

ZNA134



FERRANTI

semiconductors

CCIR/EIA TV Synchronising Pulse Generator

FEATURES

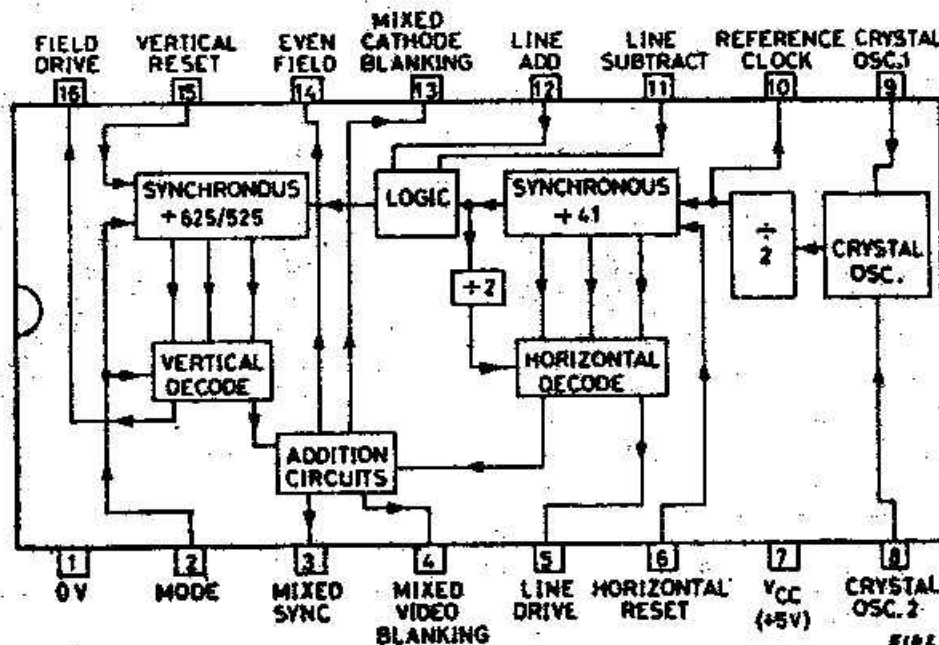
- 625 and 525 line standards.
- CCIR and EIA standard outputs.
- Single 5 volt supply, fully TTL compatible.
- Easy synchronising between generators.
- Direct reset to vertical and horizontal counters.
- Facility for adding and subtracting lines.
- Automatic interlacing.
- On chip oscillator (requiring external crystal).
- Can be driven with an external oscillator.
- Field reference output.
- Extended Temperature Range available ZNA134 H RED

GENERAL DESCRIPTION

The ZNA134 integrated circuit utilises a 2.5 MHz* crystal to generate all the horizontal, vertical, mixed blanking and synchronising pulses necessary for raster generation in 625 or 525 line commercial, industrial or military television systems. The synchronous dividers and decoding logic employed within the unit ensure perfect interlace, together with spike-free output waveforms having precisely defined relative positions and pulse widths. The device is contained in a 16 pin D.I.L. and can be selected to operate over the military temperature range.

*Dependent on line system used, series resonant.

SYSTEM DIAGRAM



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CHARACTERISTICS

ABSOLUTE MAXIMUM RATINGS

Parameter	Maximum value
Supply Voltage	7 volts
Input Voltage	5 volts
Operating Temperature Range	0°C to +70°C*
Storage Temperature Range	-65°C to +150°C

OPERATING CHARACTERISTICS

(over recommended temperature range)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Supply Voltage	V_{CC}		4.75	5.0	5.25	Volts
Supply Current	I_S		-	100	-	mA
High-level Input Voltage	V_{IH}		2.4	-	-	Volts
Low-level Input Voltage	V_{IL}		-	-	0.8	Volts
High-level Input Current	I_{IH}	$V_{CC} = 5V, V_I = 2.4V$ (See Note 1)	-	-	40	μA
Low-level Input Current	I_{IL}	$V_{CC} = 5V, V_I = 0V$. (See Note 1)	-40	-	-	μA
High-level Output Voltage	V_{OH}	$V_{CC} = 5V, I_{source} \leq 80\mu A$ (See Note 2)	2.4	-	-	Volts
Low-level Output Voltage	V_{OL}	$V_{CC} = 5V, I_{sink} \leq 3.2 mA$ (See Note 2)	-	-	0.5	Volts
Clock frequency	f_{clock}	625 lines, Mode = '1' 525 lines, Mode = '0'	-	2.56250 2.5830	-	MHz MHz
External Oscillator Pulse Width	t_w	-ve going pulse, 625/525 lines	150	200	250	ns

Note 1

Input conditions only apply to mode, horizontal reset, vertical reset, line subtract and line add. For input conditions of oscillator inputs C.0.1, C.0.2, see applications section.

Note 2

All outputs – mixed sync, mixed video blanking, line drive, reference clock, mixed cathode blanking, even field and field drive have internal 10k Ω pull-up resistors. Edge speeds and sourcing capability can be increased, if required, by the addition of external pull-up resistors. These should have a minimum value of 2k Ω .

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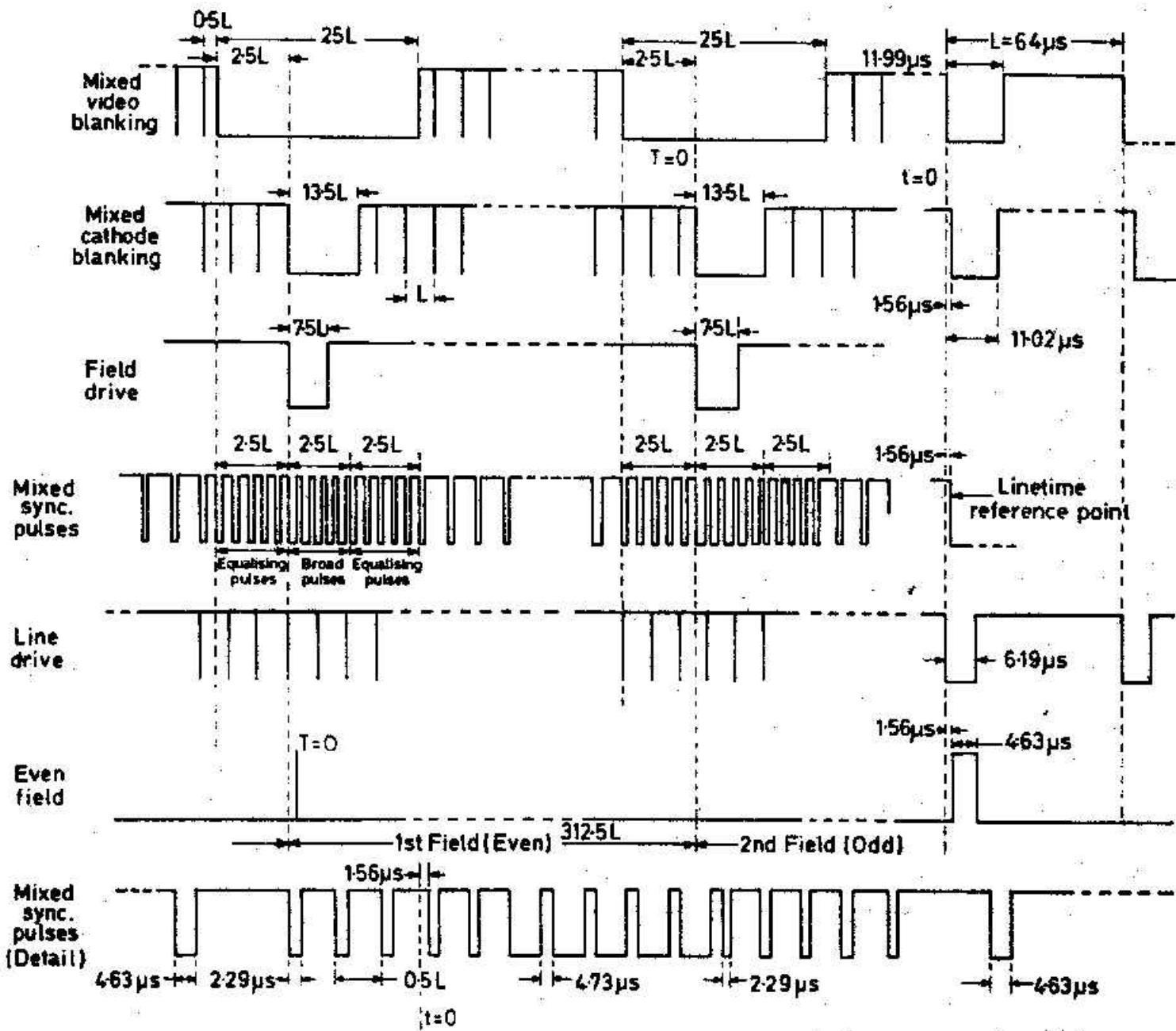
OUTPUT WAVEFORMS

(a) 625 line CCIR standard output (Mode = 1).

Crystal frequency = 2.5625 MHz.

Line frequency = 15.625 kHz, Field frequency = 50 Hz.

Line period = 64 μ s, Field period = 20 ms.

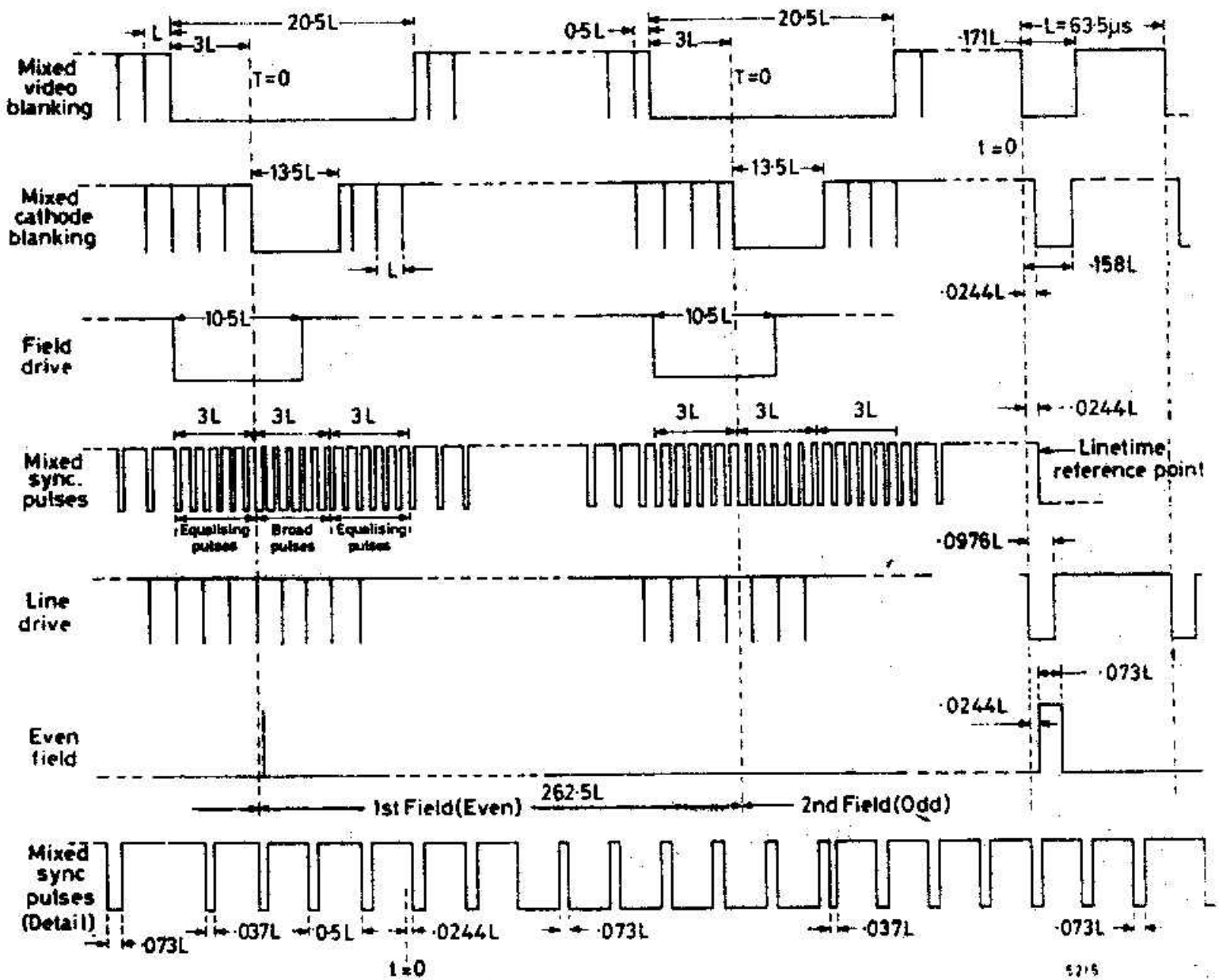


(b) 525 line EIA standard output (Mode = 0).

Crystal frequency = 2.5830 MHz

Line frequency = 15.750 kHz, Field frequency = 60 Hz

Line period = 63.5 μ s, Field period = 16.66 ms.



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Lines are added to the second generator if EF2 is less than one field period delayed from EF1, and subtracted if EF2 is greater than one field period delayed from EF1 to reduce synchronisation time
The add/subtract circuitry can be built using nine TTL packages :-

- 4 off ZN7402
- 1 off ZN7427
- 1 off ZN7404
- 1 off ZN74123
- 1 off ZN74121
- 1 off ZN7493

The circuit in Fig. 6 adds or subtracts one line per frame but this could be extended to two or more lines per frame by adding further bits to the 3 bit counter and decoding the relevant states. Similarly half a line per frame can be added by decoding 'QC' instead of 'QB'.

The circuit operates in 625 or 525 line mode without any changes to the component values.

PACKAGE OUTLINE

ZN134H

