

# AN5011

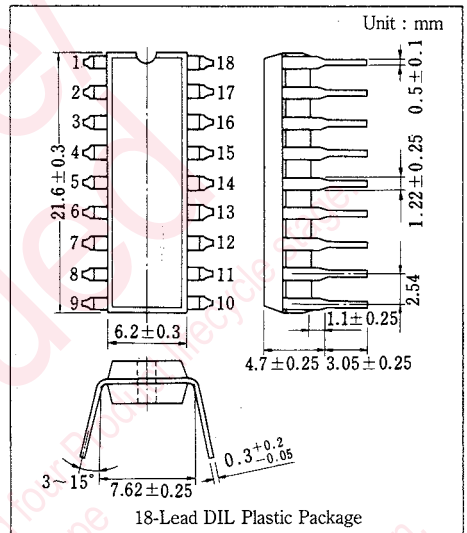
## TV Electronic Channel Selection Circuit

### Outline

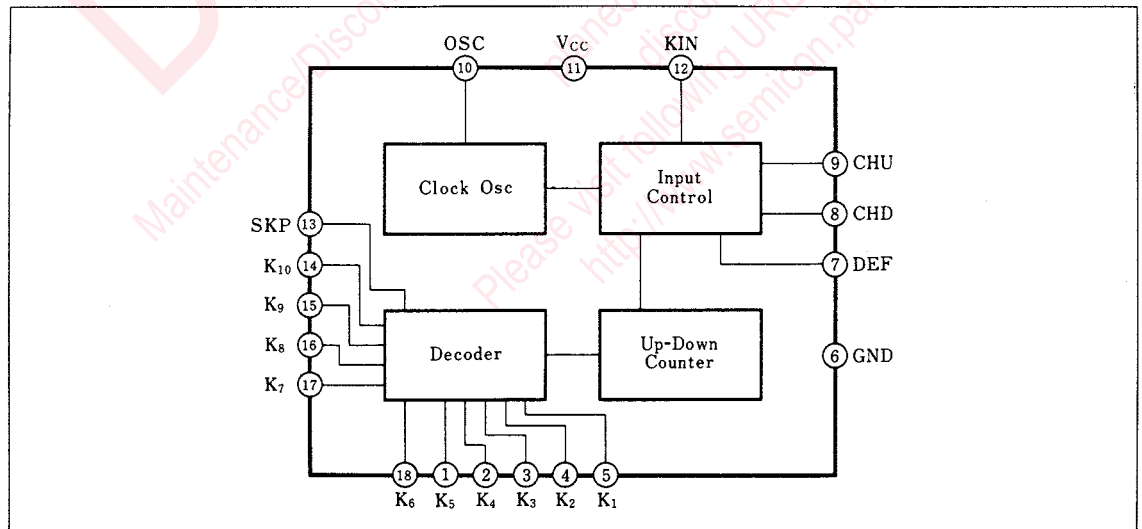
The AN5011 is an integrated circuit designed for electronic tuner circuit by the preset volume method.

### Features

- Simplifies selection circuit up to 10 channels
- Incorporating clock oscillator, input control, UP-DOWN counter and decoder circuits
- Remote control system available (UP-DOWN bidirectional)
- Clock frequency changeable by external components
- Provided with pulse output
- Channel initialize when power is switched on can be set at any channel
- Selection output breakdown voltage : 40V
- Selection output saturation voltage : <math><0.15\text{V}</math> (5mA)
- Supply voltage : 6.0V
- Channel selection : 10 channels, jump over selection available



### Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V <sub>cc</sub>	7.2		V
	Circuit Voltage	V <sub>K-6</sub> *1	-0.5	50	V
		V <sub>7-8</sub>	-0.5	14.4	V
		V <sub>11-6</sub>	-0.5	7.2	V
		V <sub>10-6</sub>	-0.5	7.2	V
Current	Supply Current	I <sub>tot</sub>	60		mA
	Circuit Current	I <sub>K</sub> *2	-5	15	mA
		I <sub>7</sub>	-5	15	mA
		I <sub>8</sub>	-5	10	mA
		I <sub>9</sub>	-5	10	mA
		I <sub>10</sub>	-5	10	mA
		I <sub>11</sub>	-5	60	mA
		I <sub>12</sub>	-5	10	mA
		I <sub>13</sub>	-5	10	mA
Power Dissipation (Ta=75°C)		P <sub>D</sub>	450		mW
Temperature	Operating Ambient Temperature	T <sub>opr</sub>	-20~+75		°C
	Storage Temperature	T <sub>stg</sub>	-40~+150		°C

\* 1 : K of V<sub>k</sub> indicates pins ① to ⑤ and ⑭ to ⑰.

\* 2 : K of I<sub>k</sub> indicates pins ① to ⑤ and ⑭ to ⑰ and ratings when output is LOW level.

### ■ Electrical Characteristics (V<sub>cc</sub>=V<sub>s-3</sub>=12V, Ta=25°C)

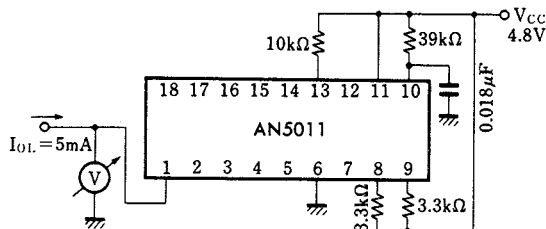
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Output Voltage Low Level (Tuning)	V <sub>OL(K)</sub>	1	V <sub>cc</sub> =4.8V, I <sub>OL</sub> =5mA			0.15	V
Output Current High Level (Tuning)	I <sub>OH(K)</sub>	2	V <sub>cc</sub> =7.2V, V <sub>OH</sub> =35V			5	μA
Output Voltage Low Level (DEF)	V <sub>OL(D)</sub>	3	V <sub>cc</sub> =4.8V, I <sub>OL</sub> =5mA			5	V
Output Current High Level (DEF)	I <sub>OH(D)</sub>	4	V <sub>cc</sub> =7.2V, V <sub>OH</sub> =14.4V			5	μA
Input Current Low Level (CHD)	I <sub>IL(CHD)</sub>	5	V <sub>cc</sub> =7.2V, V <sub>IL</sub> =0V	-5			μA
Input Current Low Level (CHU)	I <sub>IL(CHU)</sub>	7	V <sub>cc</sub> =7.2V, V <sub>IL</sub> =0V	-5			μA
Input Current High Level (CHD)	I <sub>IH(CHD)</sub> *1	6	V <sub>cc</sub> =4.8V		50		μA
Input Current High Level (CHU)	I <sub>IH(CHU)</sub> *1	8	V <sub>cc</sub> =4.8V		50		μA
Input Current Low Level (KIN)	I <sub>IL(KI)</sub>	9	V <sub>cc</sub> =7.2V, V <sub>IL</sub> =0V	-10			μA
Input Current High Level (KIN)	I <sub>IH(KI)</sub> *2	10	V <sub>cc</sub> =4.8V		200		μA
Input Current Low Level (SKP)	I <sub>IL(SK)</sub>	11	V <sub>cc</sub> =7.2V, V <sub>IL</sub> =0V	-5			μA
Input Current High Level (SKP)	I <sub>IH(SK)</sub> *1	12	V <sub>cc</sub> =4.8V		50		μA
Input Current Low Level (OSC)	I <sub>IL(OS)</sub>	13	V <sub>cc</sub> =7.2V, V <sub>IL</sub> =1.0V			5	μA
Input Current High Level (OSC)	I <sub>IH(OS)</sub>	14	V <sub>cc</sub> =4.8V, V <sub>IH</sub> =4V	1.7		3.2	mA
Oscillation Frequency (Clock)	f <sub>osc</sub>	15	V <sub>cc</sub> =6V	1.5	2.0	2.5	kHz
Total Circuit Current	I <sub>tot</sub>	16	V <sub>cc</sub> =6V	23	35	50	mA

\* 1 : DEF Pin (⑦) shall be "H" level (3.0V or more).

\* 2 : DEF Pin (⑦) shall be "L" level (1.0V or less).

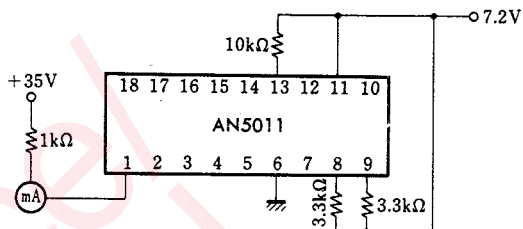
Note: Operating supply voltage is: V<sub>cc</sub> (opr) = 4.8 ~ 7.2V.

**Test Circuit 1 ( $V_{OL(K)}$ )**



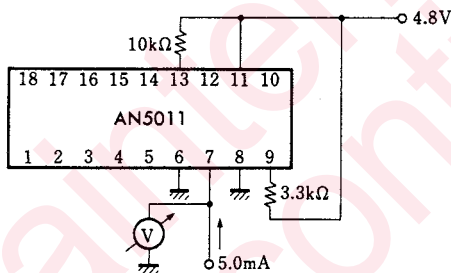
Note: Pins ① to ⑤ and ⑭ to ⑰ are used for measuring pins. First, short-circuit pins ⑫ (KIN) and ⑮ (KI) to set the measuring pin to ⑤. Then, make CHU and CHD pins "L" level to set K1 to K16 sequentially. Pins other than measuring pins are not required for connection.

**Test Circuit 2 ( $I_{OH(K)}$ )**

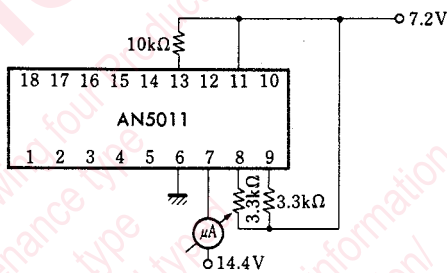


Note: Pins ① to ⑤ and ⑭ to ⑰ are used for measuring pins. Pins other than measuring pins are not required for connection.

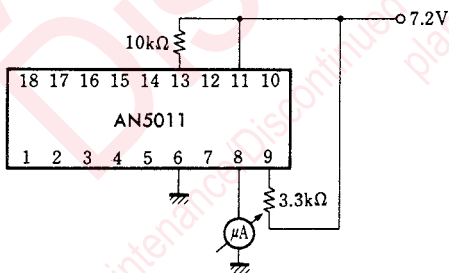
**Test Circuit 3 ( $V_{OL(D)}$ )**



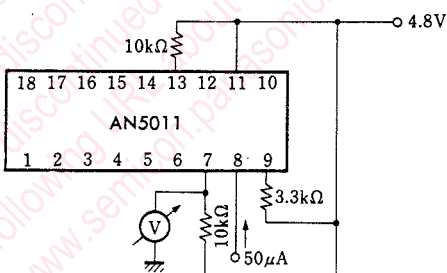
**Test Circuit 4 ( $I_{OH(D)}$ )**



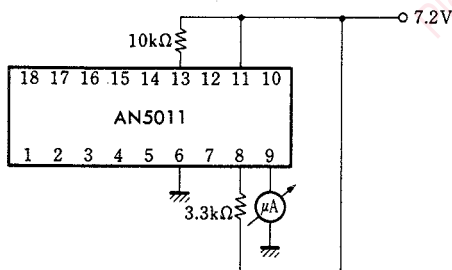
**Test Circuit 5 ( $I_{IL(CHD)}$ )**



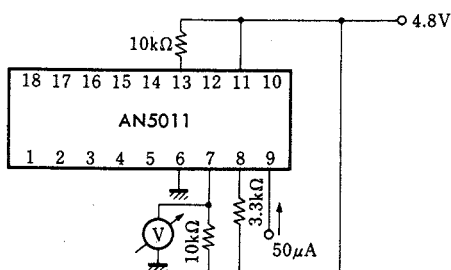
**Test Circuit 6 ( $I_{IH(CHD)}$ )**



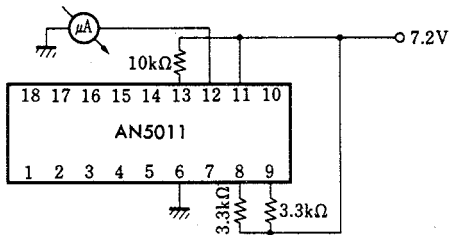
**Test Circuit 7 ( $I_{IL(CHU)}$ )**



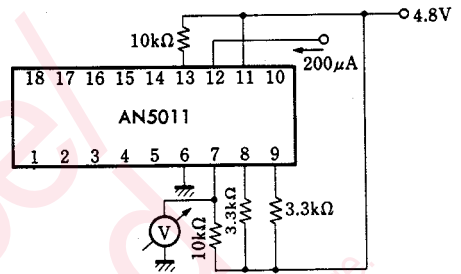
**Test Circuit 8 ( $I_{IH(CHU)}$ )**



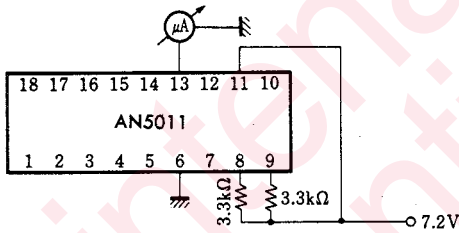
Test Circuit 9 ( $I_{IL(KI)}$ )



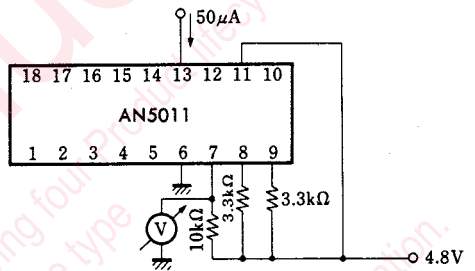
Test Circuit 10 ( $I_{IH(KI)}$ )



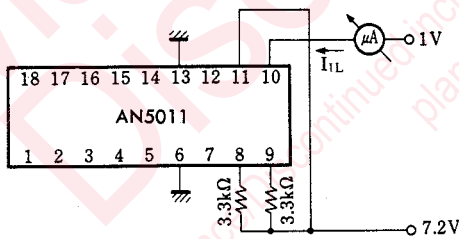
Test Circuit 11 ( $I_{IL(SK)}$ )



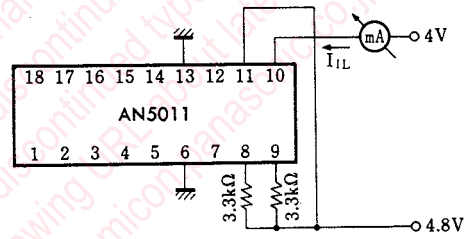
Test Circuit 12 ( $I_{IH(SK)}$ )



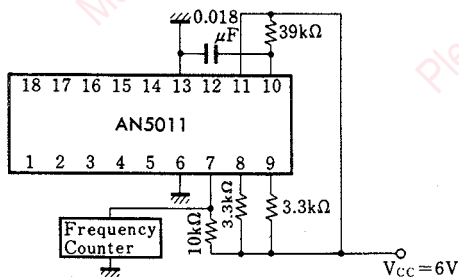
Test Circuit 13 ( $I_{IL(OS)}$ )



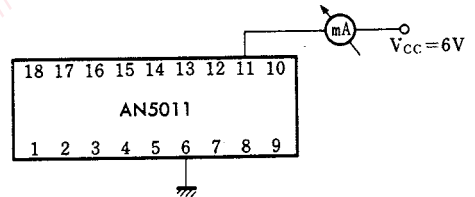
Test Circuit 14 ( $I_{IH(OS)}$ )



Test Circuit 15 ( $f_{osc}$ )



Test Circuit 16 ( $I_{tot}$ )





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