Ordering number : EN 4038

Monolithic Linear IC

No.4038

LA7916

Peripheral Circuit for TV / VCR Frepuency Synthesizer Channel Select System

The LA7916 contains CPU/PLL-excluded peripheral circuits such as switch, +5V power supply (with $\overline{RST}$), 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 $\overline{RST}$ output (for CPU)
- OP amp for low-pass filter (for frequency synthesizer)

Features

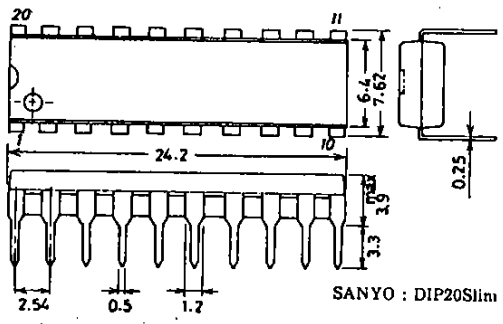
- The band switch truth table can be changed in a short period of time at the user's option.
- The band switch is of pnp output type which need not be driven externally.
- The OP amp for low-pass filter is excellent in pulse response because of its high-impedance input pin.

Maximum Ratings at Ta = 25°C

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

Package Dimensions

(unit :mm)
3021B



SANYO Electric Co.,Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

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 Curent Dissipation	I_{CC1}			16.0		mA
Output Saturation Voltge	F1 to 4 sat	Io = −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 Curent 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	Isink = 2mA	0	0.33	0.7	V
	V_5 sat	Isink = 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

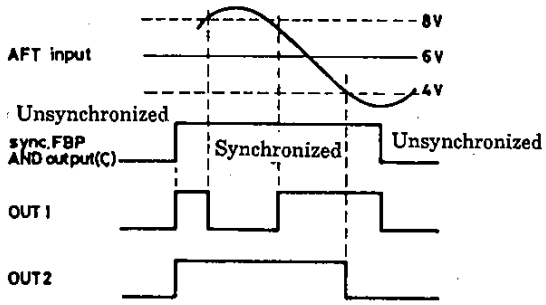
Band Switch Truth Table

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

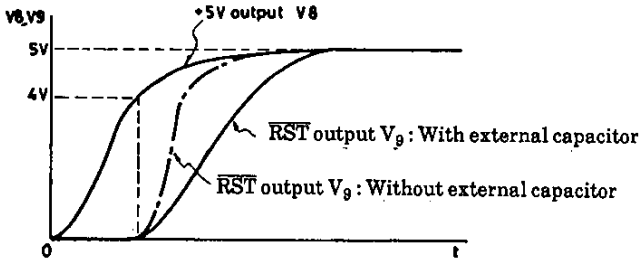
Tuning Mode	LPF Output	AFT	OUT 1	OUT 2
Unsynchronized	L	AFT-L	L	L
		AFT-C	L	L
		AFT-H	L	L
Synchronized	H	AFT-L	H	L
		AFT-C	H	H
		AFT-H	L	H

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



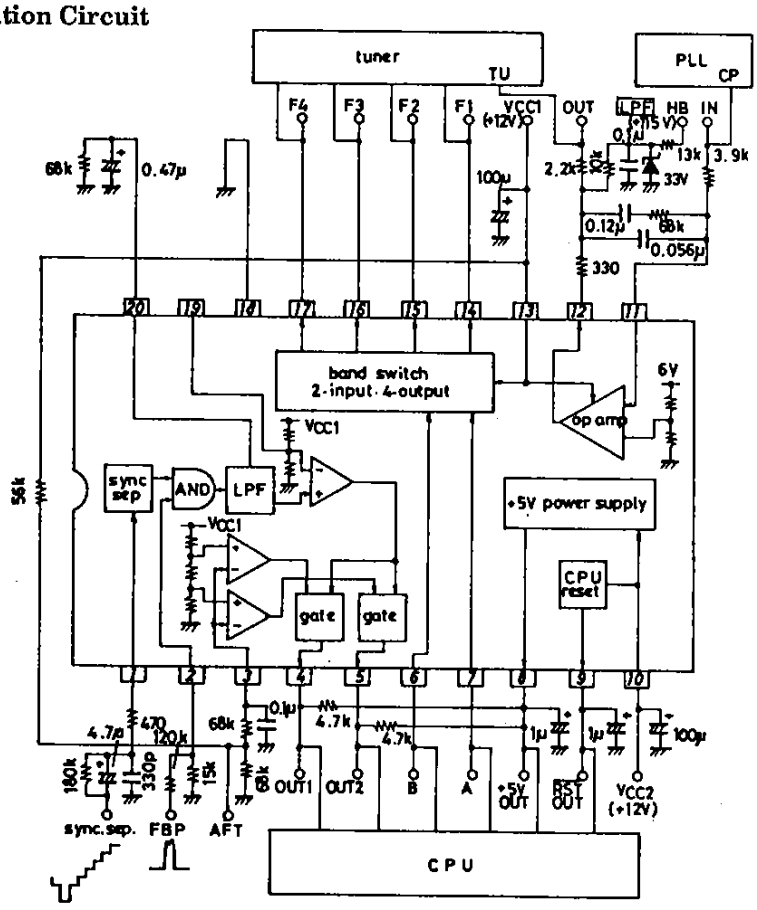
+5V Power Supply, $\overline{RST}$ Output

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 : 1μF) externally connected to $\overline{RST}$ output V_9.



Reset output at the time of application of power

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)