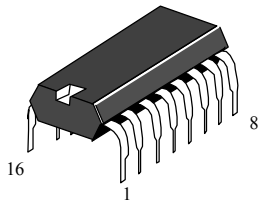
SECAM decoder

ILA8395N

FEATURES

- Fully integrated filters
- Alignment free
- For use with baseband delay



ORDERING INFORMATION

ILA8395N DIP
T_A = -40° to 125°C

GENERAL DESCRIPTION

The ILA8395N is a self-calibrating, fully integrated SECAM decoder. The IC should preferably be used in conjunction with the PAL/NTSC decoder ILA8362ANS (TDA8362A) or TDA8366 and with the switched capacitor baseband delay circuit ILA4661 (TDA4661, TDA4660). The IC incorporates HF and LF filters, a demodulator and an identification circuit (luminance is not processed in this IC). The IC needs no adjustments and very few external components are required. A highly stable reference frequency is required for calibration and a two-level sandcastle pulse for blanking and burst gating.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_p	Positive supply voitage; pin 3	7.2	8.8	V
$V_{16(p-p)}$	Composite video input voltage (peak -to- peak value); pin 16	-	1.5	V
T_{stg}	Storage temperature range	-25	+150	°C
T_{amb}	Operation ambient temperature range	-25	+70	°C

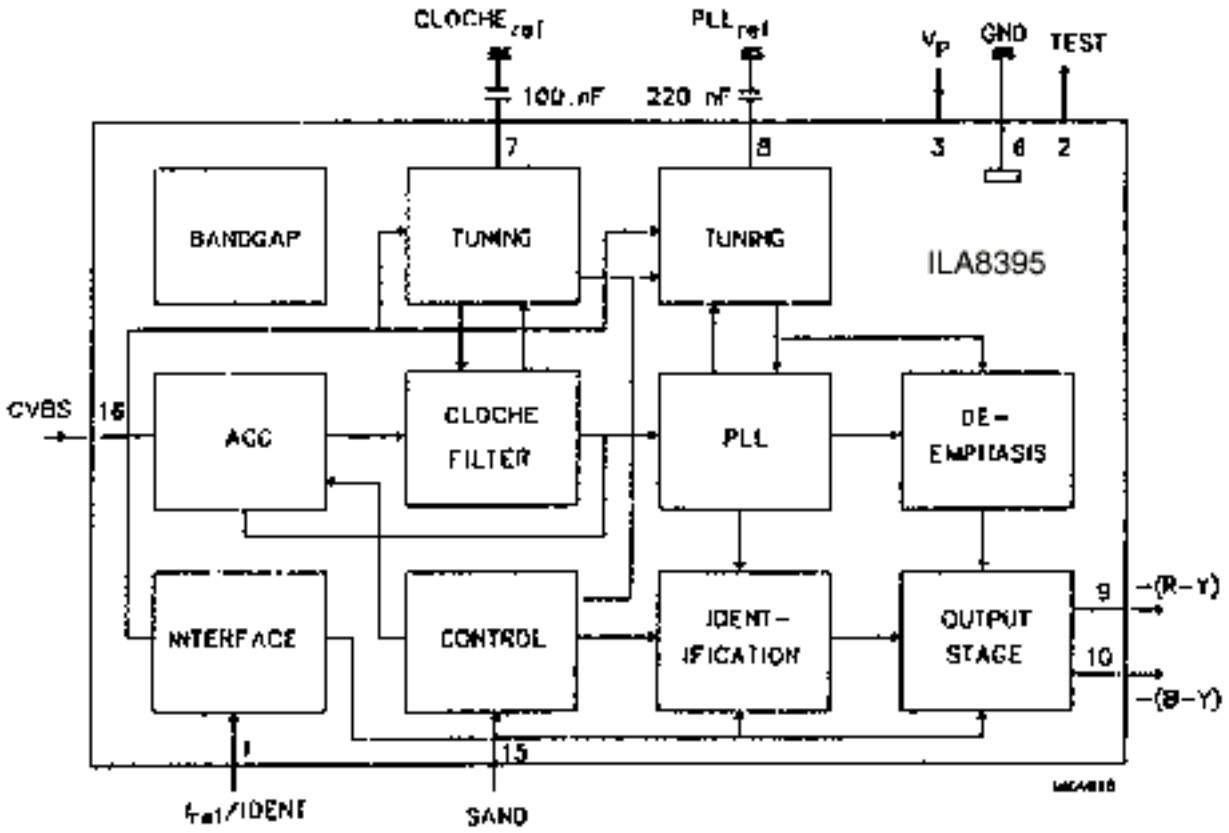


Fig.1 Block diagram.

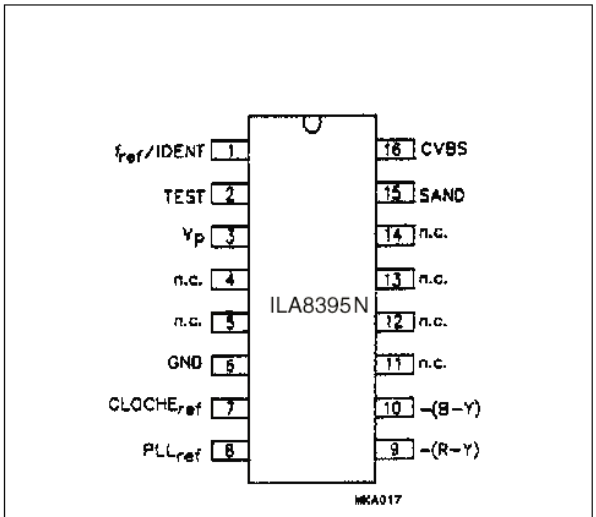


Fig.2 Pin configuration

PINNING

SYMBOL	PIN	DESCRIPTION
f_{ref} IDENT	1	reference frequency input/identification input
TEST	2	test output
V_P	3	positive supply voltage
n.c.	4	not connected
n.c.	5	not connected
GND	6	ground
$CLOCHE_{ref}$	7	Cloche reference filter
PLL_{ref}	8	PLL reference
-(R-Y)	9	-(R-Y) output
-(B-Y)	10	-(B-Y) output
n.c.	11	not connected
n.c.	12	not connected
n.c.	13	not connected
n.c.	14	not connected
SAND	15	sandcastle pulse input
CVBS	16	video (chrominance) input

FUNCTIONAL DESCRIPTION

The ILA8395N is a self-calibrating SECAM decoder designed for use with a baseband delay circuit. During frame retrace a 4.433619 MHz reference frequency is used to calibrate the filters and the demodulator. The reference frequency should be very stable during this period.

The Cloche filter is a gyrator-capacitor type filter the resonance frequency of which is controlled during the calibration period and offset during scan; this ensures the correct frequency during calibration. The demodulator is a Phase-Locked Loop (PLL) type demodulator which uses the frequency reference and the bandgap reference to force the PLL to the required demodulation characteristic.

The low frequency de-emphasis is matched to the PLL and is controlled by the tuning voltage of the PLL. A digital identification circuit scans the incoming signal for SECAM (only line-identification is implemented). The identification circuit needs to communicate with the ILA8362ANS to guarantee that the output signal from the decoder is only available when no PAL signal has been identified. If a SECAM signal is decoded a request for colour-on is transmitted to pin 1 (current is sunk). If the signal request is granted (i.e. pin 1 is HIGH therefore no PAL) the colour difference outputs ($\tilde{(}\tilde{B}Y$) and $\tilde{(}\tilde{R}Y$)) from the ILA8362 are high impedance and the output signals from the ILA8395N are switched ON.

If no SECAM signal is decoded during a two-frame period the demodulator will be initialized before another attempt is made also during a two-frame period. The CD outputs will be blanked or high-impedance depending on the logic level at pin 1.

A two-level sandcastle pulse generates the required blanking periods and, also, clocks the digital identification pulse on the falling edge of the burst gate pulse. To enable the calibration period to be defined the vertical retrace is discriminated from the horizontal retrace, this is achieved by measuring the width of the blanking period.

APPLICATION INFORMATION

The leakage current at pin 8 should be well below 20 nA to meet the specification of the black levels (C8 = 220 nF).

The leakage current at pin 7 should be well below 60 nA to meet the specification of the Cloche resonance frequency (C7 = 100 nF).

The capacitors C7 and C8 should be connected to the ground pin as close as possible to the package. If not, this can result in a black level error for both channels.

TEST INFORMATION

The performance of the Cloche filter can be measured at pin 2. The use of a FET-probe is advised for low capacitive loading.

CHARACTERISTICS

VP = 8.0 V; Tamb = 25 °C; unless otherwise specified

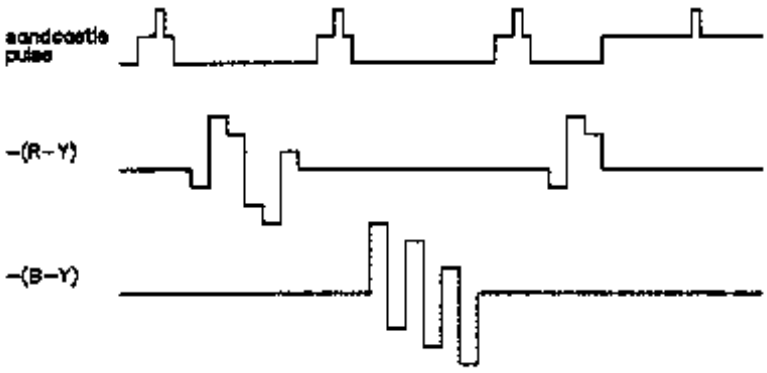
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply (pin 3)						
V_p	positive supply voltage		7.2	8.0	8.8	V
I_p	supply current			18	25	mA
P_{tot}	Total power dissipation		-	144	220	mV
CVBS input (pin 10)						
$V_{16(p-p)}$	composite video input voltage (peak to peak value)		-	1.0	1.5	V
$V_{16(p-p)}$	chrominance video input voltage (peak to peak value)	Note 1	15	-	300	mV
Z_I	Input impedance	Note 2	-	15	-	kΩ
CLOCHE (pin 7)						
V_{td}	tuning voltage; pin 7		2.5	3.5	4.5	V
f_0	resonance frequency	Note 3	4.266	4.286	4.306	MHz
B	bandwidth		241	268	295	kHz
Demodulator						
V_{td}	tuning voltage; pin 8		3.5	-	4.8	V
$V_{0(p-p)}$		100/75 color bar	0.97	1.05	1.13	V
$V_{0(p-p)}$		100/75 color bar	1.23	1.33	1.43	V
NLE	non-lineanty error	100/75 color bar note 4	-	-	3	%
-(B-Y) /(R-Y)	ratio of -(B-Y) and -(R-Y)		1.23	1.27	1.32	
F_{be}-(R-Y)	black level error – (R-Y)	Note 5	-	-	5	kHz
F_{be}-(B-Y)	black level error – (B-Y)	Note 5	-	-	7	kHz
V_o	Output voltage levelduring blanking		-	2.8	-	V
B_o	Output bankwidth		-	1.3	-	MHz
S/N	signal-to-noise ratio	Note 6	40	-	-	dB
f_p	pole-frequency LF de-emphasis		77	85	93	kHz
f_p/f_o	ratio of pole and zero frequency		-	3	-	
$V_{rh(p-p)}$	residual harmonic voltage (peak to peak value)		-	-	10	mV
$Z_{o(e)}$	output impedance SECAM enabled	Pin 1 HIGH	-	-	600	Ω
$Z_{o(d)}$	output impedance SECAM disabled	Pin 1 LOW	1	-	-	MΩ
Sandcastle pulse						
V_{bl}	blanking detection level		1.0	1.25	1.5	V
V_{b0}	burst gate detection level		3.5	3.85	4.2	V
t_f	falling edge of burst gate to start syne		8.5	9.0	9.5	µs
Reference/communication						
f_{ref}	reference frequency	Note 7	-	4.4336	-	MHz
$V_{ref(p-p)}$	reference voltage amplitude (peak to peak value)		0.20	-	0.50	V

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{ed}	SECAM enable detection level; pin 1		-	2.8	3.3	V
V_{dd}	SECAM disabled detection level; pin 1	Note 8	1.5	2.0	-	V
I_s	sink current at SECAM identification; pin 1	Note 9	-	150	-	μA
Identification						
t_i	Identification time		-	4	-	frames
H	colour on/off hysteresis		3	-	-	dB

Notes to the characteristics

1.If measured in the burst-period of a blue line.
2.The video input is AC-coupled.
3.During scan.
4. Measured as 100% x (IVuI - IVII) / (IVuI + IVlI); see Fig.3.
5. Converted to input frequency error.
6. Defined as the ratio between the peak-to-peak value of the B-Y component of the demodulated 100/75 colour bar and the peak-to-peak value of the noise.
7. The reference should be stable during frame blanking.
8. The SECAM enable and disable timing should preferably be at the end of the frame blanking.
9. The externally supplied voltage should exceed 0.5 V.

TIMING



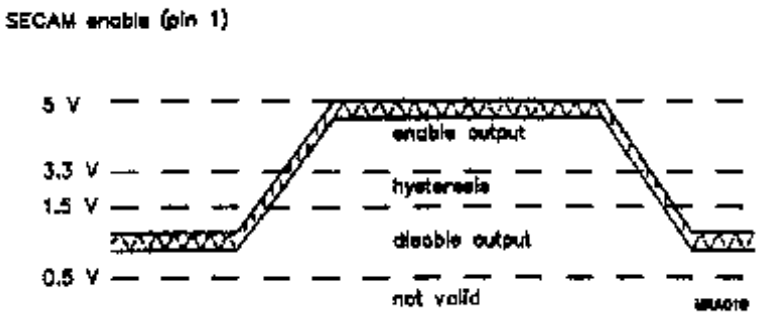


Fig.4 Timing waveforms.

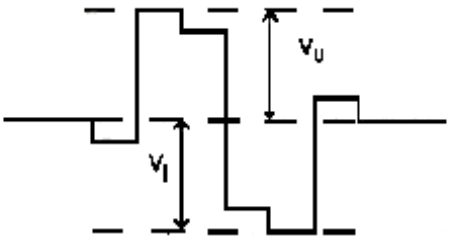
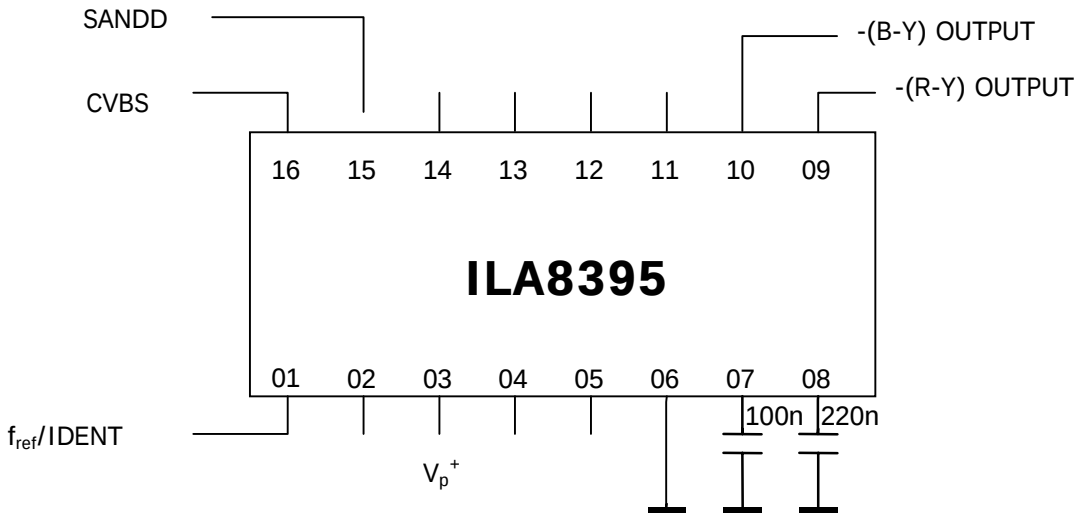
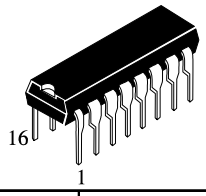
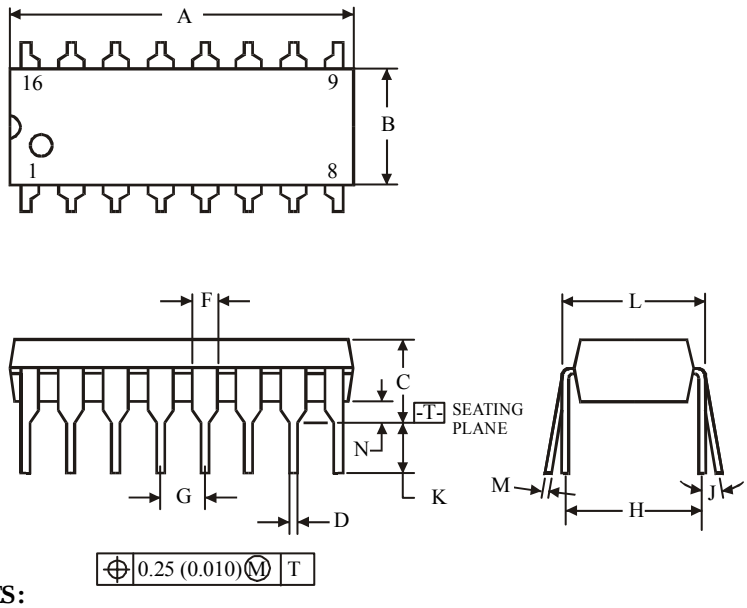


Fig.3 Non-linearity definition.



N SUFFIX PLASTIC DIP
(MS - 001BB)





	Dimension, mm	
Symbol	**MIN**	**MAX**
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

1. Dimensions “A”, “B” do not include mold flash or protrusions.
   Maximum mold flash or protrusions 0.25 mm (0.010) per side.