

AN5036

TV Tuning Control Circuit

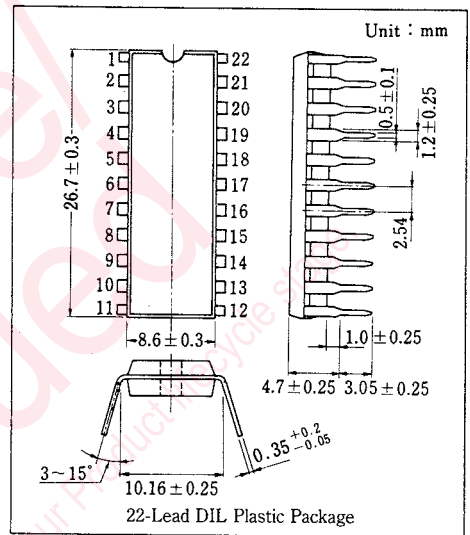
■ Outline

The AN5036 is an integrated circuit designed for tuner control circuit of TV electronic tuning system using a frequency synthesizer method.

■ Features

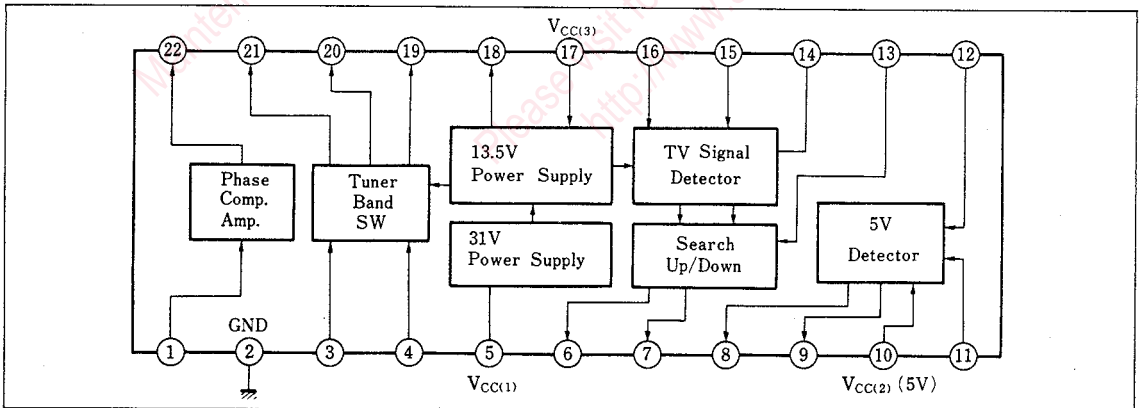
- Reference voltage stabilizer for electronic tuning incorporated
- Electronic tuner power supply incorporated
- Power supply voltage rise-up detection circuit incorporated

■ Pin



Pin No.	Pin Name	Pin No.	Pin Name
1	Phase Comp. Signal Input	12	V _{CC} Det. Input
2	GND	13	AFC. Voltage Input
3	Band SW Input (1)	14	Filter Terminal
4	Band SW Input (2)	15	H. BLK Pulse Input
5	31V Regulator (V _{CC1})	16	H. Sync. Input
6	AFC Down Output	17	V _{CC3}
7	AFC Up Output	18	BM Output
8	Reset Output	19	BU Output
9	C.E. Output	20	BV Output
10	V _{CC2}	21	BS Output
11	3V Ref. Voltage Input	22	BT Voltage Output

■ Block Diagram



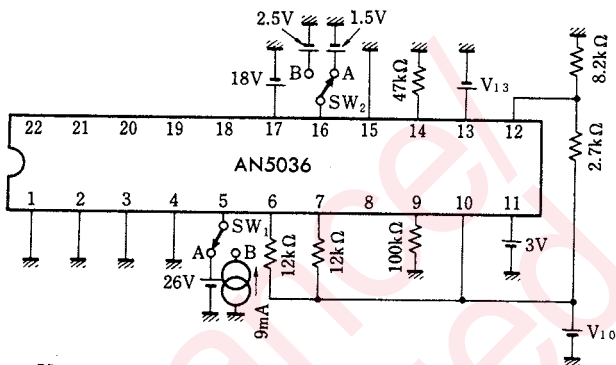
■ Absolute Maximum Ratings (Ta=25°C)

Item		Symbol	Rating	Unit
Voltage	Supply Voltage	V _{CC2}	7	V
		V _{CC3}	24	V
	Circuit Voltage	V ₆₋₂ , V ₇₋₂	0 + 7	V
V ₂₁₋₂		0 +27	V	
Current	Supply Current	I ₅	0 +13	mA
	Circuit Current	I ₁₇	0 +60	mA
		I ₁₈	-60 +20	mA
		I ₁₉ , I ₂₀	-30 0	mA
		I ₂₁	0 +30	mA
Power Dissipation		P _b	1100	mW
Temperature	Operating Ambient Temperature	T _{opr}	-20~+70	°C
	Storage Temperature	T _{stg}	-55~+150	°C

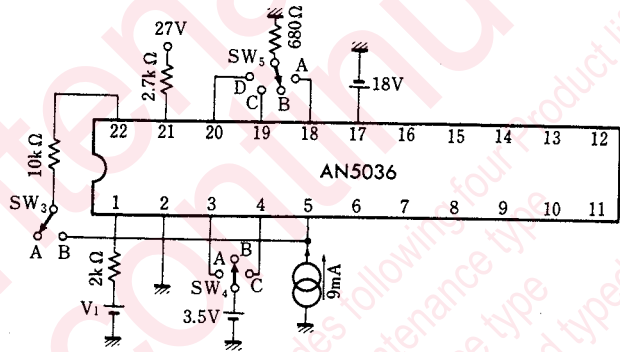
■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
V _{CC1} Circuit Current	I ₅	1	S ₁ =A, S ₂ =A, V ₁₀ =5V, V ₁₃ =3.5V	2.5	3.3	4.1	mA
V _{CC2} Circuit Current	I ₁₀	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =5V	4.2	5.6	7.2	mA
V _{CC3} Circuit Current	I ₁₇	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =5V	14	19	24	mA
SD Output Voltage	V ₆₋₂₍₁₎	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =3.5V	0	0.2	0.4	V
	V ₆₋₂₍₂₎	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =5.5V	4.9	5.0	5.1	V
	V ₆₋₂₍₃₎	1	S ₁ =B, S ₂ =B, V ₁₀ =5V, V ₁₃ =7.5V	0	0.2	0.4	V
SU Output Voltage	V ₆₋₂₍₄₎	1	S ₁ =B, S ₂ =B, V ₁₀ =5V, V ₁₃ =9.5V	4.9	5.0	5.1	V
	V ₇₋₂₍₁₎	1	S ₁ =B, S ₂ =B, V ₁₀ =5V, V ₁₃ =3.5V	4.9	5.0	5.1	V
	V ₇₋₂₍₂₎	1	S ₁ =B, S ₂ =B, V ₁₀ =5V, V ₁₃ =5.5V	0	0.2	0.4	V
	V ₇₋₂₍₃₎	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =7.5V	4.9	5.0	5.1	V
5V Power Supply	V ₇₋₂₍₄₎	1	S ₁ =B, S ₂ =A, V ₁₀ =5V, V ₁₃ =9.5V	0	0.2	0.4	V
	V ₈₋₂₍₁₎	1	S ₁ =B, S ₂ =A, V ₁₀ =3.5V, V ₁₃ =5V	0	0.1	0.3	V
Rise-up Detection	V ₈₋₂₍₂₎	1	S ₁ =B, S ₂ =A, V ₁₀ =4.5V, V ₁₃ =5V	4.2	4.4	4.5	V
	V ₉₋₂₍₁₎	1	S ₁ =B, S ₂ =A, V ₁₀ =3.5V, V ₁₃ =5V	2.2	2.6	3.0	V
Phase Comparison Amplifier Output Voltage	V ₉₋₂₍₂₎	1	S ₁ =B, S ₂ =A, V ₁₀ =4.5V, V ₁₃ =5V	0		0.2	V
	V ₂₂₋₂₍₁₎	2	S ₃ =B, S ₄ =B, S ₅ =B, V ₁ =2.2V	28	31	35	V
BM Output Voltage	V ₂₂₋₂₍₂₎	2	S ₃ =B, S ₄ =B, S ₅ =B, V ₁ =3.2V	0.4	1.0	1.6	V
BU Output Voltage	V ₁₈₋₂	2	S ₃ =A, S ₄ =B, S ₅ =A, V ₁ =0	12.5	13.6	14.7	V
BV Output Voltage	V ₁₉₋₂	2	S ₃ =A, S ₄ =C, S ₅ =C, V ₁ =0	11.1	12.2	13.5	V
BS Output Voltage	V ₂₀₋₂	2	S ₃ =A, S ₄ =B, S ₅ =D, V ₁ =0	11.1	12.3	13.5	V
	V ₂₁₋₂₍₁₎	2	S ₃ =A, S ₄ =B, S ₅ =B, V ₁ =0	0	0.4	0.8	V
V _{CC1} Voltage Regulator	V ₂₁₋₂₍₂₎	2	S ₃ =A, S ₄ =A, S ₅ =B, V ₁ =0	26.5		27	V
V _{CC1} Operating Resistance	V ₅₋₂	2	S ₃ =A, S ₄ =B, S ₅ =B, V ₁ =0	29	31.5	34	V
	I ₅	2	S ₃ =A, S ₄ =B, S ₅ =B, V ₁ =0		10	25	Ω

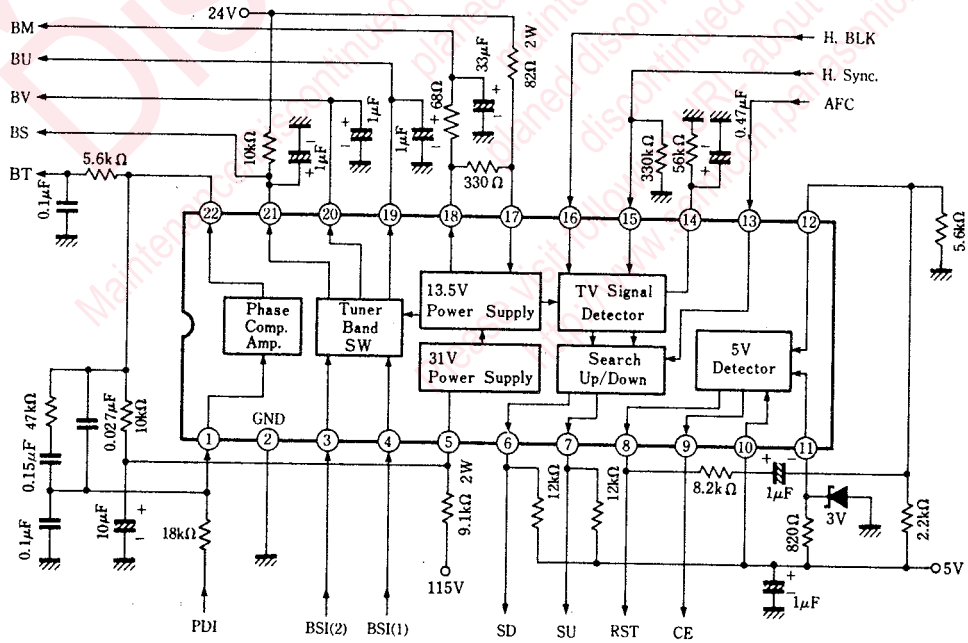
Test Circuit 1 ($I_{5,10,17}$, $V_{6-2(1),(2),(3),(4)}$, $V_{7-2(1),(2),(3),(4)}$, $V_{8-2(1),(2)}$, $V_{9-2(1),(2)}$)



Test Circuit 2 ($V_{22-2(1),(2)}$, V_{18-2} , V_{19-2} , V_{20-2} , $V_{21-2(1),(2)}$, V_{5-2} , r_5)



Application Circuit



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