

AN5342FBP, AN5342K

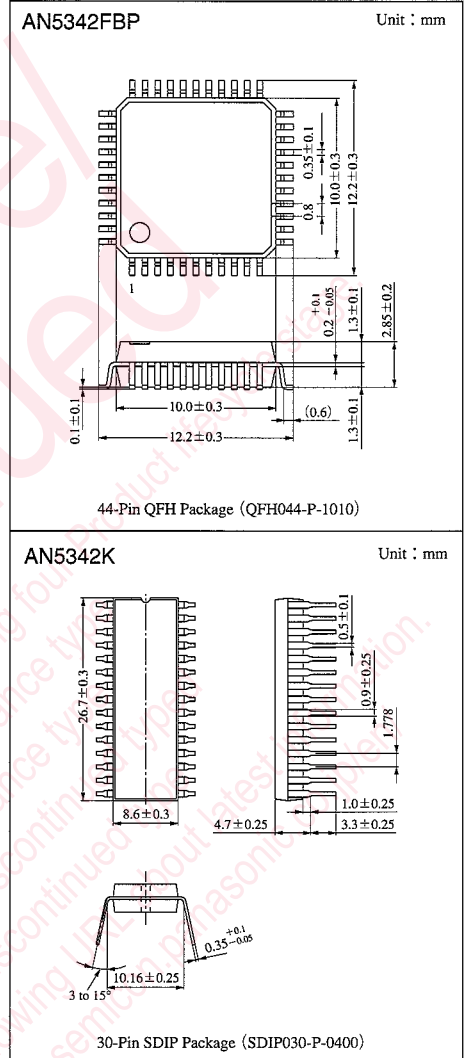
Color TV Horizontal Aperture Correction IC

Overview

The AN5342FBP or AN5342K is a horizontal aperture correction IC for color TV. It provides a Y signal waveform with a preshoot or overshoot feature to emphasize horizontal outlines.

Features

- Including a circuit to add a preshoot or overshoot to a Y signal waveform
- Dynamic sharpness control
- Built-in noise reduction circuit for Y signal
- VM signal output



ICs for TV

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	11	V
Supply current	I _{CC}	90	mA
Power dissipation ^{Note 2)}	P _D	990	mW
Operating ambient temperature ^{Note 1)}	T _{opr}	-20 to +70	°C
Storage temperature ^{Note 1)}	T _{stg}	-55 to +150	°C

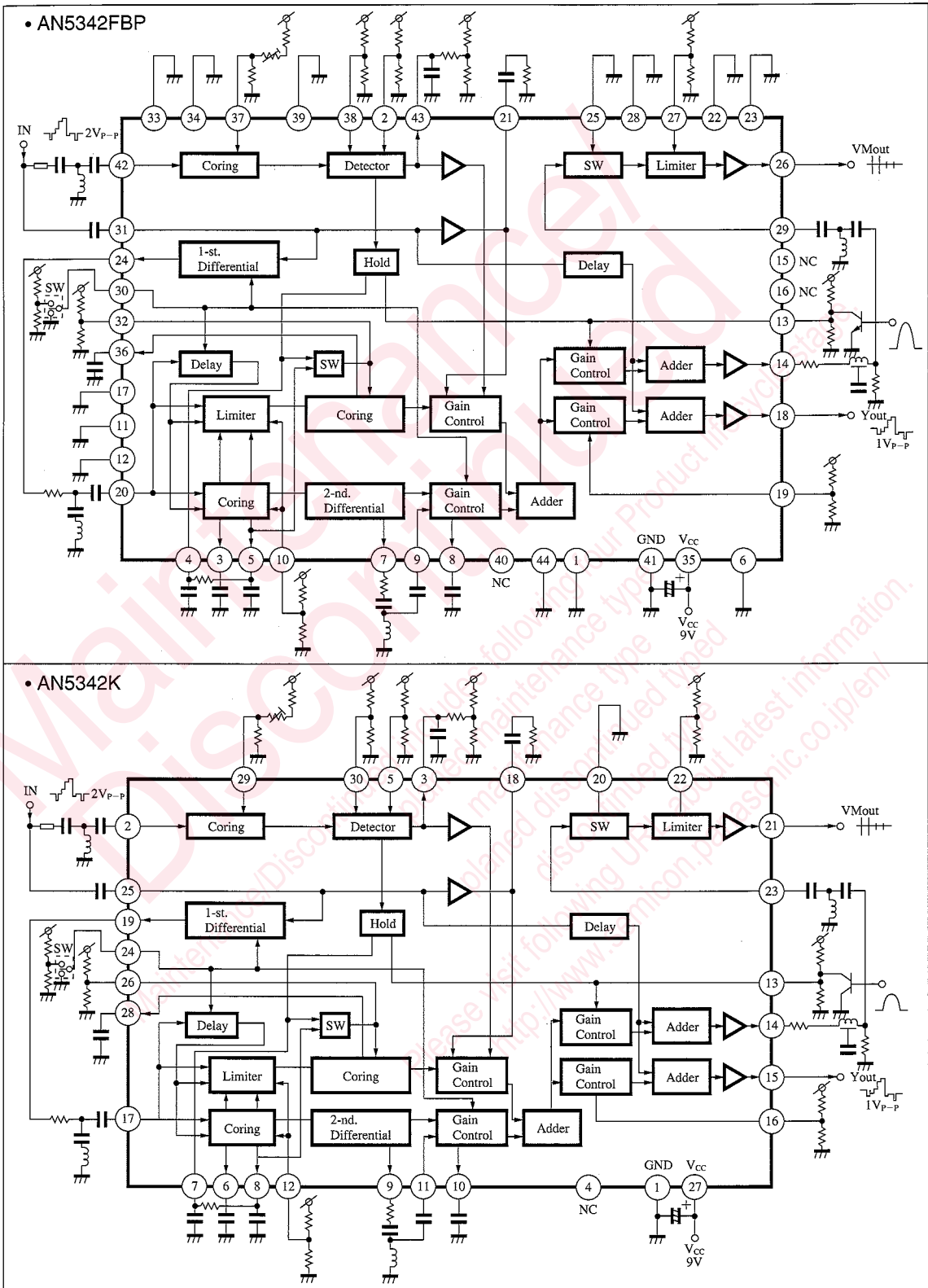
Note 1) T_a=25°C except operating ambient temperature and storage temperature.

Note 2) For only AN5342FBP, allowable power dissipation of the package at T_a=70°C.

Recommended Operating Range (T_a=25°C)

Parameter	Symbol	Range
Operating supply voltage range	V _{CC}	8.1V to 10.8V

■ Block Diagram



■ Pin Descriptions

• AN5342FBP

Pin No.	Pin name	Pin No.	Pin name
1	GND (lead frame)	23	GND (lead frame)
2	DSC large signal gain control	24	Pre-correction first differential output
3	Differential signal bias 1	25	Test Pin
4	Noise reduction bias	26	VM output
5	Differential signal bias 2	27	VM limiter control
6	GND (lead frame)	28	GND (lead frame)
7	Post-correction First Differential output	29	VM input
8	Apert. corr. Bias	30	Delay time switching
9	Second differential input	31	Y input
10	Apert. corr./detail level control	32	Detail coring control
11	GND (lead frame)	33	GND (lead frame)
12	GND (lead frame)	34	GND (lead frame)
13	VM peaking control	35	V _{cc}
14	Y output for VM	36	Coring Bias
15	NC	37	DSC bias
16	NC	38	DSC small signal gain control
17	GND (lead frame)	39	GND (lead frame)
18	Y output	40	NC
19	Sharpness control	41	GND (main)
20	Pre-correction first differential input	42	DSC input
21	Brightness detection	43	DSC Detection output
22	GND (lead frame)	44	GND (lead frame)

• AN5342K

Pin No.	Pin name	Pin No.	Pin name
1	GND	16	Sharpness control
2	DSC input	17	Pre-correction first differential input
3	DSC detection output	18	Brightness Detection
4	NC	19	Pre-correction first differential output
5	DSC large signal Gain control	20	Test
6	Differential signal Bias 1	21	VM output
7	Noise reduction bias	22	VM limiter control
8	Differential signal Bias 2	23	VM input
9	Post-correction first differential output	24	Delay time switching
10	Aperture correction bias	25	Y input
11	Second differential input	26	Detail coring control
12	Aperture correction/detail separation level control	27	V _{cc}
13	VM peaking control	28	Coring bias
14	Y output for VM	29	DSC bias
15	Y output	30	DSC small signal gain control

ICs for TV

Electrical Characteristics (Ta = 25 ± 2°C) (AN5342FBP)

Parameter	Symbol	Condition	min	typ	max	Unit
Circuit current	I ₃₅		44	55	66	mA
	I ₁₉		0.4	0.7	1.2	mA
Circuit voltage	V ₄₂₋₄₁		2.3	2.7	3.1	V
	V ₂₋₄₁		4.4	4.8	5.2	V
	V ₁₀₋₄₁		2.7	3.1	3.5	V
	V ₃₋₄₁		2.6	3.2	3.8	V
	V ₅₋₄₁		2.6	3.2	3.8	V
	V ₇₋₄₁		1.8	2.4	3.0	V
	V ₈₋₄₁		2.9	3.5	4.1	V
	V ₉₋₄₁		2.3	2.7	3.1	V
	V ₁₃₋₄₁		2.7	3.1	3.5	V
	V ₁₄₋₄₁		3.1	3.7	4.3	V
	V ₁₈₋₄₁		3.1	3.7	4.3	V
	V ₂₀₋₄₁		4.4	4.9	5.3	V
	V ₂₁₋₄₁		3.6	4.0	4.4	V
	V ₂₄₋₄₁		5.5	6.1	6.7	V
	V ₂₆₋₄₁		7.5	8.1	8.6	V
	V ₂₇₋₄₁		2.2	2.6	3.0	V
	V ₂₉₋₄₁		1.9	2.3	2.7	V
	V ₃₁₋₄₁		4.1	4.5	4.9	V
	V ₃₂₋₄₁		5.0	5.4	5.8	V
V ₃₆₋₄₁		5.0	5.6	6.2	V	
V ₃₈₋₄₁		3.9	4.3	4.7	V	
Y signal voltage gain (1)	ΔV_{18-41}	ΔV_{18} at $\Delta V_{31} = 1V$	420	500	580	mV
Y signal voltage gain (2)	ΔV_{14-41}	ΔV_{14} at $\Delta V_{31} = 1V$	420	500	580	mV
Y signal voltage gain (3)	ΔV_{21-41}	ΔV_{21} at $\Delta V_{31} = 1V$	0.95	1.1	1.25	V
Delay Section						
Y signal delay time	t _{DL} (Y)	Y signal input, output delay time at DL = 100ns	188	235	282	ns
Y signal frequency characteristics (1)	e _f (Y ₁)	f = 10MHz/f = 1MHz at DL = 100ns	-6	-4	—	dB
Y signal frequency characteristics (2)	e _f (Y ₂)	f = 10MHz/f = 1MHz at DL = 65ns	-6	-3	—	dB
Primary differential signal delay time	t _{DL}	DL = 100ns	80	100	120	ns
Primary differential signal delay time varying amount	Δt_{DL}	Difference at delay time change over	28	35	42	ns
Aperture Correction Section						
Aperture correction signal maximum gain	A _v (L)	f = 2MHz Output at Vin = 0.5V _{P-P}	0.7	0.9	1.3	V _{P-P}
Aperture correction signal coring characteristics (1)	e _{CO} (L ₁)	f = 4MHz, Vin = 75mV _{P-P} Output amplitude at V ₁₀ = 1V	100	130	160	mV _{P-P}
Aperture correction signal coring characteristics (2)	e _{CO} (L ₂)	f = 4MHz, Vin = 75mV _{P-P} Output amplitude at V ₁₀ = 5V	—	25	50	mV _{P-P}
Aperture correction signal secondary differential gain ratio	$\Delta A_{v'}$ (L)	f = 4Hz/f = 2MHz at Vin = 0.5V _{P-P}	-6	-4	-2	dB
Detail Correction Section						
Detail correction signal maximum gain	A _v (S)	f = 4MHz Input output ratio at Vin = 50mV _{P-P}	16	18	21	dB

Electrical Characteristics (cont.) ($T_a=25\pm 2^\circ\text{C}$) (AN5342FBP)

Parameter	Symbol	Condition	min	typ	max	Unit
Detail correction signal gain control (typ.)	ΔA_v (S)	f=4MHz Vin=50mV _{P-P} Output ratio at V ₄₃ =5V→3V	-8.5	-6	-3.5	dB
Detail correction signal coring characteristics	e _{CO} (S)	f=4MHz Vin=50mV _{P-P} Output ratio at V ₃₂ =5V→3V	-7	-4	-2	dB
Detail correction signal limiter characteristics	Δe_{LT} (S)	f=4MHz Vin=100mV _{P-P} Output ratio at V ₁₀ =5V→3V	—	-5	-3	dB
Detail correction signal sharpness control	$\Delta A_v'$ (S)	f=4MHz Vin=50mV _{P-P} Output ratio at V ₁₉ =5V→3V	—	-7	-4	dB

DSC Section

DSC output voltage (1)	V _{LIM} (DSC)	f=4MHz Output DC at Vin=27mV _{P-P}	2	3	4	V
DSC output voltage (2)	V _S (DSC)	f=4MHz Output DC at Vin=150mV _{P-P}	7.5	8.8	—	V
DSC output voltage (3)	V _L (DSC)	f=4MHz Output DC at Vin=840mV _{P-P}	—	0.2	1.0	V
Noise reduction characteristics	V _{NR}	f=4MHz Pin ^② bias voltage at Vin=150mV _{P-P}	—	0.2	1.0	V

VM Section

VM signal maximum gain	A _v (VM)	f=4MHz Output amplitude at Vin=100mV _{P-P}	0.6	0.9	1.4	V _{P-P}
VM signal limiter characteristics	ΔA_v (VM)	f=4MHz Vin=100mV _{P-P} Output ratio at V ₂₇ =5V→3V	2.5	4.0	5.5	dB
VM signal SW operation characteristics	e _{off} (VM)	f=4MHz Vin=100mV _{P-P} Output ratio at V ₂₅ =0→2V	—	-40	-25	dB
VM signal output DC level	V ₂₆₋₄₁	Difference in case between, V ₂₅ =0 and V ₂₅ =2V	-90	0	+90	mV

Reference Value

Y signal delay time variation amount	Δt_{DL} (Y)	Delay time difference in delay time changeover	—	(35)	—	ns
Primary differential signal pulse width (1)	$\Delta t_{(DL_1)}$	Output amplitude at 125ns rise pulse inputs (DL=100ns)	—	(190)	—	ns
Primary differential signal pulse width (2)	$\Delta t_{(DL_2)}$	Output amplitude at 125ns rise pulse inputs (DL=65ns)	—	(225)	—	ns
Primary differential signal output amplitude (1)	A _v (DL ₁)	Output amplitude at 125ns rise pulse inputs (DL=100ns)	—	(0.9)	—	V _{P-P}
Primary differential signal output amplitude (2)	A _v (DL ₂)	Output amplitude at 125ns rise pulse inputs (DL=65ns)	—	(0.8)	—	V _{P-P}
Aperture correction signal gain difference at delay change-over	ΔA_v (L)	f=2MHz, Vin=0.5V _{P-P} Output ratio at V ₃₀ =0→3V	—	(-3)	—	dB

Note) The characteristics value in parentheses is not a guaranteed value, but reference one on design.

ICs for
TV

Electrical Characteristics ($T_a = 25 \pm 2^\circ\text{C}$) (AN5342K)

Parameter	Symbol	Condition	min	typ	max	Unit
Circuit current	I_{27}		44	55	66	mA
	I_{16}		0.4	0.7	1.2	mA
Circuit voltage	V_{2-1}		2.3	2.7	3.1	V
	V_{5-1}		4.4	4.8	5.2	V
	V_{12-1}		2.7	3.1	3.5	V
	V_{6-1}		2.6	3.2	3.8	V
	V_{8-1}		2.6	3.2	3.8	V
	V_{9-1}		1.8	2.4	3.0	V
	V_{10-1}		2.9	3.5	4.1	V
	V_{11-1}		2.3	2.7	3.1	V
	V_{13-1}		2.7	3.1	3.5	V
	V_{14-1}		3.1	3.7	4.3	V
	V_{15-1}		3.1	3.7	4.3	V
	V_{17-1}		4.4	4.9	5.3	V
	V_{18-1}		3.6	4.0	4.4	V
	V_{19-1}		5.5	6.1	6.7	V
	V_{21-1}		7.5	8.1	8.6	V
	V_{22-1}		2.2	2.6	3.0	V
	V_{23-1}		1.9	2.3	2.7	V
	V_{25-1}		4.1	4.5	4.9	V
	V_{26-1}		5.0	5.4	5.8	V
V_{28-1}		5.0	5.6	6.2	V	
V_{30-1}		3.9	4.3	4.7	V	
Y signal voltage gain (1)	ΔV_{15-1}	ΔV_{15} at $\Delta V_{25} = 1\text{V}$	420	500	580	mV
Y signal voltage gain (2)	ΔV_{14-1}	ΔV_{14} at $\Delta V_{25} = 1\text{V}$	420	500	580	mV
Y signal voltage gain (3)	ΔV_{18-1}	ΔV_{18} at $\Delta V_{25} = 1\text{V}$	0.95	1.1	1.25	V
Delay Section						
Y signal delay time	$t_{DL}(Y)$	Y signal input, output delay time at $DL = 100\text{ns}$	188	235	282	ns
Y signal frequency characteristics (1)	$e_r(Y_1)$	$f = 10\text{MHz}/f = 1\text{MHz}$ at $DL = 100\text{ns}$	-6	-4	—	dB
Y signal frequency characteristics (2)	$e_r(Y_2)$	$f = 10\text{MHz}/f = 1\text{MHz}$ at $DL = 65\text{ns}$	-6	-3	—	dB
Primary differential signal delay time	t_{DL}	$DL = 100\text{ns}$	80	100	120	ns
Primary differential signal delay time varying amount	Δt_{DL}	Difference in delay time change-over	28	35	42	ns
Aperture Correction Section						
Aperture correction signal maximum gain	$A_v(L)$	$f = 2\text{MHz}$ Output at $V_{in} = 0.5V_{P-P}$	0.7	0.9	1.3	V_{P-P}
Aperture correction signal coring characteristics (1)	$e_{CO}(L_1)$	$f = 4\text{MHz}$, $V_{in} = 75mV_{P-P}$ Output amplitude at $V_{12} = 1\text{V}$	100	130	160	mV_{P-P}
Aperture correction signal coring characteristics (2)	$e_{CO}(L_2)$	$f = 4\text{MHz}$, $V_{in} = 75mV_{P-P}$ Output amplitude at $V_{12} = 5\text{V}$	—	25	50	mV_{P-P}
Aperture correction signal secondary differential gain ratio	$\Delta A_v'(L)$	$f = 4\text{MHz}/f = 2\text{MHz}$ at $V_{in} = 0.5V_{P-P}$	-6	-4	-2	dB
Detail Correction Section						
Detail correction signal maximum gain	$A_v(S)$	Input output ratio at $V_{in} = 50mV_{P-P}$	16	18	21	dB
Detail correction signal gain control (typ.)	$\Delta A_v(S)$	Output ratio at $V_3 = 5V \rightarrow 3V$	-8.5	-6	-3.5	dB

Electrical Characteristics (cont.) ($T_a = 25 \pm 2^\circ\text{C}$) (AN5342K)

Parameter	Symbol	Condition	min	typ	max	Unit
Detail correction signal coring characteristics	e_{CO} (s)	$f=4\text{MHz}$, $V_{in}=50\text{mV}_{P-P}$ Output ratio at $V_{26}=5\text{V} \rightarrow 3\text{V}$	-7	-4	-2	dB
Detail correction signal limiter characteristics	Δe_{LT} (s)	$f=4\text{MHz}$, $V_{in}=100\text{mV}_{P-P}$ Output ratio at $V_{12}=5\text{V} \rightarrow 3\text{V}$	—	-5	-3	dB
Detail correction signal sharpness control	$\Delta A_v'$ (s)	$f=4\text{MHz}$, $V_{in}=50\text{mV}_{P-P}$ Output ratio at $V_{16}=5\text{V} \rightarrow 3\text{V}$	—	-7	-4	dB

DSC Section

DSC output voltage (1)	V_{LIM} (DSC)	$f=4\text{MHz}$ Output DC at $V_{in}=27\text{mV}_{P-P}$	2	3	4	V
DSC output voltage (2)	V_S (DSC)	$f=4\text{MHz}$, Output DC at $V_{in}=150\text{mV}_{P-P}$	7.5	8.8	—	V
DSC output voltage (3)	V_L (DSC)	$f=4\text{MHz}$, Output DC at $V_{in}=840\text{mV}_{P-P}$	—	0.2	1.0	V
Noise reduction characteristics	V_{NR}	$f=4\text{MHz}$, $\text{Pin} \textcircled{2}$ bias voltage at $V_{in}=150\text{mV}_{P-P}$	—	0.2	1.0	V

VM Section

VM signal maximum gain	A_v (VM)	$f=4\text{MHz}$, Output amplitude at $V_{in}=100\text{mV}_{P-P}$	0.6	0.9	1.4	V_{P-P}
VM signal limiter characteristics	ΔA_v (VM)	$f=4\text{MHz}$, $V_{in}=100\text{mV}_{P-P}$ Output ratio at $V_{22}=0 \rightarrow 2\text{V}$	2.5	4.0	5.5	dB
VM signal SW operation characteristics	e_{off} (VM)	$f=4\text{MHz}$, $V_{in}=100\text{mV}_{P-P}$ Output ratio at $V_{20}=5\text{V} \rightarrow 3\text{V}$	—	-40	-25	dB
VM signal output DC level	ΔV_{21-1}	$V_{CC}=9\text{V}$, $\text{Pin} \textcircled{2}$ output voltage difference at $V_{20}=0\text{V}/2\text{V}$	-90	0	+90	mV

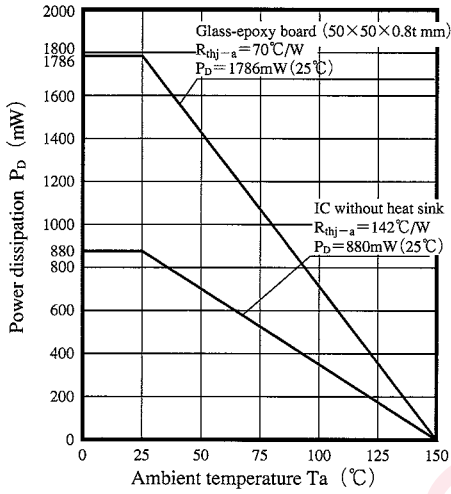
Reference Value

Y signal delay time variation amount	Δt_{DL} (Y)	Difference of delay time in delay time change-over	—	(35)	—	ns
Primary differential signal pulse width (1)	$\Delta t_{(DL_1)}$	Pulse width in 125ns pulse input (DL=100ns)	—	(190)	—	ns
Primary differential signal pulse width (2)	$\Delta t_{(DL_2)}$	Pulse width in 125ns pulse input (DL=65ns)	—	(225)	—	ns
Primary differential signal output amplitude (1)	A_v (DL ₁)	Pulse width in 125ns pulse input (DL=100ns)	—	(0.9)	—	V_{P-P}
Primary differential signal output amplitude (2)	A_v (DL ₂)	Pulse width in 125ns pulse input (DL=65ns)	—	(0.8)	—	V_{P-P}
Profile correction signal gain difference at delay change-over	ΔA_v (L)	$f=2\text{MHz}$, $V_{in}=0.5\text{V}_{P-P}$ Output ratio at $V_{24}=0 \rightarrow 3\text{V}$	—	(-3)	—	dB

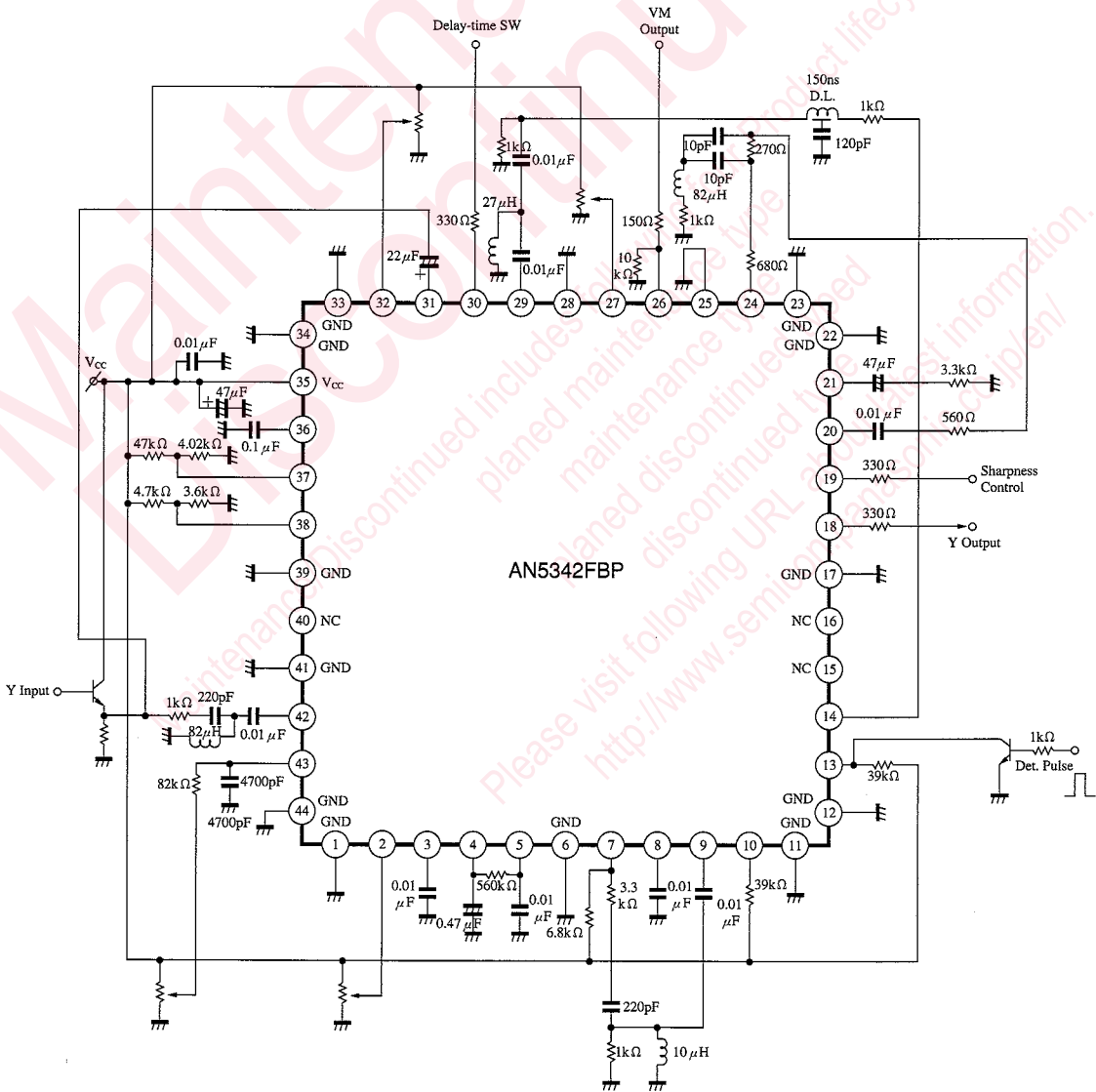
Note) The characteristics value in parentheses is not a guaranteed value, but reference one on design.

ICs for TV

Reference $P_D - T_a$



Application Circuit of AN5342FBP



■ Application Circuit



ICs for TV

Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
 - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (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.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.