# LZ95B25

## Subcarrier Generator LSI for CCD

### DESCRIPTION

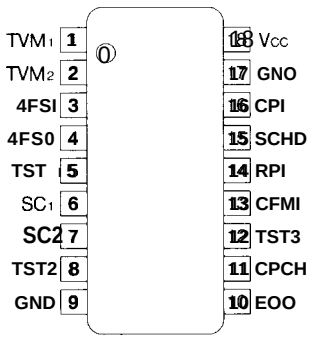
The LZ95B25 is a CMOS subcarrier signal generator LSI which provides subcarrier pulses for color video camera, in combination with the SSG LSI (LZ95D52/M)

### FEATURES

- Switchable between NTSC, PAL and SECAM systems
- Included phase comparator circuit
- Single + 5 V power supply
- Package : 18-pin MFP(MFPO1 8-P)

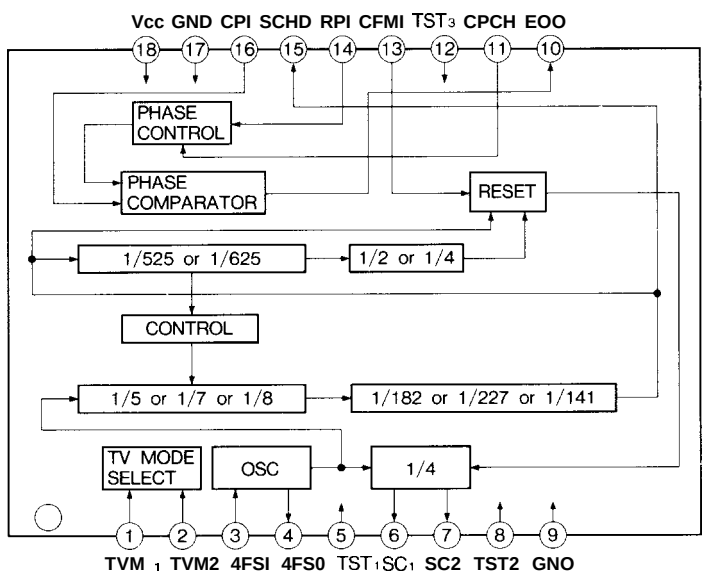
### PIN CONNECTIONS

18-PIN MFP TOP VIEW






### BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

| PARMETER | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Supply voltage | Vcc | −0.3 to 7.0 | v |
| Input voltage | VI | − 0.3 to Vcc + 0.3 | v |
| Output voltage | Vo | − 0.3 to Vcc + 0.3 | V |
| Operating temperature | Topr | −20 to +70 | ‘c |
| Storage temperature | Tstg | −55 to +150 | “c |

## DC CHARACTERISTICS

(Vcc = +5 V ± 10%, Ta=−10 to +70℃)

| PARMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNIT | NOTE |
|---|---|---|---|---|---|---|---|
| Input Low voltage | $V_{IL}$ | | | | 1.5 | v | 1 |
| Input High voltage | $V_{IH}$ | | 3.5 | | | v | |
| Input Low current | $\lvert I_{IL1} \rvert$ | $V_I$ = 0 v | | | 1.0 | μA | 2 |
| | $\lvert I_{IL2} \rvert$ | VI=o v | 8.0 | | 60 | μA | 3 |
| Input High current | $\lvert I_{IH1} \rvert$ | VI= Vcc | | | 1.0 | μA | 4 |
| | $\lvert I_{IH2} \rvert$ | VI= Vcc | 8.0 | | 60 | μA | 5 |
| Output High voltage | $V_{OH}1$ | $I_{OH}$ = −2 mA | 4.0 | | | v | 6 |
| | $V_{OH2}$ | $I_{OH}$ = − I mA | 4.0 | | | v | 7 |
| | $V_{OH3}$ | $I_{OH}$ = −6 mA | 4,0 | | | v | 8 |
| Output Low voltage | $V_{OL1}$ | $I_{OL}$ = 4 mA | | | 0.4 | v | 6 |
| | $V_{OL2}$ | $I_{OL}$ = 2 mA | | | 0.4 | v | 7 |
| | v0L3 | $I_{OL}$ = 12 mA | | | 0.4 | v | 8 |
| Leak output current | \| Ioz \| | High-Z | | | 1.0 | μA | |

NOTES :

1. Applied to inputs (IC, ICU, OSCI).
2. Applied to inputs (ICD, OSCI).
3. Applied to input (ICU).
4. Applied to inputs (ICU, OSCI).
5. Applied to input (ICD).
6. Applied to outputs (O, OSCO).
7. Applied to output (O2M).
8. Applied to tri-state output (EOO).

## PIN DESCRIPTION

| PIN NO. | SYMBOL | I/O | POLARITY | PIN NAME | FUNCTION |
|---|---|---|---|---|---|
| 1 | TVM1 | Icu | – | TV mode 1 | These input pins to select TV standards. |
| 2 | TVM2 | ICU | – | TV mode 2 | |
| 3 | 4FSI | OSCI |  | Colck input | An input pin for the signal 4 times the color sub-carrier frequency. At NTSC mode : 14.31818 MHz At PAL mode : 17.734475 MHz At SECAM mode : 17.625 MHz |
| 4 | 4FS0 | OSCO |  | Clock output | The output is the inverse 4FSI (pin 4). |
| 5 | TSTI | ICD | – | Test pin 1 | A test pin, Set open or to L level in the Normal mode, |
| 6 | SC1 | 02M |  | Subcarrier output 1 | An output pin for color subcarrier. The frequency of the signals is 1/4 the 4FSI (pin 3). The signal is reset by color frame pulse CFMI (pin 13). |
| 7 | SC2 | 02M |  | Subcarrier output 2 | An output pin for color subcarrier. When the phase of SC1 (pin 4) is 180 degree, the phase of SC2 is 80 degree in NTSC mode; in PAL mode, the phase of SC2 is 90 degree when LSW (SSG-LSI) is L level and 270 degree when LSW is H level. The SC 2 is same as the phase of SC I in SECAM mode. |
| 8 | TST2 | ICD | – | Test pin 2 | A test pin. Set open or to L level in the Normal mode. |
| 9 | GND | – | – | Ground | A grounding pin. |
| 10 | EOO | TO | – | Phase comparator output | Phase comparator output for input signals RPI (pin 14) and CPI (pin 16). When CPI is advanced, output is Low level. When CPI is delayed, output is High level. When phases are equal, the terminal impedance is High. Phase comparator comparates rising edge of CPI. |
| 11 | CPCH | ICD | – | Polarity select input | The CPCH input pin switches the polarity of RPI (pin 14). When CPCH is L level, phase comparator comparates rising edge of RPI. When CPCH is H level, phase comparator comparates falling edge of RPI. |
| 12 | TST3 | ICD | – | Test pin 3 | A test pin. Set open or to L level in the Normal mode. |
| 13 | CFMI | ICD | – | Color frame input | An input pin for color frame signal; Connect to CFMO (SSG-LSI). |

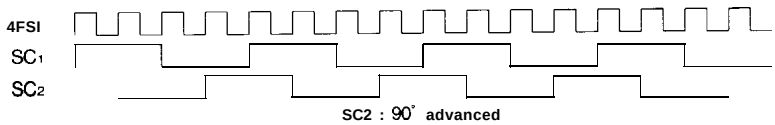
| TV mode | NTSC | PAL | no-use | SECAM |
|---|---|---|---|---|
| TVM1 | L | L | H or open | H or open |
| TVM2 | L | H or open | L | H or open |

| PIN NO. | SYMBOL | I/O | POLARITY | PIN NAME | FUNCTION |
|---|---|---|---|---|---|
| 14 | RPI | ICD | – | Horizontal comparison input | An input pin for the reference horizontal signal to the phase comparator. Connect to HD (SSG-LSI), when comparator is used. The polarity of RPI selects with CPCH (pin 11), |
| 15 | SCHD | O | – | Subcarrier HD | A horizontal synchronous pulse obtained by dividing 4FSI (pin 3).<br>At NTSC mode : dividing into 1/910 4FSI.<br>At PAL mode : dividing into 1/1 135 4FSI ordinarily and dividing into 1/1 137 4FSI during one horizon tal period within the V blanking.<br>At SECAM mode : dividing into 1/1 128 4FSI. |
| 16 | CPI | ICD | – | Horizontal comparison input | An input pin for comparison horizontal signal to the phase comparator. Connect to SCHD (pin 15) when comparator is used, |
| 17 | GND | – | – | Ground | A grounding pin. |
| 18 | Vcc | – | · | Power supply | Supply +5 V power. |

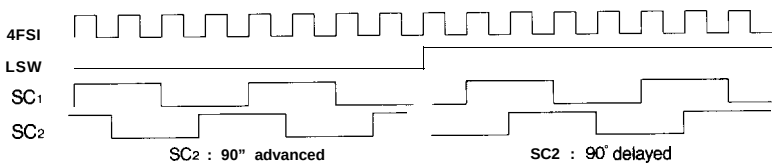
ICU : Input pin (CMOS level with built-in pull-up resistor).
ICD : Input pin (CMOS level with built-in pull-up resistor).
O : Output pin,
02M : Output pin.
TO : Output pin (tri-state output).
OSCI : Input pin for oscillation.
OSCO : Output pin for oscillation.

## TIMING DIAGRAM

### PULSE TIMING < NTSC >




### PULSE TIMING < PAL >




### PULSE TIMING <SECAM>