

No.4038

# 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**

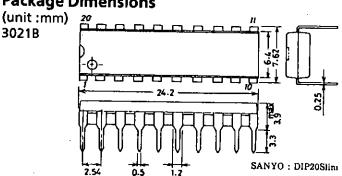
- · Band switch (2-input 4-output)
- · Video signal, flyback pulse, AFT output-used detection of tuning mode and horizontal sync mode
- $\cdot +5V$  power supply, with  $\overline{RST}$  output (for CPU)
- · OP amp for low-pass filter (for frequency synthesizer)

#### **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 <sub>CC1</sub> Maximum Supply Voltage	V <sub>13</sub> 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]		001		
V <sub>CC2</sub> Maximum Supply Voltage	V <sub>10</sub> max		15	V
+5V Output Current	I <sub>8</sub> max		-38	mÅ
[Tuning Detection Section]	•			
Maximum Input Voltage	V <sub>2</sub> max		3.5	V
Maximum Input Voltage	V <sub>3</sub> max		$v_{cc_1}$	v
Maximum Input Voltage	$-\mathbf{V_2}$ max		-1.4	v
(Negative Polarity)	_			•
Maximum Comparator	$V_{19}-V_{20}$		6	v
Difference Voltage				
Maximum Output Current	I <sub>1</sub> max		-3	mA
[Operational Amplifier Section]			_	
Maximum Applied Voltage	V <sub>12</sub> max		35	v
Maximum Input Voltage	V <sub>11</sub> max		5.9	v

Package Dimensions



Operating Conditions at Ta = 25°C Supply Voltage Range Recommended Output Current	$V_{10} \ V_{13} \ I_4, I_5$		min 9.0 9.0	typ 12 12	max 14.0 14.0	unit V V
in Tuning Detection Section Recommended Load Current	<b>-</b>			_		mA
in OP Amp Section	I <sub>12</sub>			3	5	mA.
Recommended Setting Range of Comparator Voltage in Tuning Detection Section	V <sub>19</sub>		2.7		7.0	V
•						
Operating Characteristics at Ta = 2 [Band Switch Section]	5°C		min	typ	max	unit
Quiescent Curent Dissipation	$I_{CC1}$			16.0		mA
Output Saturation Voltge	F1 to 4 sat	Io = -40 mA	0		0.7	V
Input 'H'-Level Voltage	$V_{6TH}, V_{7TH}$		2.2			V
Input 'L'-Level Voltage	$ m V_{6TL}$ , $ m V_{7TL}$		0		0.8	v
Output Leakage Current	${f I_{FL}}$	-15V			-50	$\mu A$
[+5V Power Supply Section]						•
Quiescent Curent Dissipation	$I_{CC2}$			3.6		mA
+5V Output Voltage	$V_8$	$I_8 = -30 \text{mA}$	4.5		5.5	V
RST Output Voltage	$V_9$ sat	$I_9 = -100 \mu A$	4.5		5.5	V
[Tuning Detection Section]		·				
Input Threshold Voltage	$ m V_{2TH}$		0.4	0.72	1.5	$\mathbf{v}$
Comparator Voltage	$V_{C19}$		3.7	4.0	4.3	v
Window Comparator 'H' Voltage	$ m V_{CH}$		5.7	6.0	6.3	v
Window Comparator 'L' Voltage	$ m V_{CL}$		2.7	3.0	3.3	V
Output Saturation Voltage	$V_4$ sat	Isink = 2mA	0	0.33	0.7	V
	$ m 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	$I_{1TH}$		<b>-150</b>			$\mu$ A
[Operational Amplifier Section]						•
Output Saturation Voltage	$ m V_{12}sat$		0		0.3	V
Input Threshold Voltage	$ m V_{11TH}$		2.0		2.4	V
Input Current	I <sub>11</sub>				20	nΑ

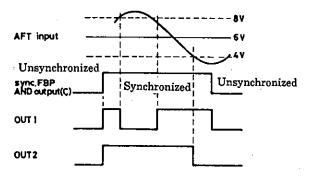
### **Band Switch Truth Table**

Input		Output			
A	B	F1	F2	F3	F4
(Pin 7)	(Pin 6)	(Pin 14)	(Pin 15)	(Pin 16)	(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**

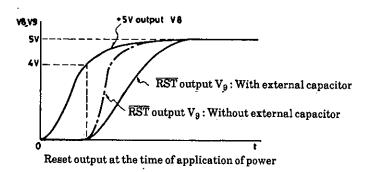
Tuning Mode	LPF Output	AFT	OUT 1	OUT 2
Unsynchronized	L	AFT-L AFT-C AFT-H	L L L	L L L
Synchronized	Н	AFT-L AFT-C AFT-H	H H L	L H H

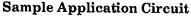
 $\begin{array}{c} \text{AFT-L}: \text{V}_{\text{AFT}} < \text{V}_{\text{CL}} \\ \text{AFT-C}: \text{V}_{\text{CL}} < \text{V}_{\text{AFT}} < \text{V}_{\text{CH}} \\ \text{AFT-H}: \text{V}_{\text{AFT}} > \text{V}_{\text{CH}} \end{array}$ 

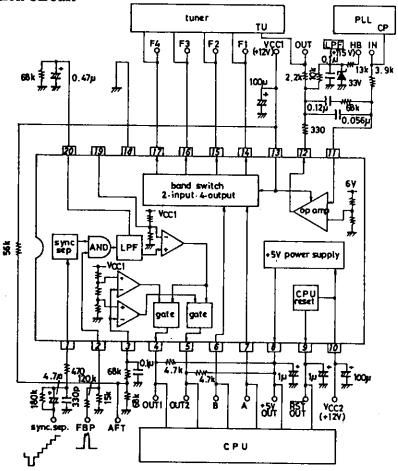


+5V Power Supply, RST Output

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  $V_9$ .







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

Unit (resistance:  $\Omega$ , capacitance: F)

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