



LA7054Z

Video, Audio Signal Processor for UHF Band RF Modulator Use

Overview

The LA7054Z 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. The characteristics of the LA7054Z are highly stable to supply voltage variations because the LA7054Z has an internal voltage regulator.

Functions

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

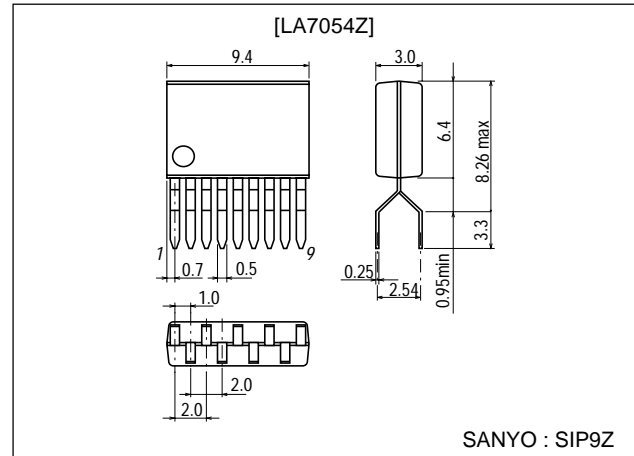
Features

- Low-voltage operation : $V_{CC}=5V$.
- Highly stable to supply voltage variations because the LA7054Z has an internal voltage regulator.
- On-chip TSG (test signal generator).
- Good frequency characteristic of white clip.
- Large amplitude of audio carrier and less high-frequency spurious radiation.
- Low audio distortion.
- Low current drain : -30% (compared with our similar ICs).
- Minimum number of parts required : Peripherals of clock oscillator for TSG.
- Compact package : 9Z-pin SIP.

Package Dimensions

unit:mm

3119-SIP9Z



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		9.0	V
Allowable power dissipation	$P_d\text{ max}$	$T_a \leq 60^\circ\text{C}$	250	mW
Operating temperature	T_{opr}	$V_{CC}=5V$	-20 to $+80$	$^\circ\text{C}$
Storage temperature	T_{stg}		-40 to $+125$	$^\circ\text{C}$

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LA7054Z

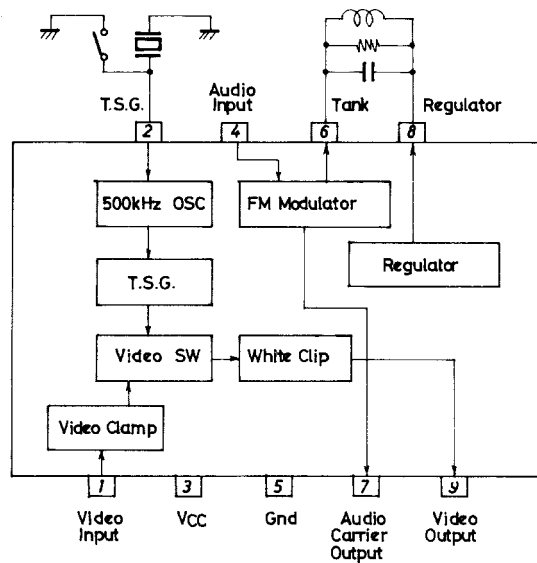
Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5.0	V
Operating voltage range	$V_{CC\ op}$		4.25 to 7.00	V

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

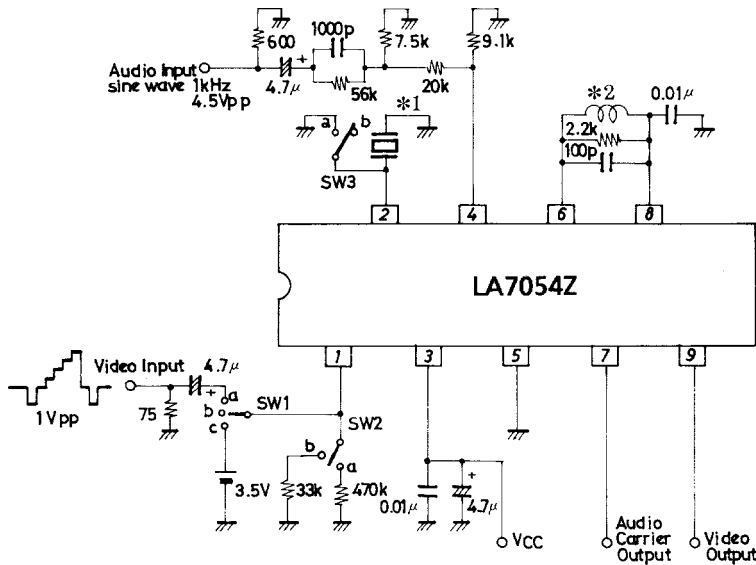
Parameter	Symbol	SW1	SW2	SW3	Conditions	Ratings			Unit
						min	typ	max	
Current drain	I_{CC}	a	a	a		10	14	18	mA
Video clamp voltage	V_{CL}	a	b	a		1.35	1.60	1.85	V
White clip level	V_{WC}	c	-	a	$V_{WC}=V_1-V_{CL}$, V_1 : Output voltage	1.10	1.14	1.18	Vp-p
TSG output amplitude	V_{TO}	-	-	b		0.85	1.0	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	μs
Horizontal sync signal width	H_s	-	-	b		3.6	4.0	4.4	μs
White signal width	H_V	-	-	b		3.6	4.0	4.4	μs
Sync-1st white signal rise time	t_{y1}	-	-	b		22	24	26	μs
Sync-2nd white signal rise time	t_{y2}	-	-	b		38	40	42	μs
Audio carrier amplitude	V_{AO}	-	-	-		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



LA7054Z

Test Circuit



Unit (resistance : Ω , capacitance : F)

- *1 : Ceramic resonator : Murata CSB500E54
Tokyo BCRK500B
- *2 : 5.5MHz coil : Sumida 2239-334

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