



LA7116

VCR Servo Interface

Overview

The LA7116 is a VCR servo interface IC that can be used in conjunction with the LC7412, 7413 to form a servo system with a good cost performance.

Functions

- Drum FG amplifier.
- Capstan FG amplifier.
- CTL amplifier.
- Drum PG amplifier.
- OP amplifier × 2.

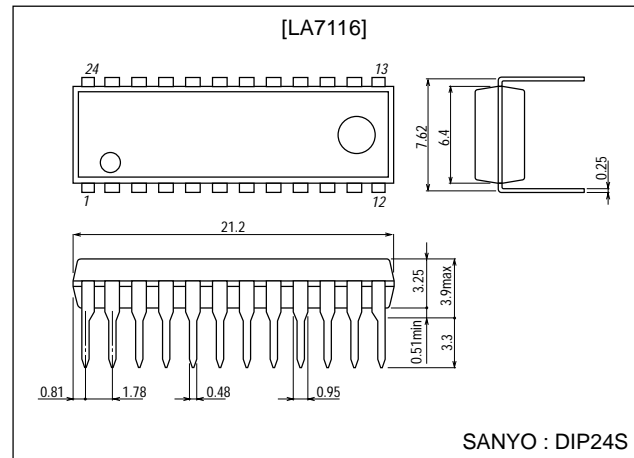
Features

- The operational amplifier section can be operated from a voltage of up to 12V.
- Selectable threshold voltage of CLT Schmitt section.

Package Dimensions

unit:mm

3067-DIP24S



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC1}	$T_a \leq 65^\circ\text{C}$	7.0	V
	V_{CC2}		15.0	V
Allowable power dissipation	$P_d \text{ max}$		200	mW
Operating temperature	T_{opr}		-20 to +65	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to +125	$^\circ\text{C}$

Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5.0	V
Operating voltage	$V_{CC \text{ op1}}$		4.5 to 5.5	V
	$V_{CC \text{ op2}}$		4.5 to 13.0	V

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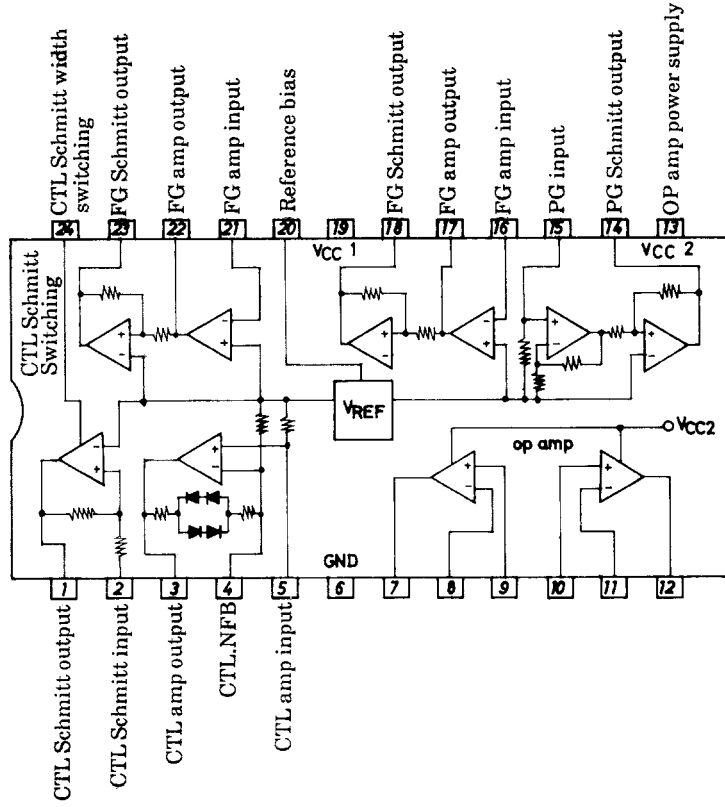
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Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}=5\text{V}$

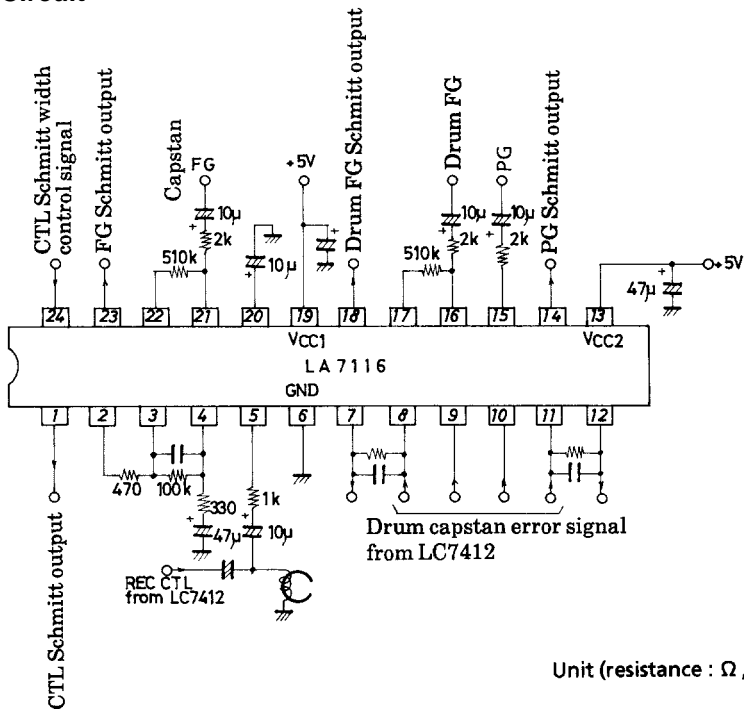
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit current	I_{CC1}	Quiescent, no load	2.0	4.0	6.0	mA
CTL amplifier bias voltage	V_5	Quiescent, no load	2.4	2.5	2.6	V
PG amplifier bias voltage	V_{15}	Quiescent, no load	2.4	2.5	2.6	V
PG amplifier bias voltage	V_{16}	Quiescent, no load	2.4	2.5	2.6	V
	V_{21}	Quiescent, no load	2.4	2.5	2.6	V
Reference voltage	V_{20}	Quiescent, no load	2.4	2.5	2.6	V
CTL output voltage	V_{OHCTL}	$I_1=+0.5\text{mA}$	4.0			V
	V_{OLCTL}	$I_1=-0.5\text{mA}$			1.0	V
PG output voltage	V_{OHPG}	$I_{14}=+0.5\text{mA}$	4.0			V
	V_{OLPG}	$I_{14}=-0.5\text{mA}$			1.0	V
FG output voltage	V_{OHFG1}	$I_{18}=+0.5\text{mA}$	4.0			V
	V_{OLFG1}	$I_{18}=-0.5\text{mA}$			1.0	V
	V_{OHFG2}	$I_{23}=+0.5\text{mA}$	4.0			V
	V_{OLFG2}	$I_{23}=-0.5\text{mA}$			1.0	V
CTL amplifier gain	G_{CTL}	SG1 : 500Hz, 1Vp-p, $V_3=1\text{Vp-p}$	48	50	52	dB
CTL amplifier frequency characteristic	ΔG_{CTL}	SG1 : 10Hz, 1Vp-p, $V_3=1\text{Vp-p}$	-6	-2		dB
FG amplifier gain	G_{FG1}	SG3 : 500Hz, 1Vp-p, $V_{17}=1\text{Vp-p}$	46	48	50	dB
	G_{FG2}	SG4 : 500Hz, 1Vp-p, $V_{22}=1\text{Vp-p}$	46	48	50	dB
FG amplifier frequency characteristic	ΔG_{FG1}	SG3 : 20kHz, 1Vp-p, $V_{17}=1\text{Vp-p}$	-10	-6		dB
	ΔG_{FG2}	SG4 : 20kHz, 1Vp-p, $V_{22}=1\text{Vp-p}$	-10	-6		dB
PG schmitt width	V_{HPG}	SG2 : 500Hz	48	60	72	mVp-p
FG schmitt width	V_{HFG1}	SG3 : 500Hz	185	230	275	mVp-p
	V_{HFG2}	SG4 : 500Hz	185	230	275	mVp-p
CTL schmitt width	V_{HCTL1}	SG1 : 500Hz, S1=a	160	200	240	mVp-p
CTL schmitt width (search)	V_{HCTL2}	SG1 : 500Hz, S1=b	320	400	480	mVp-p
CTL schmitt width (slow)	V_{HCTL3}	SG1 : 500Hz, S1=c	+72	+92	+112	mV
CTL schmitt width (slow)	V_{HCTL4}	SG1 : 500Hz, S1=c	+34	+54	+70	mV
CTL schmitt width switching level	V_{24H}	S1=d	3.0	3.5	4.0	V
	V_{24L}	S1=d	1.0	1.5	2.0	V
[Operational amplifier characteristics] at $V_{CC}=5$ to 12V						
Circuit current	I_{CC2}		0.3	0.8	1.2	mA
Input offset voltage	V_{IO1}			± 2	± 7	mV
	V_{IO2}			± 2	± 7	mV
Input offset current	I_{IO1}			± 5	± 50	nA
	I_{IO2}			± 5	± 50	nA
Input bias current	I_{B1}			45	250	nA
	I_{B2}			45	250	nA
Output current (source)	I_{OSOC1}		10			mA
	I_{OSOC2}		10			mA
Output current (sink)	I_{OSNK1}		10			mA
	I_{OSNK2}		10			mA
Common-mode input voltage range	V_{ICM}		0		V_{CC} to 1.5	V
Output voltage range	V_{OUT}		0		V_{CC} to 1.5	V

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Equivalent Circuit Block Diagram



Sample Application Circuit



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