

SANYO

No.4038

LA7916**Peripheral Circuit for TV / VCR Frequency
Synthesizer Channel Select System**

The LA7916 contains CPU/PLL-excluded peripheral circuits such as switch, +5V power supply (with $\overline{\text{RST}}$), sync detector, low-pass filter for color TV/VTR frequency synthesizer channel select system use.

Functions

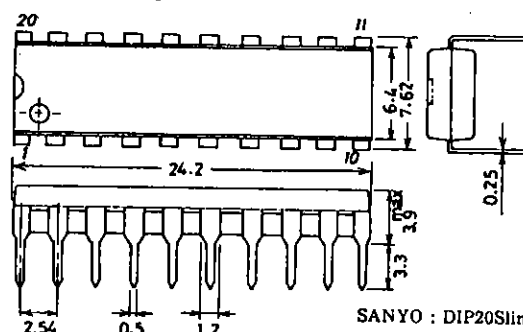
- Band switch (2-input 4-output)
- Video signal, flyback pulse, AFT output-used detection of tuning mode and horizontal sync mode
- +5V power supply, with $\overline{\text{RST}}$ output (for CPU)
- OP amp for low-pass filter (for frequency synthesizer)

Features

- The band switch truth table can be changed in a short period of time at the user's option.
- The band switch is of pnp output type which need not be driven externally.
- The OP amp for low-pass filter is excellent in pulse response because of its high-impedance input pin.

Maximum Ratings at $T_a = 25^\circ\text{C}$

Allowable Power Dissipation	$P_d \text{ max}$	$T_a \leq 65^\circ\text{C}$	770	unit
Operating Temperature	T_{opr}		-20 to +65	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$
[Band Switch Section]				
V_{CC1} Maximum Supply Voltage	$V_{13} \text{ max}$		15	V
Maximum Load Current	$I_{14}, I_{15}, I_{16}, I_{17} \text{ max}$		-50	mA
Maximum Applied Voltage	$V_{14}, V_{15}, V_{16}, V_{17} \text{ max}$	Output off	-15	V
Maximum Applied Voltage (Input)	$V_6 \text{ max}, V_7 \text{ max}$	$V_{CC1} = 14\text{V}$	12	V
[+5V Power Supply Section]				
V_{CC2} Maximum Supply Voltage	$V_{10} \text{ max}$		15	V
+5V Output Current	$I_8 \text{ max}$		-38	mA
[Tuning Detection Section]				
Maximum Input Voltage	$V_2 \text{ max}$		3.5	V
Maximum Input Voltage	$V_3 \text{ max}$		V_{CC1}	V
Maximum Input Voltage (Negative Polarity)	$-V_2 \text{ max}$		-1.4	V
Maximum Comparator Difference Voltage	$V_{19}-V_{20}$		6	V
Maximum Output Current	$I_1 \text{ max}$		-3	mA
[Operational Amplifier Section]				
Maximum Applied Voltage	$V_{12} \text{ max}$		35	V
Maximum Input Voltage	$V_{11} \text{ max}$		5.9	V

Package Dimensions(unit : mm)
3021B

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Operating Conditions at Ta = 25°C

		min	typ	max	unit
Supply Voltage Range	V ₁₀	9.0	12	14.0	V
	V ₁₃	9.0	12	14.0	V
Recommended Output Current in Tuning Detection Section	I ₄ , I ₅			3	mA
Recommended Load Current in OP Amp Section	I ₁₂		3	5	mA
Recommended Setting Range of Comparator Voltage in Tuning Detection Section	V ₁₉	2.7		7.0	V

Operating Characteristics at Ta = 25°C

			min	typ	max	unit
[Band Switch Section]						
Quiescent Current Dissipation	I _{CC1}			16.0		mA
Output Saturation Voltage	F1 to 4 sat	I _o = -40mA	0		0.7	V
Input 'H'-Level Voltage	V _{6TH} , V _{7TH}		2.2			V
Input 'L'-Level Voltage	V _{6TL} , V _{7TL}		0		0.8	V
Output Leakage Current	I _{FL}	-15V			-50	μA
[+5V Power Supply Section]						
Quiescent Current Dissipation	I _{CC2}			3.6		mA
+5V Output Voltage	V ₈	I _g = -30mA	4.5		5.5	V
RST Output Voltage	V ₉ sat	I _g = -100μA	4.5		5.5	V
[Tuning Detection Section]						
Input Threshold Voltage	V _{2TH}		0.4	0.72	1.5	V
Comparator Voltage	V _{C19}		3.7	4.0	4.3	V
Window Comparator 'H' Voltage	V _{CH}		5.7	6.0	6.3	V
Window Comparator 'L' Voltage	V _{CL}		2.7	3.0	3.3	V
Output Saturation Voltage	V ₄ sat	I _{sink} = 2mA	0	0.33	0.7	V
	V ₅ sat	I _{sink} = 2mA	0	0.33	0.7	V
Low-Pass Filter Output Current	I _{OL}		-1.80		-0.90	mA
Sync Separation Start Current	I _{1TH}		-150			μA
[Operational Amplifier Section]						
Output Saturation Voltage	V ₁₂ sat		0		0.3	V
Input Threshold Voltage	V _{11TH}		2.0		2.4	V
Input Current	I ₁₁				20	nA

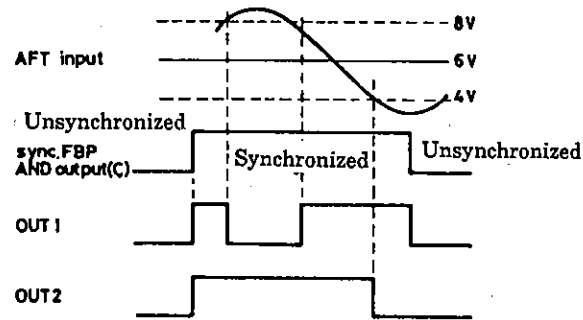
Band Switch Truth Table

Input		Output			
A (Pin 7)	B (Pin 6)	F1 (Pin 14)	F2 (Pin 15)	F3 (Pin 16)	F4 (Pin 17)
L	L	H	Z	Z	Z
H	L	Z	H	Z	Z
L	H	Z	Z	H	Z
H	H	Z	Z	Z	H

Operation of Tuning Detection Section

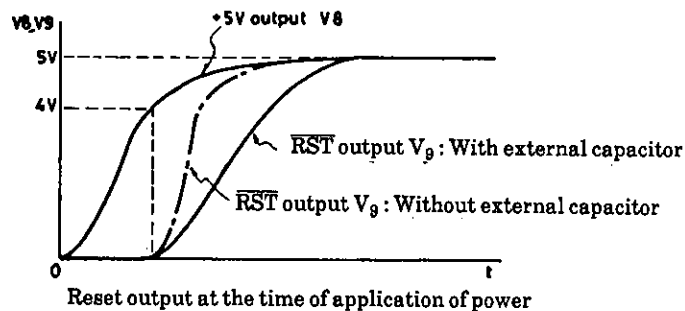
Tuning Mode	LPF Output	AFT	OUT 1	OUT 2
Unsynchronized	L	AFT-L	L	L
		AFT-C	L	L
		AFT-H	L	L
Synchronized	H	AFT-L	H	L
		AFT-C	H	H
		AFT-H	L	H

AFT-L: V_{AFT} < V_{CL}AFT-C: V_{CL} < V_{AFT} < V_{CH}AFT-H: V_{AFT} > V_{CH}

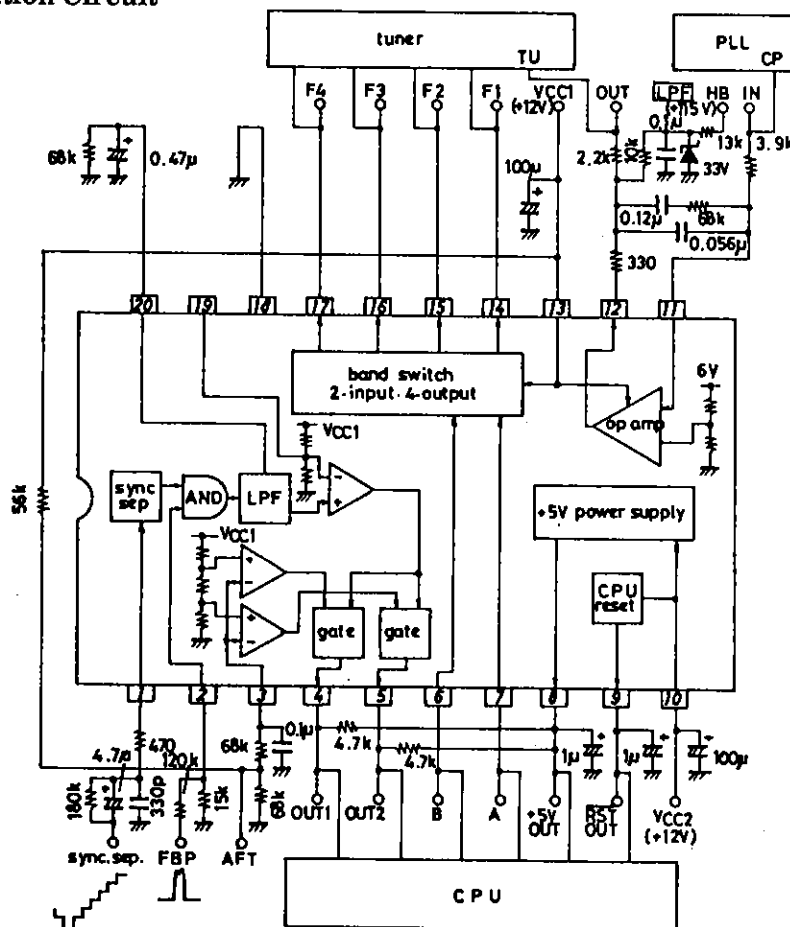


+5V Power Supply, $\overline{\text{RST}}$ Output

When +5V output V_8 becomes approximately 4V at the time of application of power, the reset signal is delivered at pin 9. The reset signal can be delayed by a capacitor (recommended value : $1\mu\text{F}$) externally connected to $\overline{\text{RST}}$ output V_9 .



Sample Application Circuit



VTR application: In VTR applications without flyback pulse, connected pin 2 to V_{CC} through a resistor

Unit (resistance: Ω , capacitance:F)

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