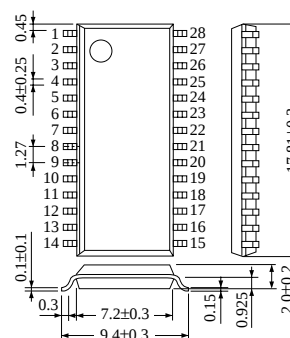
Unit : mm



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

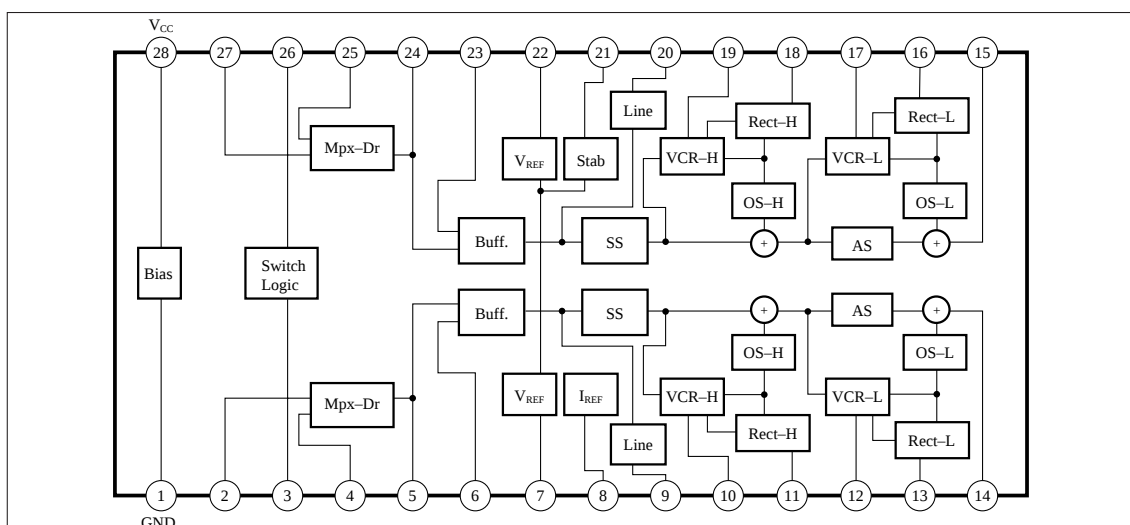
AN7376S

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)

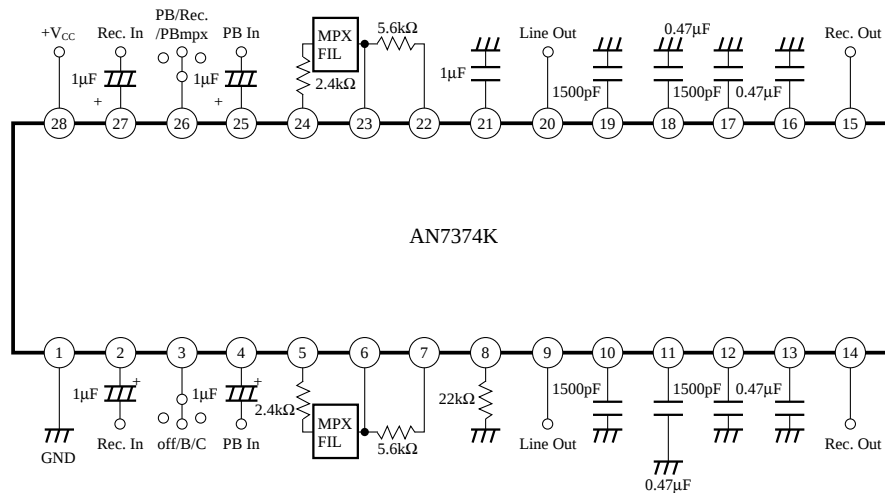
Parameter	Symbol	Range
Operating Supply	AN7374K	9V ~ 13V or ± 4.5V ~ ±6.5V
Voltage Range	AN7376S	
		7V ~ 13V or ± 3.5V ~ ±6.5V

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

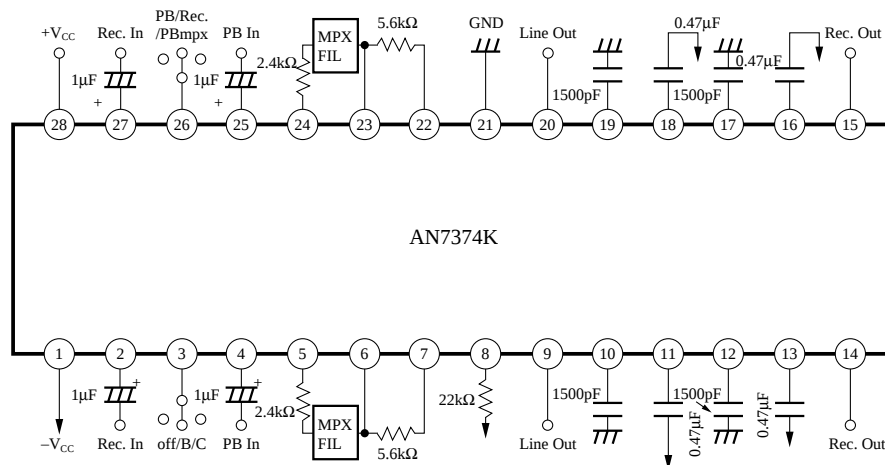
Parameter		Symbol	Condition				min.	typ.	max.	Unit		
			R/P	NR	f(Hz)	Others						
Quiescent Current		I _{CQ}	R	off	—	No signal		12	15	19	mA	
Rec.— IN to Rec.— OUT Gain		G _{rin}	R	off	1k	V _{in} = 0dB		17	19	21	dB	
PB — IN to Rec.— OUT Gain		G _{pin}	P	off	1k	V _{in} = 0dB		22	24	26	dB	
MPX ON/OFF Gain Difference		DG _{mpx}	P → P _m	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	V _{CC} = 9.0V	12	14	—	dB
		AN7376S					= 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 − P _m					− 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

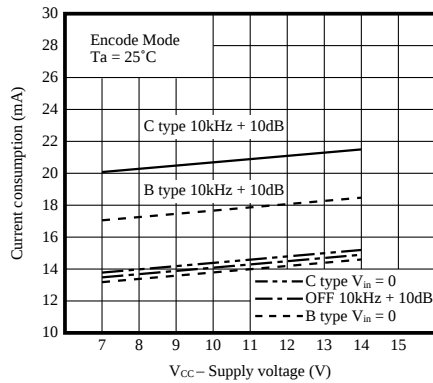


• For ±2 Power Supply

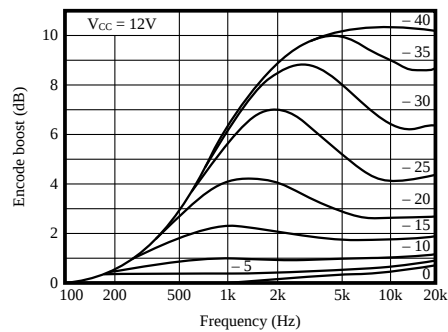


Note) When users use this product, licensing contract should be made between the Dolby Research Center. Details should be contacted with the following.
 Dolby Research Center. Tokyo Office (Far Easton Continental Inc.)
 TEL : 03-3584-0039

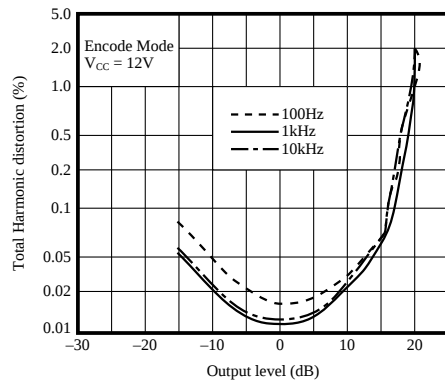
Current consumption



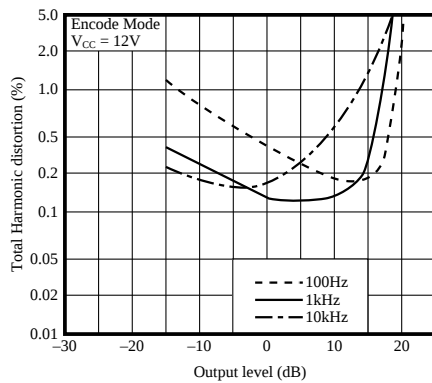
B type encode characteristics



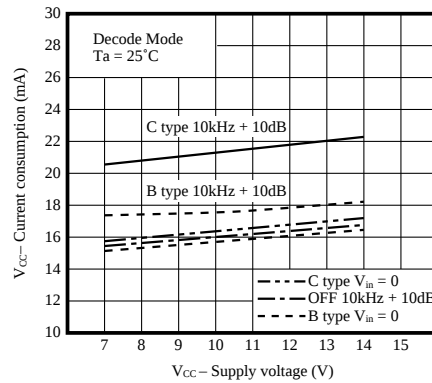
NR OFF total harmonic distortion



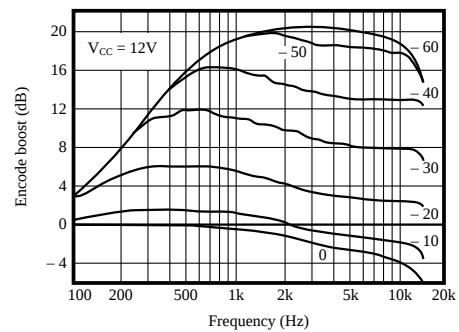
C type total harmonic distortion



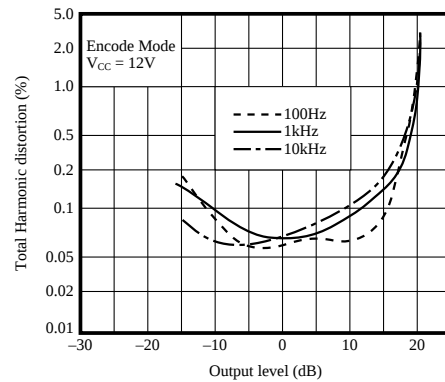
Current consumption



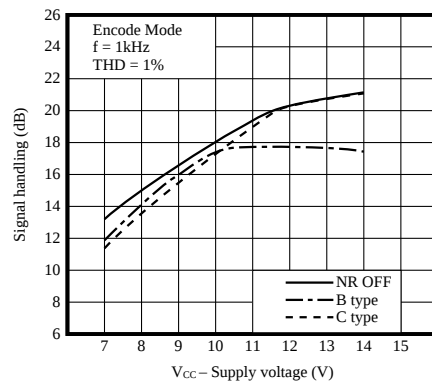
C type encode characteristics



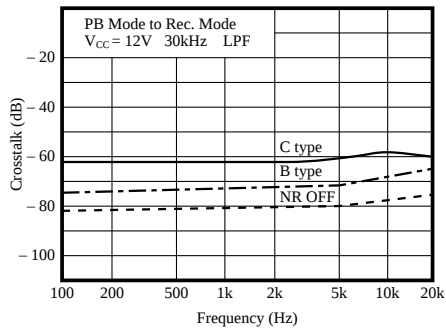
B type total harmonic distortion



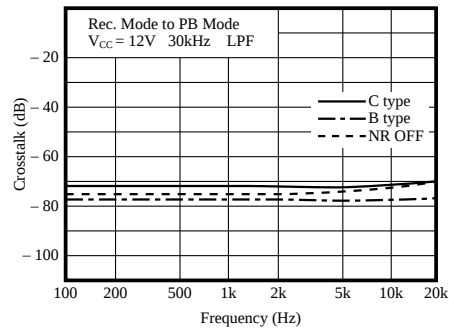
Signal handling



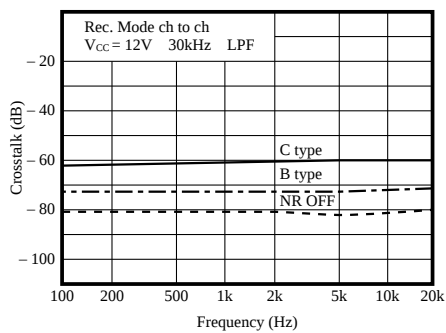
Crosstalk



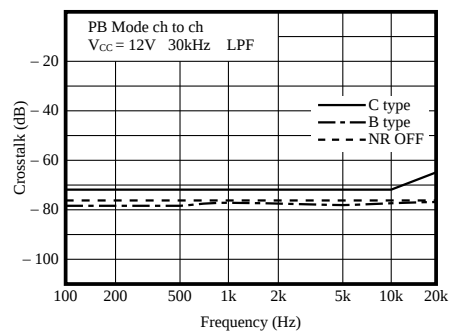
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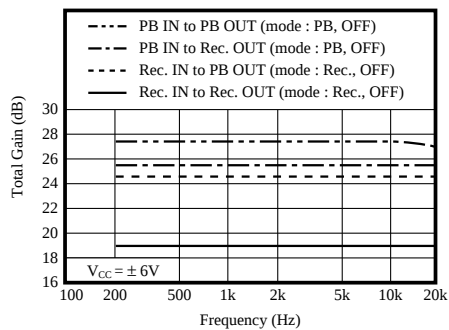
Crosstalk



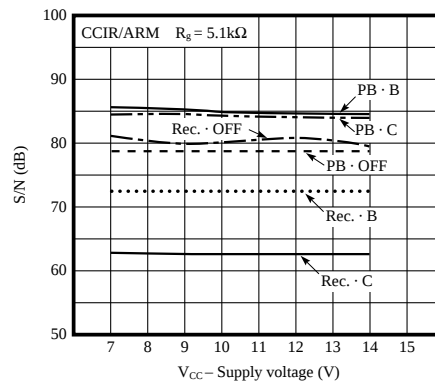
Crosstalk



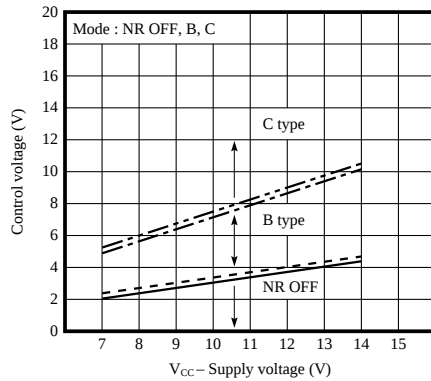
Total Gain



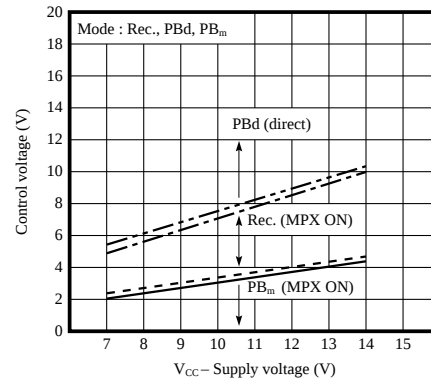
S/N



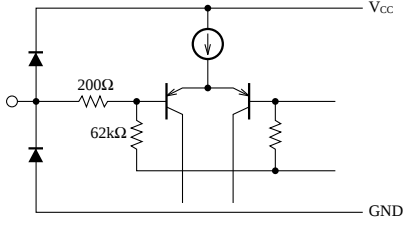
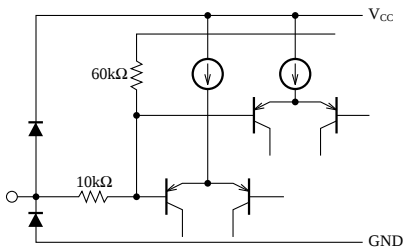
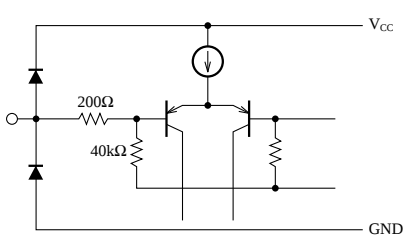
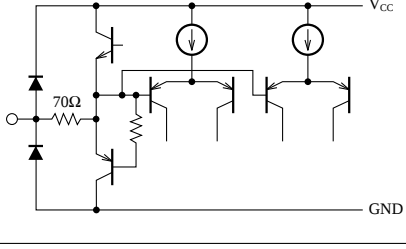
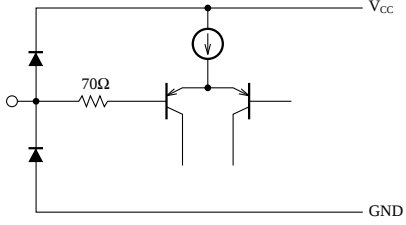
NR control voltage threshold



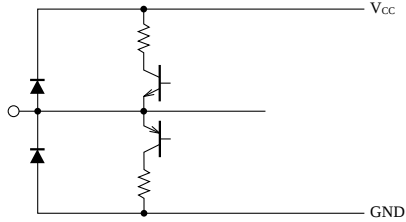
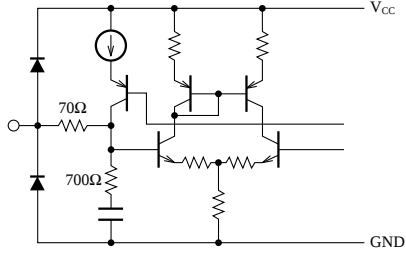
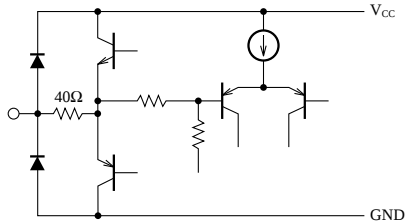
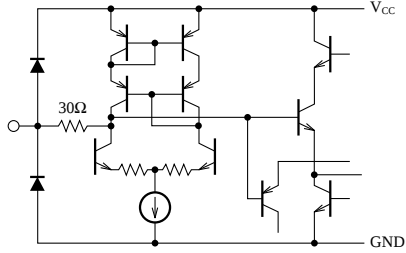
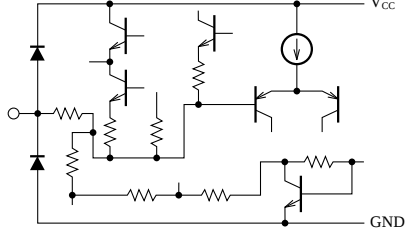
NR control voltage threshold



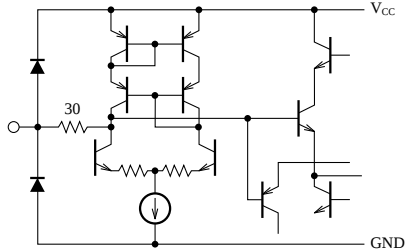
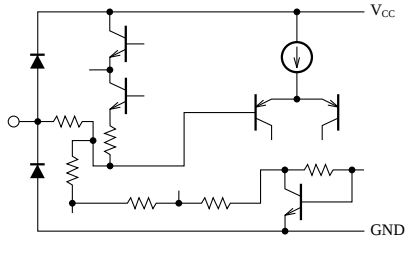
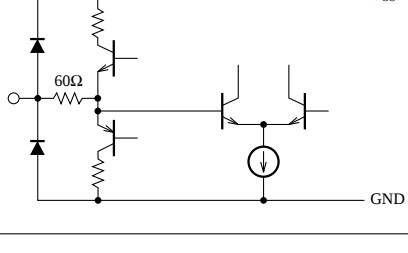
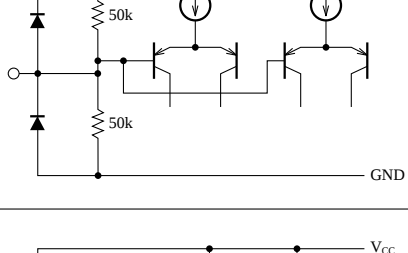
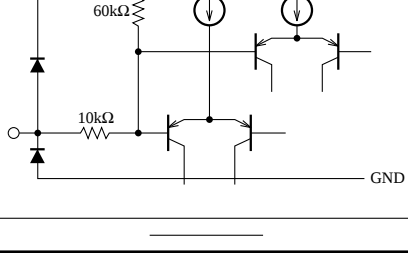
■ Pin Description

Pin No.	Pin Name	Input Impedance Pin Voltage	Pin Description	Equivalent Circuit
1	GND	0	Single Supply : Ground Pin	
2, 27	Rec. IN	$62\text{k}\Omega$ $V_{CC}/2$	Record Input Pin	
3	OFF/B/C	$70\text{k}\Omega$ $V_{CC}/2$	C-type/B-type/NR OFF Changeover Switching Pin	
4, 25	PB IN	$40\text{k}\Omega$ $V_{CC}/2$	Playback Input Pin	
5, 24	MPX OUT	70Ω $V_{CC}/2$	MPX Drive Amp. Output Pin	
6, 23	MPX IN	$\approx \infty$ $V_{CC}/2$	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}	$\approx \infty$ 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	$25k\Omega$ $V_{CC}/2$	Reference Voltage Input/Ripple Rejection Pin	
26	PB/Rec. /PBmpx	$70k\Omega$ $V_{CC}/2$	Playback/Record/Playback – mpx MODE Switching Pin	
28	V _{CC}	—	Supply Voltage Pin	—