

May 1999

**OBSOLETE PRODUCT  
NO RECOMMENDED REPLACEMENT**  
Call Central Applications 1-800-442-7747  
or email: centapp@harris.com

## TV Sync/AGC/Horizontal Signal Processor

### Features

- Horizontal Oscillator with AFC
- Sync Separator with Noise Immunity
- Strobed AGC System
- IF AGC Output
- Delayed Outputs for Forward or Reverse AGC Tuners
- Internal Noise Threshold
- High-Impedance Video Input
- Choice of Dual External Time Constants for Sync Separator Noise Immunity
- RF AGC Delay Externally Controlled
- Output Short-Circuit Protection

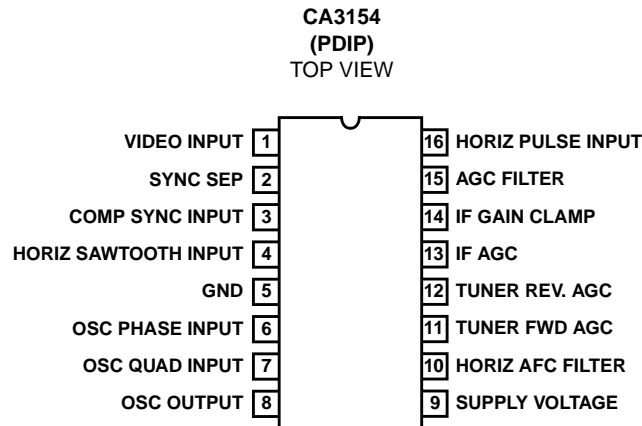
### Description

The CA3154 is a monolithic integrated circuit TV signal processor designed for use in color or monochrome receivers. Circuit functions include a horizontal oscillator with AFC, a sync separator, and a keyed AGC system. The AGC system provides output signals for IF (reverse) and tuner (forward and/or reverse). The wide frequency-range horizontal oscillator has high stability at 503.5kHz. When the CA3154 is used in conjunction with horizontal/vertical countdown circuits, the need for horizontal and vertical hold controls is eliminated.

### Part Number Information

PART NUMBER	TEMP. RANGE (°C)	PACKAGE	PKG. NO.
CA3154E	-40 to 85	16 Ld PDIP	E16.3

### Pinout



# CA3154

## Absolute Maximum Ratings

DC Supply Voltage (V+ to V-) ..... 15V

## Operating Conditions

Temperature Range ..... -40°C to 85°C

## Thermal Information

Thermal Resistance (Typical, Note 1)

$\theta_{JA}$  (°C/W)

PDIP Package ..... 80

Maximum Junction Temperature (Plastic Package) ..... 150°C

Maximum Storage Temperature Range ..... -65°C to 150°C

Maximum Lead Temperature (Soldering 10s) ..... 300°C

*CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.*

### NOTE:

1.  $\theta_{JA}$  is measured with the component mounted on an evaluation PC board in free air.

## Electrical Specifications Terminal 5 to GND, and Terminal 9 to +12V, Unless Otherwise Specified

PARAMETER	SYMBOL	TEST CONDITIONS (TERMINALS CONNECTED AS SHOWN BELOW)	TEMP (°C)	MIN	TYP	MAX	UNITS
Power Supply Current	$I_g$	Measure (9)	25	10	-	22	mA
Video Inverter Voltage	$V_2$	(1) to +4V, (2) 12k $\Omega$ to GND, (3) 27k $\Omega$ to GND, Measure (2)	25	5.2	-	6.4	V
Sync Separator High Output Voltage	$V_{3H}$	(1) to +4V, (2) 12k $\Omega$ to GND, (3) 27k $\Omega$ to GND, Measure (2)	25	10.7	-	-	V
Sync Separator Low Output Voltage	$V_{3L}$	(1) to +4V, (3) 27k $\Omega$ to GND, Measure (3)	25	-	-	1.3	V
Video Noise Clamp Voltage	$V_3$ Clamp	(1) to +3.1V, (3) 27k $\Omega$ to GND, Measure (3)	25	10.7	-	-	V
AGC Discharge Current	$I_{15}$ Discharge	(1) to +4.4V, (2) 10k $\Omega$ to GND, (15) 470 $\Omega$ to +6V, (16) 27k $\Omega$ to 12V, Measure (15)	25	0.6	-	1.4	mA
AGC Charge Current	$I_{15}$ Charge	(1) to +3.45V, Otherwise, Same as Above	25	-2.1	-	-4.8	mA
AGC Comparator Leakage	$I_{15}$ Leakage	(1) to +3.45V, (2) 10k $\Omega$ to GND, (15) 4.7k $\Omega$ to +6V, Measure (15)	25	-20	-	20	$\mu$ A
AGC Threshold Voltage	$V_{1TH}$	Adj. (1) for $I_{15} = 0 \pm 0.1$ mA, (2) 10k $\Omega$ to GND, (15) 4.7k $\Omega$ to +6V, (16) 27k $\Omega$ to +12V, Measure (1)	25	3.8	4	4.3	V
Minimum IF AGC	$V_{13L}$	(11) 10k $\Omega$ to GND, (12) 10k $\Omega$ to +12V, (13) 22k $\Omega$ to +5V, (14) 1k $\Omega$ to +2.95V, (16) 1k $\Omega$ to +2.2V, Measure (13)	25	0.75	-	1.25	V
Forward Tuner AGC Leakage Current	$I_{11}$ Leakage	(11) 10k $\Omega$ to GND, (12) 10k $\Omega$ to 12V, (13) 2.2k $\Omega$ to +5V, (14) 1k $\Omega$ to +2.95V, (15) 1k $\Omega$ to +5.3V, Measure (11)	25	-20	-	20	$\mu$ A
Reverse Tuner AGC Leakage	$I_{12}$ Leakage	Same as Above, but Measure (12)	25	-10	-	10	$\mu$ A
IF AGC High Voltage	$V_{13H}$	Same as Above, but Measure (13)	25	3.65	-	4.15	V
Forward Tuner AGC Low Voltage	$V_{11L}$	(11) 3.6k $\Omega$ to GND, (12) 3.16k $\Omega$ to +12V, (13) 2.2k $\Omega$ to +5V, (14) 1k $\Omega$ to +2.95V, (15) 1k $\Omega$ to +7.9V, Measure (11)	25	0.8	-	3.2	V
Reverse Tuner AGC Low Voltage	$V_{12L}$	Same as Above, but Measure (12)	25	1.65	-	3.25	V
Maximum IF AGC Voltage	$V_{13H}$	(11) 10k $\Omega$ to GND, (12) 10k $\Omega$ to +12V, (13) 2.2k $\Omega$ to +5V, (14) 1k $\Omega$ to +2.95V, (15) 1k $\Omega$ to +7.9V, Measure (13)	25	4.85	-	5.2	V
Phase Detector Leakage Current	$I_{10L}$	(2) 10k $\Omega$ to GND, (3) to GND, (4) 5k $\Omega$ to +3.8V, (10) 10k $\Omega$ to +6V, Limit GND at (3) to 10s, Measure 10	25	-5	-	5	$\mu$ A

# CA3154

## Electrical Specifications Terminal 5 to GND, and Terminal 9 to +12V, Unless Otherwise Specified (Continued)

PARAMETER	SYMBOL	TEST CONDITIONS (TERMINALS CONNECTED AS SHOWN BELOW)	TEMP (°C)	MIN	TYP	MAX	UNITS
Phase Detector Bias Voltage	$V_4$		25	2.65	-	3.1	V
Oscillator Output Voltage	$V_6$	Connect Oscillator Loop Shown in Test Circuit to (6), (7), (8); (3) to GND for 10s Max, Measure (6)	25	0.6	-	1.6	$V_{p-p}$
Oscillator Free-Running Frequency	$f_{6FR}$	Same as Above	25	475	-	535	kHz
Oscillator Frequency High	$f_{6H}$	Connect Oscillator Circuit Shown in Test Circuit to (10), (7), (8); (2) 10k $\Omega$ to GND, (4) 5k $\Omega$ to +18V, Measure (6)	25	520	-	-	kHz
Oscillator Frequency Low	$f_{6L}$	Same as Above, Except (4) 5k $\Omega$ to +3.8V	25	-	-	485	kHz
Sync Separator Short Circuit	$I_3$ Max	(3) 10 $\Omega$ to GND for 10s Max	25	-	-	40	mA
Oscillator Output Short Circuit	$I_8$ Max	(8) 10 $\Omega$ to GND for 10s Max (3) 10 $\Omega$ to GND for 10s Max	25	-	-	130	mA

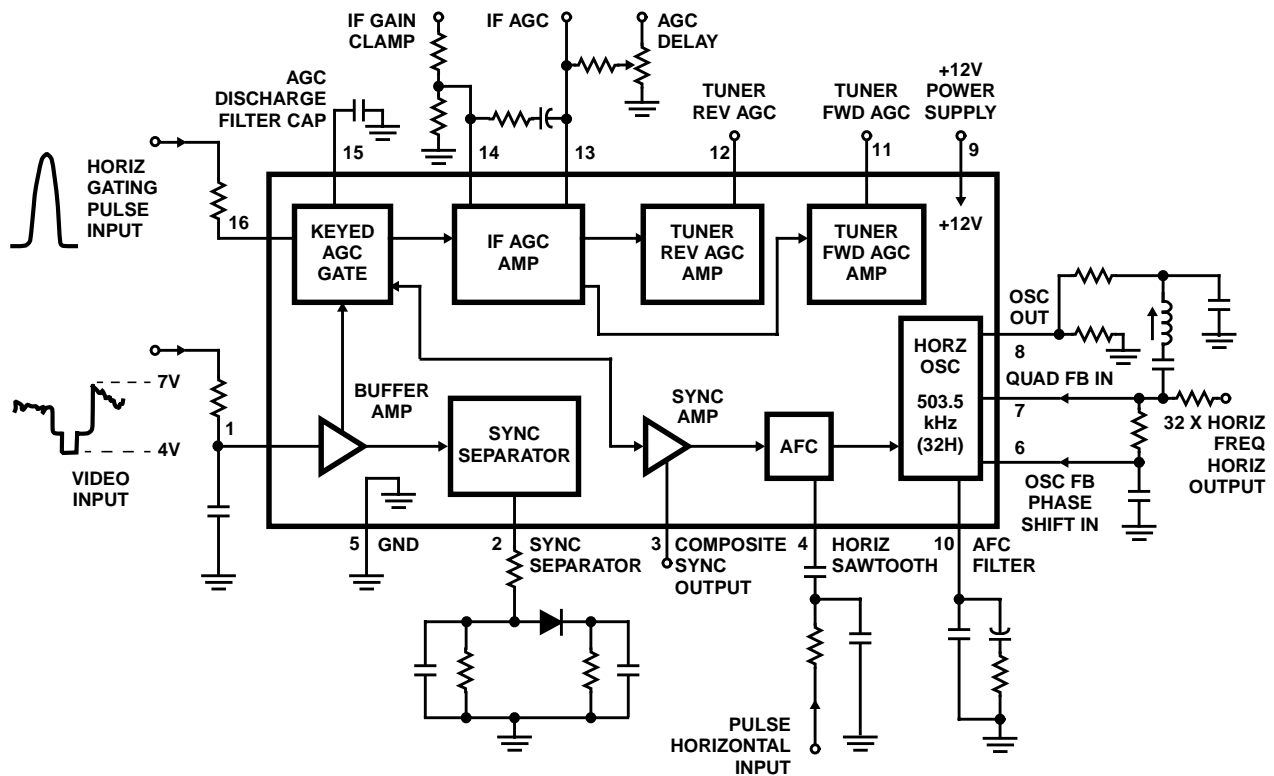
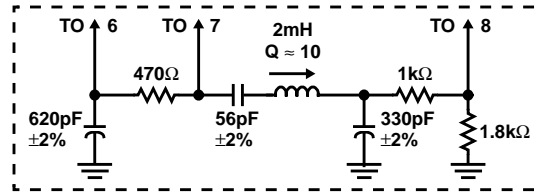


FIGURE 1. FUNCTIONAL BLOCK DIAGRAM OF CA3154

# CA3154



NOTE: Oscillator loop to be used as indicated in the electrical characteristics chart, with coil adjusted for typical unit to 503.5kHz for  $f_{6FR}$ .

FIGURE 2. ELECTRICAL CHARACTERISTICS TEST CIRCUIT

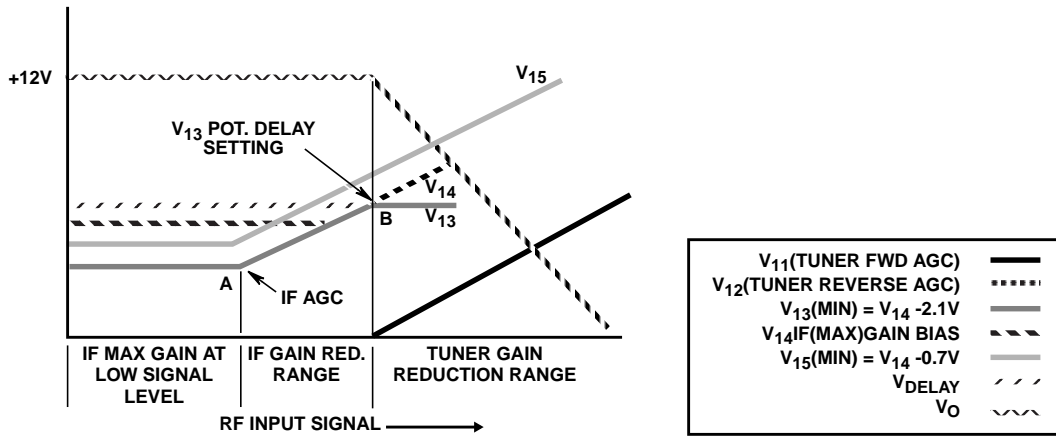


FIGURE 3. TYPICAL OPERATION OF AGC CIRCUITS USING THE CA3154

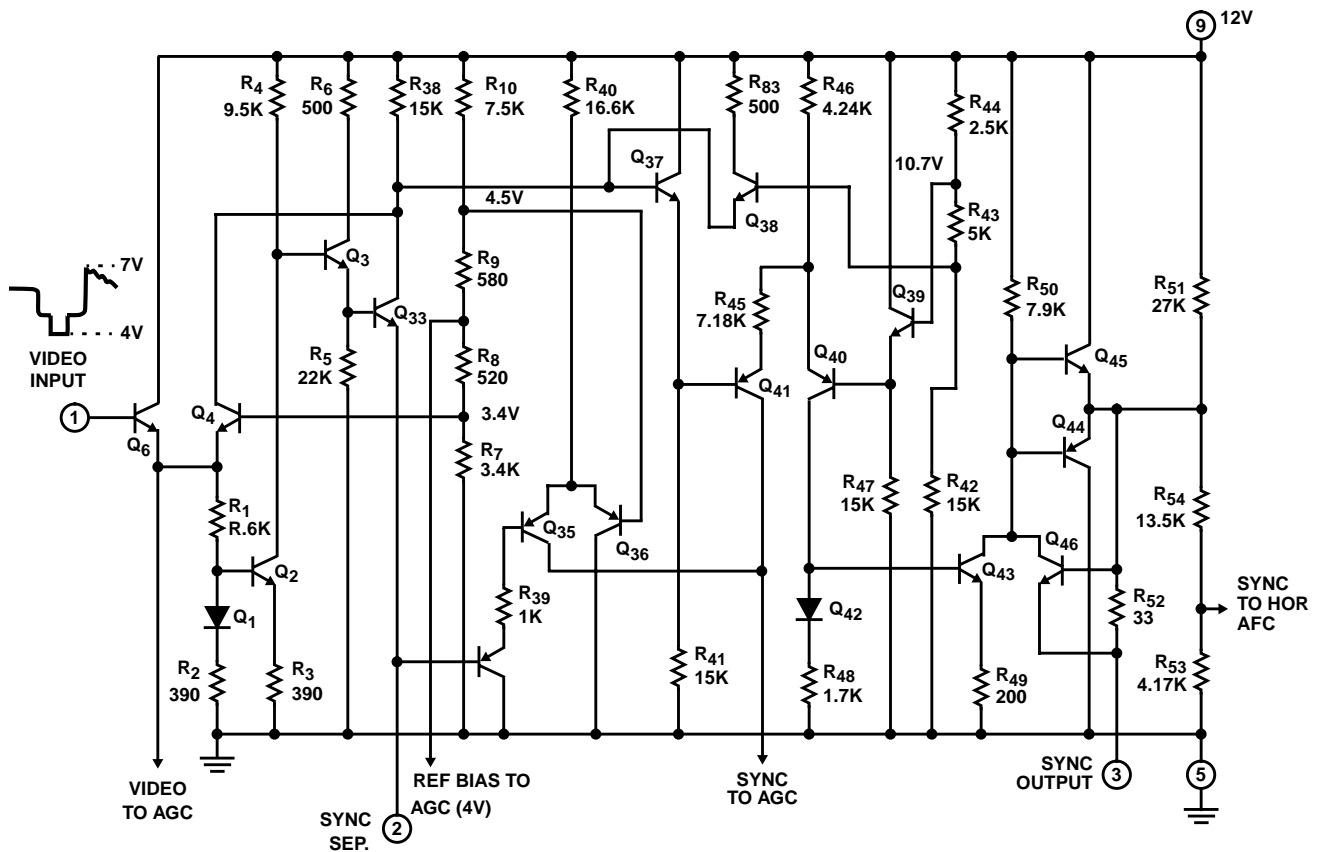


FIGURE 4. SCHEMATIC OF SYNC SEPARATOR SECTION OF THE CA3154

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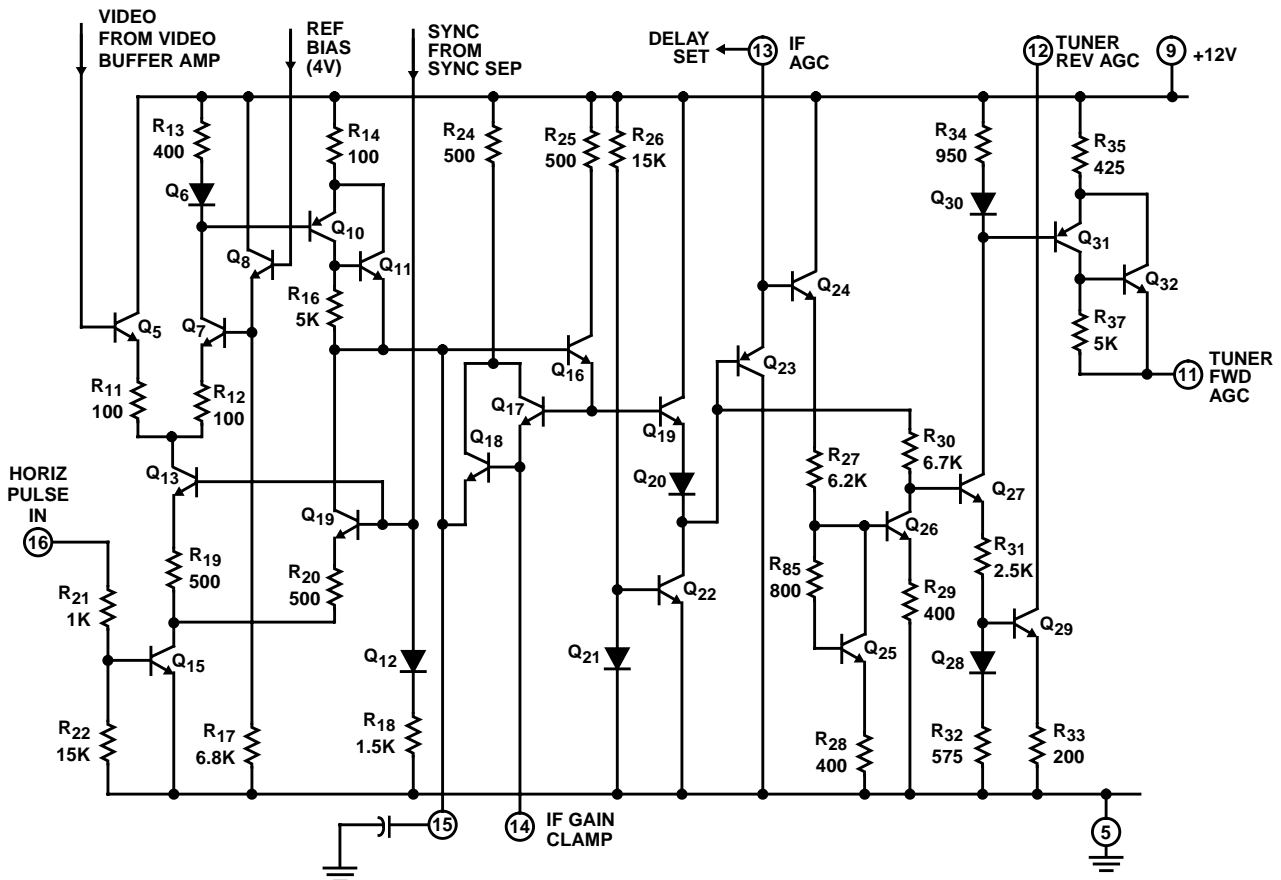


FIGURE 5. SCHEMATIC OF AGC SECTION OF THE CAA3154

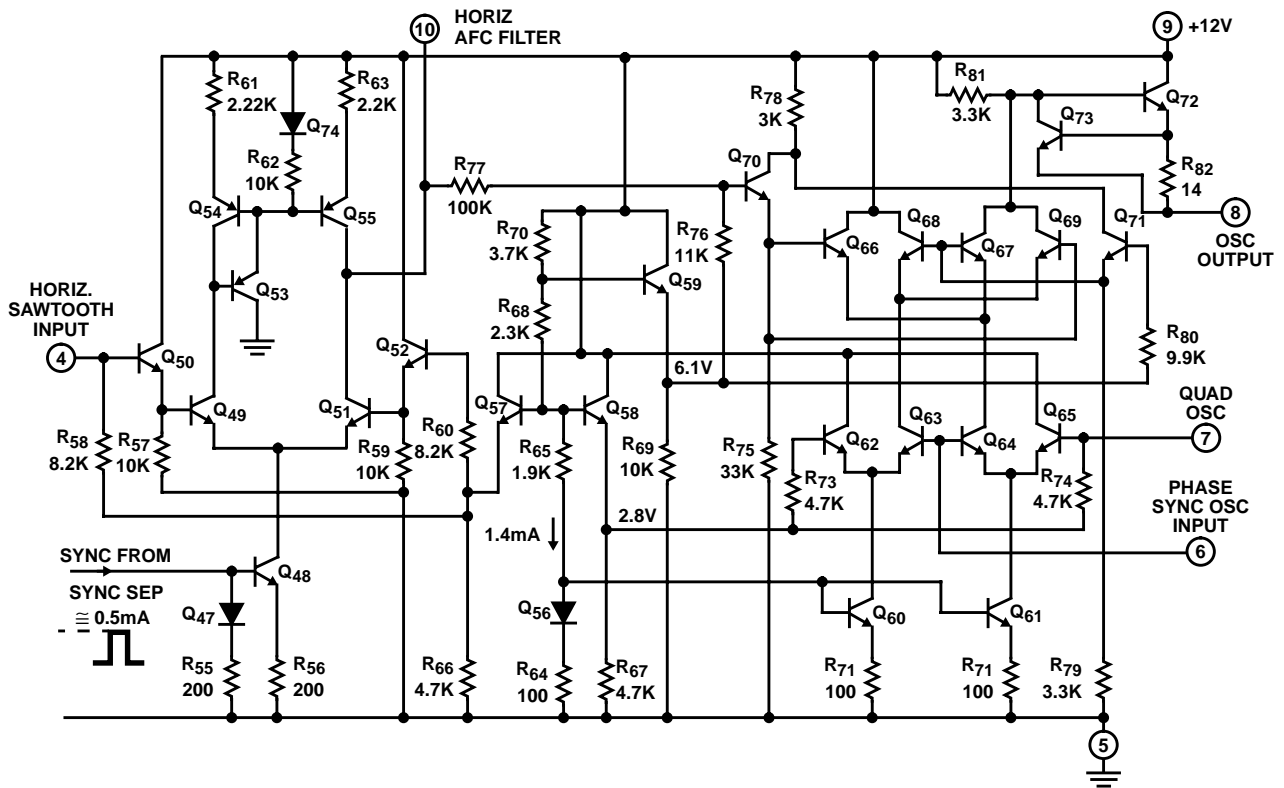


FIGURE 6. SCHEMATIC OF AFC-OSCILLATOR SECTION OF THE CA3154

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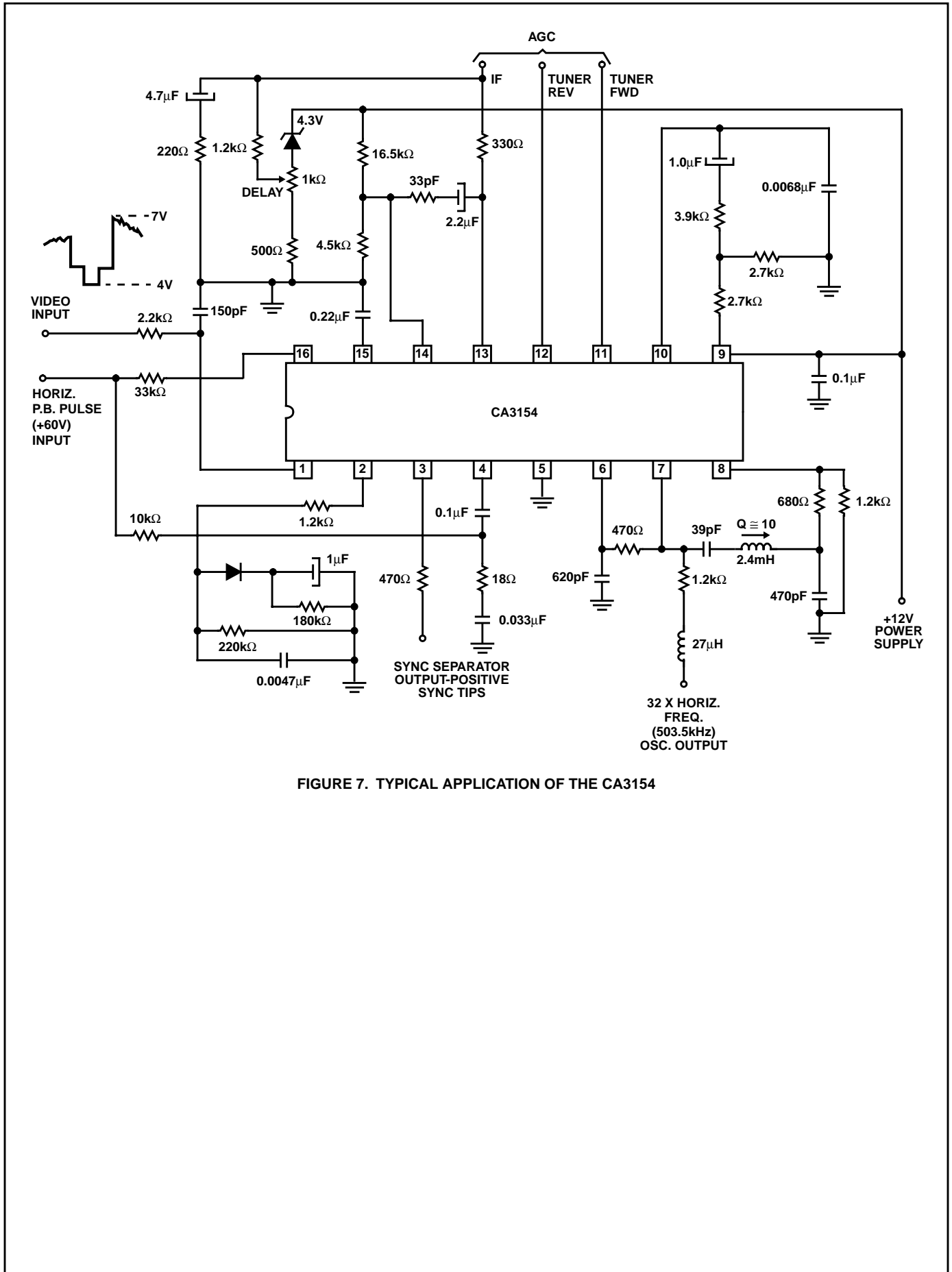


FIGURE 7. TYPICAL APPLICATION OF THE CA3154