

AN5043

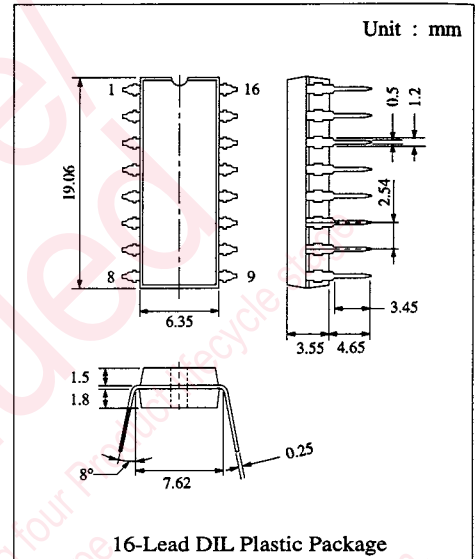
TV/VCR Tuner Band Switch Circuit

■ Description

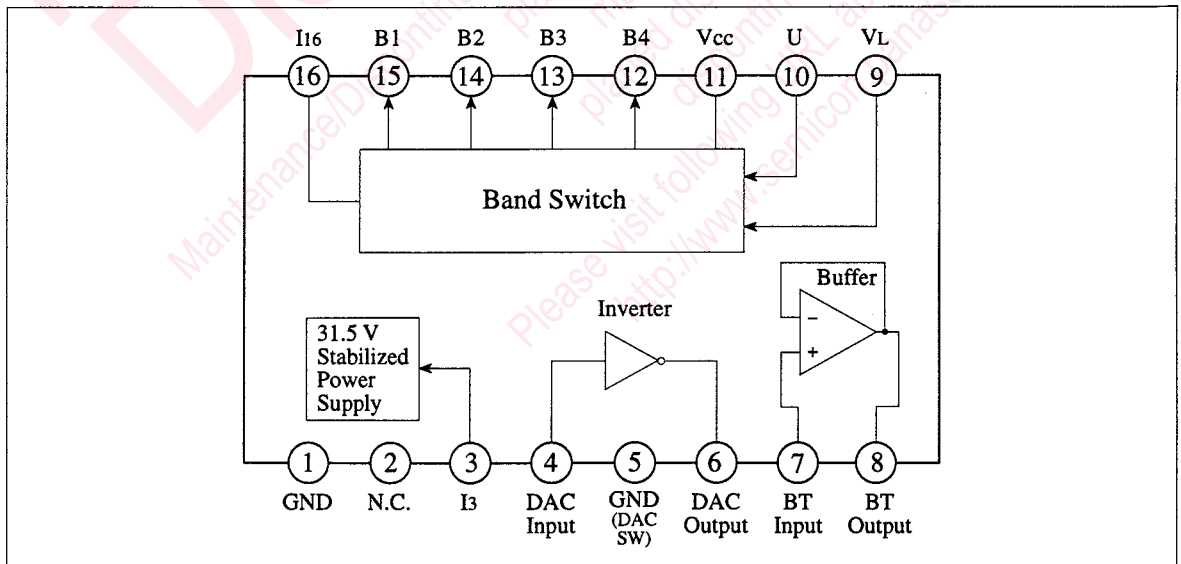
The AN5043 is an integrated circuit designed for tuner control circuit of TV/VCR electronic tuning system using a semiconductor memory.

■ Features

- Built-in reference voltage stabilizer for electronic tuning
- 2-input, 4-output band switch
- Usable for every tuner with suitable output combination
- Consists of peripheral part of electronic tuning system with semiconductor memory



■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	Vcc	14.4	V
Supply Current	Icc	15	mA
Power Dissipation (Ta=70°C)	Pd	700	mW
Operating Ambient Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-55 ~ +150	°C

■ Recommended Operating Range (Ta=25°C)

Item	Symbol	Range
Operating Supply Voltage Range	Vcc	9.6V ~ 14.4V
Operating Supply Current Range	I16	2.7mA ~ 5.0 mA
Operating Supply Current Range	I3	6.0 mA ~ 15.0 mA

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Circuit Current Pin 3	I3	V3-1 = 26V	1.5	2.3	3.1	mA
Circuit Current Pin 11	I11	V11-1 = 12V	2.6	4.0	5.4	mA
DAC IN Input Threshold Voltage	VTH (4)	V5-1 = 0V	0.45	0.7	1.0	V
DAC OUT Output Voltage	V6-1	V4-1 = 1.0V		0.1	0.4	V
DAC OUT Output Voltage	V3-6	V4-1 = 0.45V		0.2	0.7	V
DAC OUT Output Current	I6	V4-1 = 0V	-1.8	-1.1	-0.7	mA
BT IN Input Current	I7	V7-1 = 1 ~ 26V	-0.3	-0.1	0.1	μA
BT OUT "L" Output Voltage	V8-1 L	V7-1 = 0V	0	0.1	0.4	V
BT OUT "H" Output Voltage	V8-3 H	V7-1 = V3-1	-1.5	-1.0	-0.5	V
BT IN-OUT Difference Voltage	V7-8	V7-1 = 1 ~ 26V	0	0.2	0.4	V
Pin Voltage VL	V9-1	V11-1 = 12V	3	3.4	3.8	V
Pin Voltage U	V10-1	V11-1 = 12V	1.7	2.1	2.5	V
VL Input Threshold Voltage	VTH (9)	V11-1 = 12V	0.5		2.0	V
VL Input Threshold Current	ITH (9)	V11-1 = 12V	-500		-50	μA
U Input Threshold Voltage	VTH (10)	V11-1 = 12V	0.5		1.5	V
U Input Threshold Current	ITH (10)	V11-1 = 12V	-500		-50	μA
Output Saturation Voltage	V11-12, 13, 14, 15	IOUT = -60mA	0.6	1.0	1.4	V
Output Leakage Current	I12, 13, 14, 15		-10		0	μA
31.5V Stabilized Voltage	V3-1	I3 = 10mA	29.5	31.5	33.5	V
Operating Resistance	γ3	I3 = 6 ~ 15mA		10	25	Ω

■ Description of Test circuit and Test method

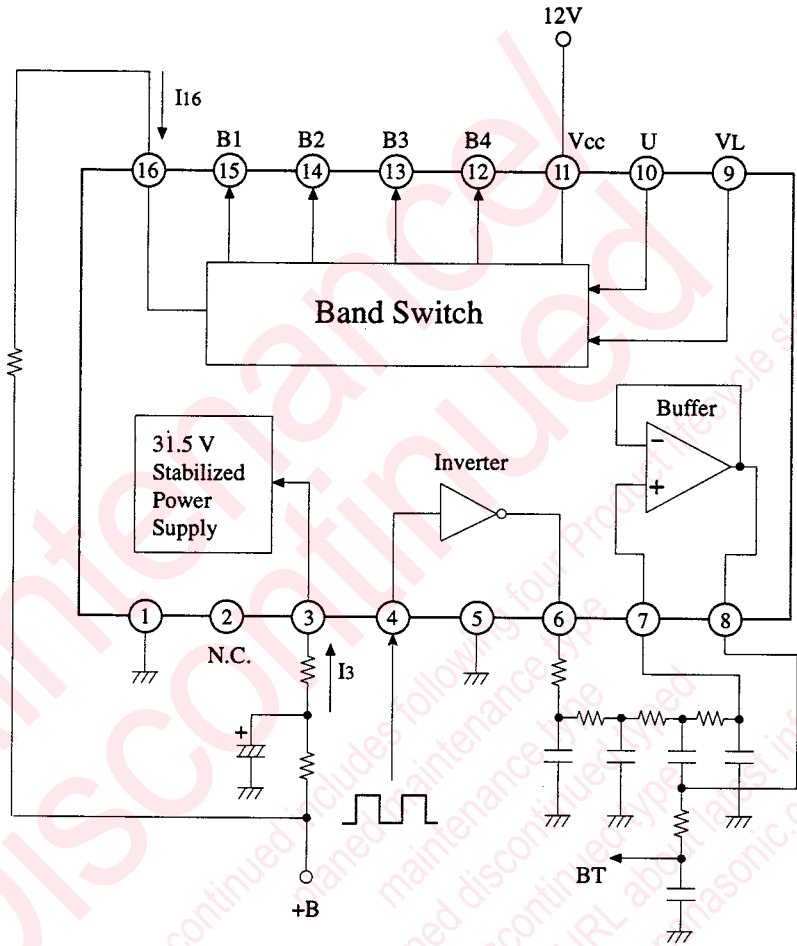
No.	Item	Symbol	Measured Pin No.	Pin No.													Note								
				1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16					
1	Circuit current pin 3	I ₃	3	0V	26V																				
2	Circuit current pin 11	I ₁₁	12	0V	10 mA	0V	0V	15V							12V										
3,5	DAC IN input threshold voltage	V _{TH} (4)	6	0V	10 mA	0.45 V	0V								12V										Pin 6 "H"
3,4	DAC IN input threshold voltage	V _{TH} (4)	6	0V	10 mA	1.0 V	0V								12V										Pin 6 "L"
6	DAC OUT output current	I ₆	6	0V	10 mA	0V	0V	0V							12V										
7	BT IN input current	I ₇	7	0V	10 mA			1V~ 26V							12V										9.1k 45V
8	BT OUT "L" output voltage	V _{8-1 L}	8	0V	10 mA	0V	0V	0V																	*
9	BT OUT "H" output voltage	V _{8-3 H}	8	0V	10 mA	0V	0V	3V																	*
10	BT IN-OUT difference voltage	V ₇₋₈	8	0V	10 mA	0V	0V	1V~ 26V																	*
11	Pin voltage VL	V ₉₋₁	9	0V	10 mA										12V										9.1k 45V
12	Pin voltage U	V ₁₀₋₁	10	0V	10 mA										12V										9.1k 45V
13	VL input threshold voltage	V _{TH} (9)	14	0V	10 mA										0.5 V										Pin 14 "L"
13	VL input threshold voltage	V _{TH} (9)	14	0V	10 mA										2.0 V										Pin 14 "H"

* : A capacitor should be added between pin 8 (0.01μF) and GND.

■ Description of Test circuit and Test method

No.	Item	Symbol	Measured Pin No.	Pin No.																Note
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
14	V _L input threshold current	I _{TH} (9)	14	0V	10 mA							12V						9.1k 45V	Pin 14 "H"	
14	V _L input threshold current	I _{TH} (9)	14	0V	10 mA							12V						9.1k 45V	Pin 14 "L"	
15	U input threshold voltage	V _{TH} (10)	14	0V	10 mA					0.5 V		12V						9.1k 45V	Pin 14 "L"	
15	U input threshold voltage	V _{TH} (10)	14	0V	10 mA					1.5 V		12V						9.1k 45V	Pin 14 "H"	
16	U input threshold current	I _{TH} (10)	14	0V	10 mA					-50 μA		12V						9.1k 45V	Pin 14 "H"	
16	U input threshold current	I _{TH} (10)	14	0V	10 mA					-500 μA		12V						9.1k 45V	Pin 14 "L"	
17	Output saturation voltage	V ₁₁₋₁₂	12	0V	10 mA					0V		12V	-60 mA					9.1k 45V		
17	Output saturation voltage	V ₁₁₋₁₃	13	0V	10 mA					0V		12V	-60 mA					9.1k 45V		
17	Output saturation voltage	V ₁₁₋₁₄	14	0V	10 mA							12V		-60 mA				9.1k 45V		
17	Output saturation voltage	V ₁₁₋₁₅	15	0V	10 mA					0V		12V					-60 mA	9.1k 45V		
18	Output leakage current	I _{12,13,15}	12,13,15	0V	10 mA							12V	0V	0V				9.1k 45V		
18	Output leakage current	I ₁₄	14	0V	10 mA							12V			0V			9.1k 45V		
19	3.1.5V stabilized voltage	V ₃₋₁	3	0V	10 mA													9.1k 45V		
20	Operating Resistance	γ ₃	3	0V	6-15 mA															

■ Application Circuit



■ Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	GND	9	V _L Input
2	N. C.	10	U Input
3	31.5V Stabilized Voltage (I ₃)	11	Supply Voltage V _{cc}
4	DAC Input	12	B4 Output
5	GND (DAC SW)	13	B3 Output
6	DAC Output	14	B2 Output
7	BT Input	15	B1 Output
8	BT Output	16	Supply Current (I ₁₆)

Band Switch I/O Logic

Input Pin		Output Pin				Remarks
⑨	⑩	⑮	⑭	⑬	⑫	
L	H	H	L	L	L	VHF-L
H	H	L	H	L	L	VHF-H
L	L	L	L	H	L	-----
H	L	L	L	L	H	UHF

H/L state of Input pin :

L : 0.5V or less

H : $V_{9-1} > 2.0V$, $V_{10-1} > 1.5V$

H/L state of Output pin :

L : High impedance

H : $V_{CC} - V_{CE}(\text{sat})$

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