



# LA7054

## Video, Audio Signal Processor for UHF Band RF Modulator

### Overview

The LA7054 is a video, audio signal processor IC for UHF band RF modulators. It performs the functions of TSG (test signal generator), video clamp circuit, white clip circuit, audio FM modulator. It is highly stable to supply voltage variations because the LA7054 has an internal voltage regulator.

### Functions

- Audio FM modulator
- Sync pulse peak clamp
- TSG
- White clip
- Voltage regulator

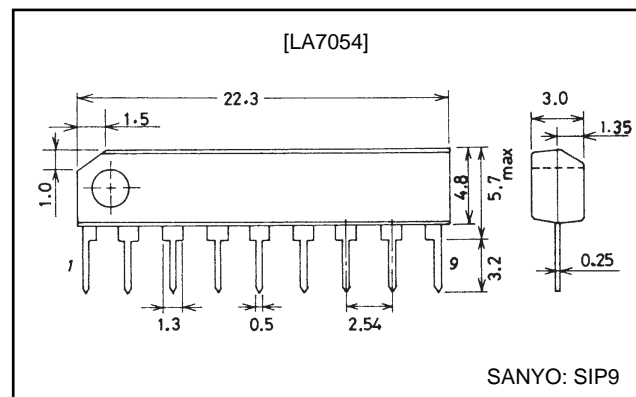
### Features

- Low-voltage operation :  $V_{CC}=5V$
- Highly stable to supply voltage variations because the LA7054 has an internal voltage regulator.
- On-chip TSG (test signal generator).
- Good frequency characteristic of white clip.
- Wide amplitude of audio carrier and less high-frequency spurious interference.
- Low audio distortion.
- Low current drain :  $-30\%$  (compared with our similar ICs).
- Minimum number of parts required : Peripherals of clock oscillator for TSG.
- Small-sized package : 9-pin SIP

### Package Dimensions

unit: mm

#### 3017C-SIP9



### Specifications

#### Maximum Ratings at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC}$ max		9	V
Allowable power dissipation	$P_d$ max	$T_a \leq 60^\circ C$	250	mW
Operating temperature	$T_{op}$		-20 to +80	$^\circ C$
Storage temperature	$T_{stg}$		-40 to +125	$^\circ C$

#### Operating Conditions at $T_a=25^\circ C$

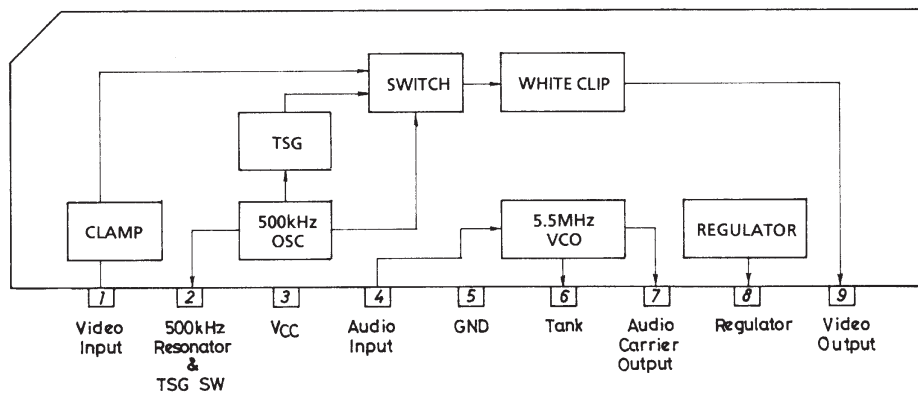
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	$V_{CC}$		5	V
Operating voltage range	$V_{CC}$ op		4.25 to 7.00	V

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

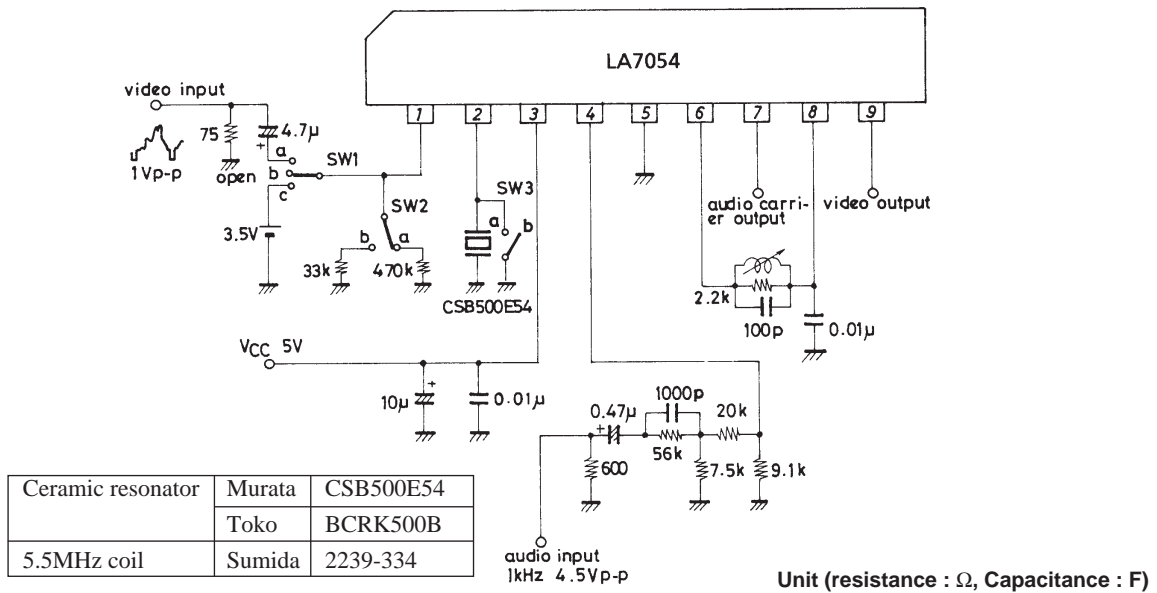
Parameter	Symbol	SW Mode			Conditions	Ratings			Unit
		SW1	SW2	SW3		min	typ	max	
Current drain	$I_{CC}$	a	a	a		10	14	18	mA
Video clamp voltage	$V_{CL}$	a	b	a		1.35	1.60	1.85	Vp-p
White clip level	$V_{WC}$	c	-	a	$V_{WC}=V_1-V_{CL}$ V1 : Output voltage	1.10	1.14	1.18	Vp-p
TSG output amplitude	$V_{TO}$	-	-	b		0.85	1.00	1.15	Vp-p
TSG V/S ratio	V/S	-	-	b		6.0/4.0	6.5/3.5	7.2/2.8	
Horizontal sync signal period	$t_S$	-	-	b		63.7	64.0	64.3	$\mu\text{s}$
Horizontal sync signal width	$H_S$	-	-	b		3.6	4.0	4.4	$\mu\text{s}$
White signal width	$H_V$	-	-	b		3.6	4.0	4.4	$\mu\text{s}$
Sync-1st white signal rise time	$t_{V1}$	-	-	b		22	24	26	$\mu\text{s}$
Sync-2nd white signal rise time	$t_{V2}$	-	-	b		38	40	42	$\mu\text{s}$
Audio carrier amplitude	$V_{AO}$	-	-	b		1.05	1.30	1.55	Vp-p
Audio modulation degree A	ms	-	-	-	Input signal : 1kHz 4.5Vp-p, $\pm 50\text{kHz}$ : 100%	73	81	89	%
Audio modulation degree B	ms	-	-	-		81	90	99	%
Audio modulation degree C	ms	-	-	-		90	100	110	%
Audio modulation degree D	ms	-	-	-		99	110	121	%
Audio modulation degree E	ms	-	-	-		109	121	133	%
Audio distortion	THD	-	-	-	Same as above	-	0.3	1.5	%

## Equivalent Circuit Block Diagram

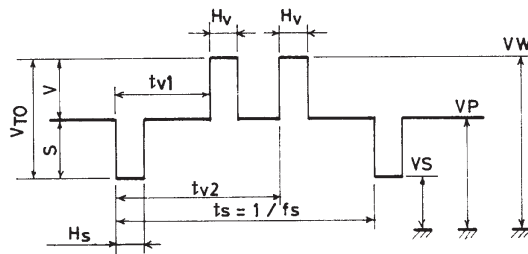


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## Test Circuit



## TSG Output Waveform



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