

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 RST output (for CPU)
- OP amp for low-pass filter (for frequency synthesizer)

Features

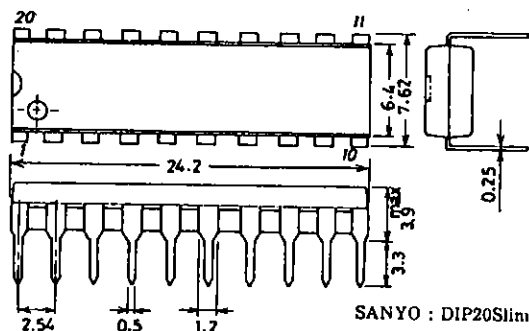
- The band switch truth table can be changed in a short period of time at the user's option.
- The band switch is of pnp output type which need not be driven externally.
- The OP amp for low-pass filter is excellent in pulse response because of its high-impedance input pin.

Maximum Ratings at Ta = 25°C

		Ta ≤ 65°C	unit
Allowable Power Dissipation	Pd max	770	mW
Operating Temperature	Topt	-20 to +65	°C
Storage Temperature	Tstg	-55 to +125	°C
[Band Switch Section]			
VCC1 Maximum Supply Voltage	V13 max	15	V
Maximum Load Current	I14, I15, I16, I17 max	-50	mA
Maximum Applied Voltage	V14, V15, V16, V17 max	Output off	V
Maximum Applied Voltage (Input)	V6 max, V7 max	VCC1 = 14V	12
[+5V Power Supply Section]			
VCC2 Maximum Supply Voltage	V10 max	15	V
+5V Output Current	I8 max	-38	mA
[Tuning Detection Section]			
Maximum Input Voltage	V2 max	3.5	V
Maximum Input Voltage	V3 max	VCC1	V
Maximum Input Voltage (Negative Polarity)	-V2 max	-1.4	V
Maximum Comparator Difference Voltage	V19-V20	6	V
Maximum Output Current	I1 max	-3	mA
[Operational Amplifier Section]			
Maximum Applied Voltage	V12 max	35	V
Maximum Input Voltage	V11 max	5.9	V

Package Dimensions

(unit : mm)
3021B



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 ₈ = -30mA	4.5	5.5	V	
RST Output Voltage	V ₉ sat	I ₉ = -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

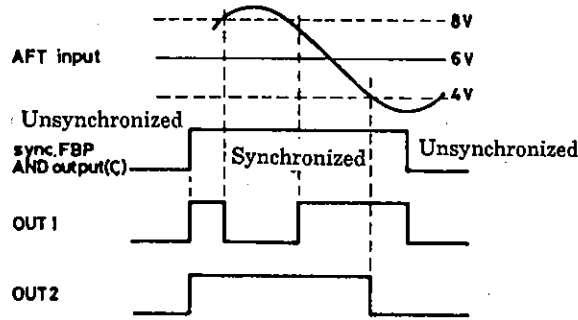
Input		Output			
A (Pin 7)	B (Pin 6)	F1 (Pin 14)	F2 (Pin 15)	F3 (Pin 16)	F4 (Pin 17)
L	L	H	Z	Z	Z
H	L	Z	H	Z	Z
L	H	Z	Z	H	Z
H	H	Z	Z	Z	H

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

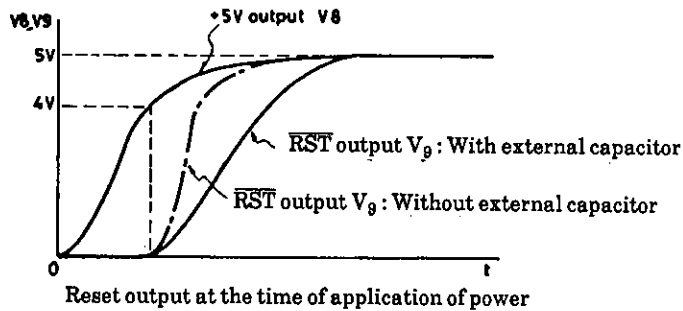
AFT-L: V_{AFT} < V_{CL}
 AFT-C: V_{CL} < V_{AFT} < V_{CH}
 AFT-H: V_{AFT} > V_{CH}

LA7916

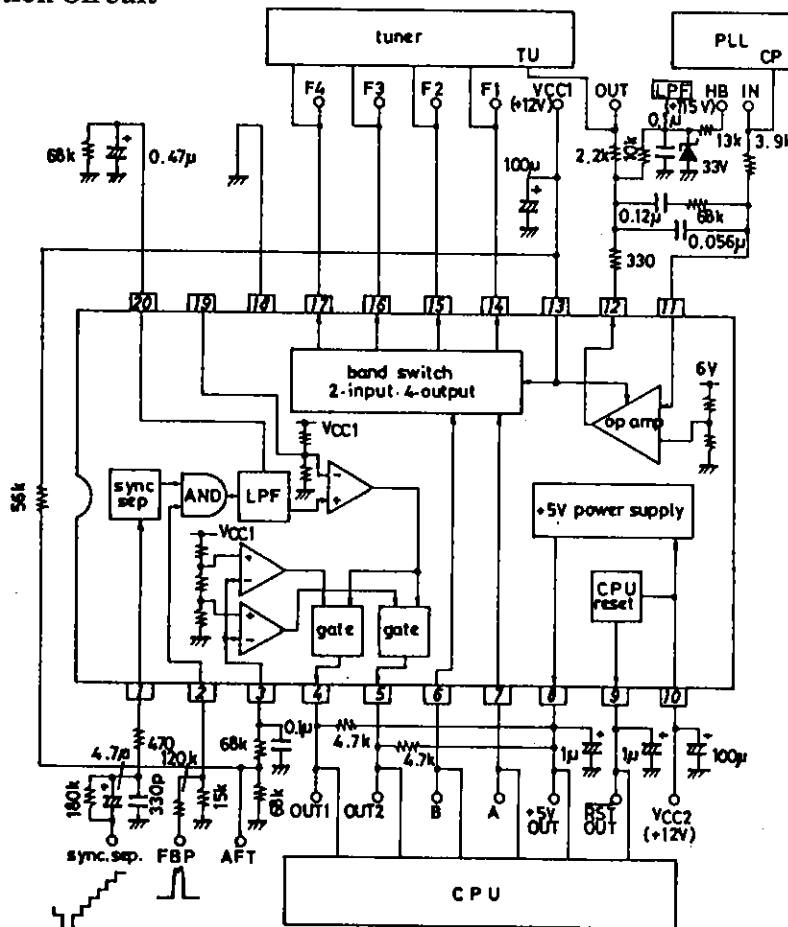


+5V Power Supply, $\overline{\text{RST}}$ Output

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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