

**SANYO**

No.2856C

**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

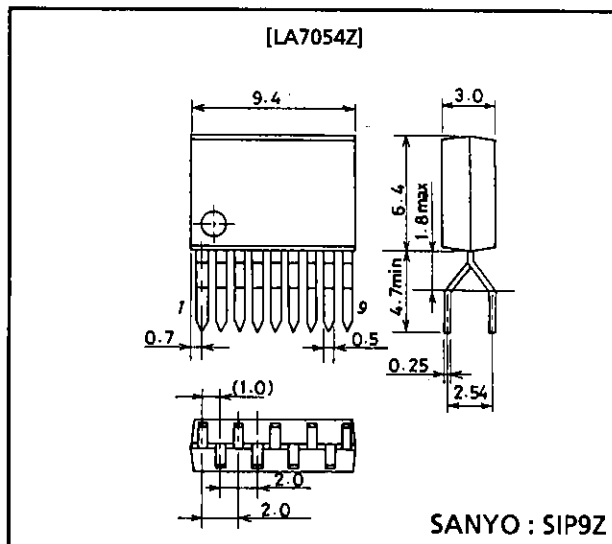
### Features

- 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       | $T_{op}$             | $V_{CC} = 5V$               | -20 to +80  | $^\circ\text{C}$ |
| 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 range    | $V_{CC \text{ op}}$ |            | 4.25 to 7.00 | V    |

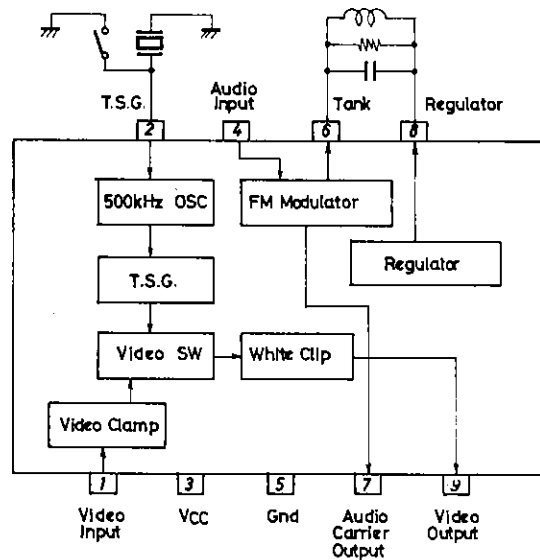
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# LA7054Z

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

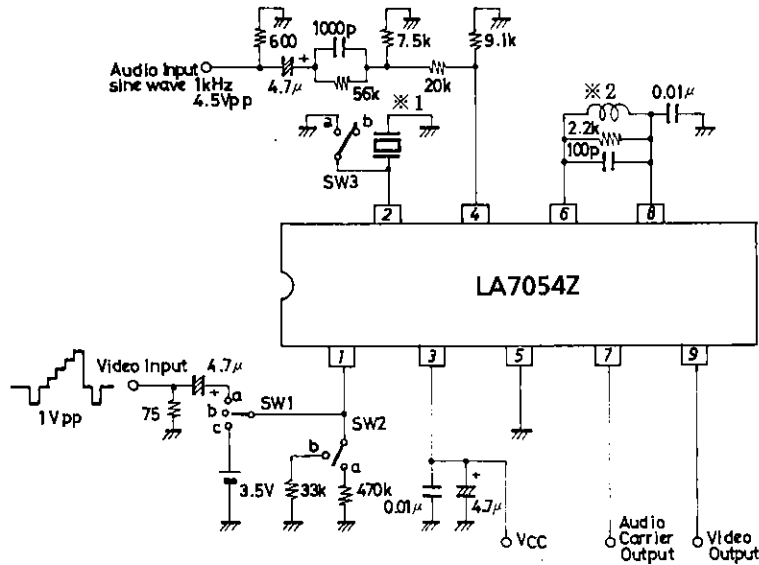
| Parameter                        | Symbol   | SW1 | SW2 | SW3 | Conditions  | min     | typ     | max     | Unit          |
|----------------------------------|----------|-----|-----|-----|---|---------|---------|---------|---------------|
| Current drain                    | $I_{CC}$ | a   | a   | 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   | $V_{WC} = V_1 - V_{CL}$<br>$V_1$ : 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    | $\mu\text{s}$ |
| 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          | $V_{AO}$ | -   | -   | -   |   | 1.05    | 1.30    | 1.55    | Vp-p          |
| Audio modulation degree A        | ms       | -   | -   | -   | Input signal : 1kHz,<br>4.5Vp-p,<br>$\pm 50\text{kHz}$ : 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



- ※1 : Ceramic resonator : Murata CSB500E54  
 Toko BCRK500B  
 ※2 : 5.5MHz coil : Sumida 2239-334

Unit (resistance: Ω, capacitance : F)

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