

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 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

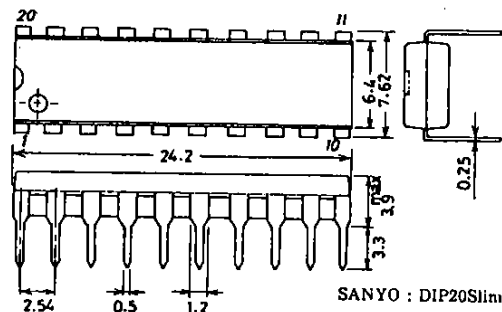
- The band switch truth table can be changed in a short period of time at the user's option.
- The band switch is of pnp output type which need not be driven externally.
- The OP amp for low-pass filter is excellent in pulse response because of its high-impedance input pin.

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

		$T_a \leq 65^\circ\text{C}$	unit
Allowable Power Dissipation	$P_d \text{ max}$	770	mW
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	$V_{14}, V_{15}, V_{16}, V_{17} \text{ max}$	-15	V
Maximum Applied Voltage (Input)	$V_6 \text{ max}, V_7 \text{ max}$	Output off $V_{CC1} = 14\text{V}$	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, I5}			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, V7TH}		2.2		V	
Input 'L'-Level Voltage	V _{6TL, V7TL}		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	

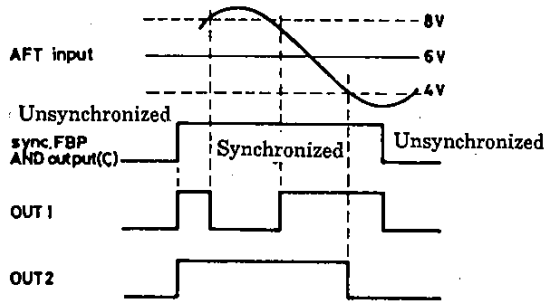
Band Switch Truth Table

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

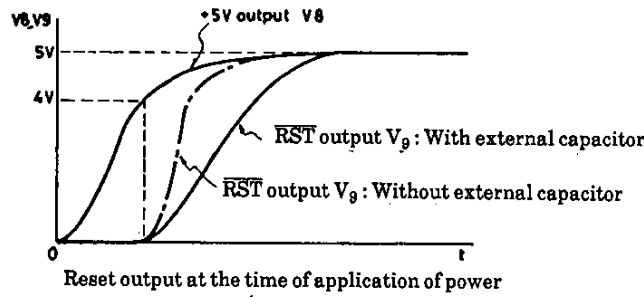
Tuning Mode	LPF Output	AFT	OUT 1	OUT 2
Unsynchronized	L	AFT-L	L	L
		AFT-C	L	L
		AFT-H	L	L
Synchronized	H	AFT-L	H	L
		AFT-C	H	H
		AFT-H	L	H

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

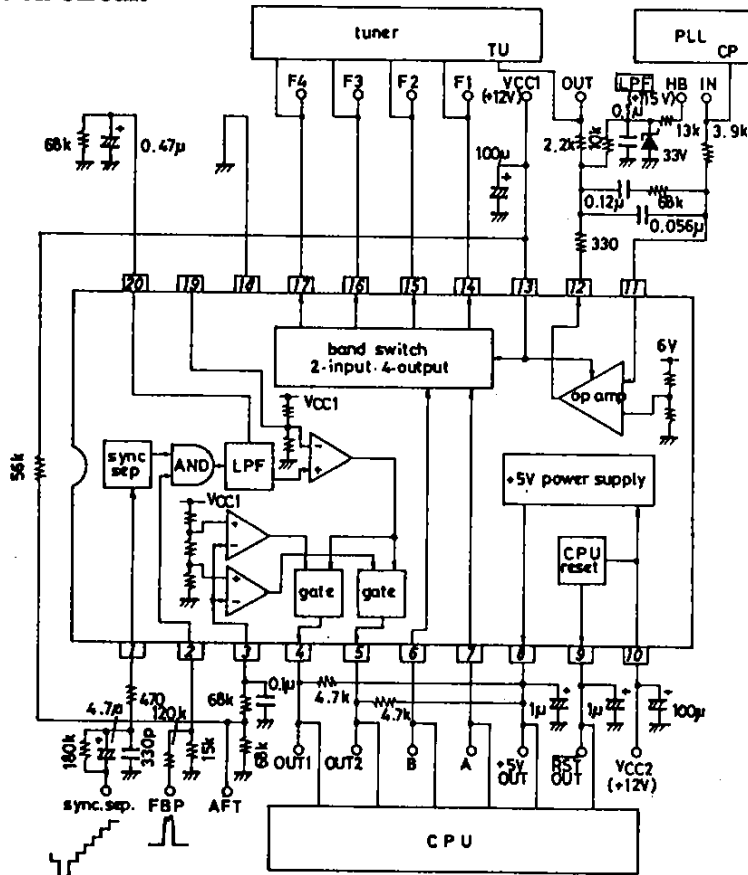


+5V Power Supply, \overline{RST} Output

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 : $1\mu F$) externally connected to \overline{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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