

## Video Sync Separator, Horiz Genlock



### EL4583 and EL4584

The EL4583, EL4584, EL4585 demo board is designed to demonstrate the operations of Intersil's family of sync separators and horizontal genlocks. The board as assembled is designed to accept NTSC standard video through A4, Video In. The EL4583 separates H-sync and sends it through jumper R10 to the EL4584. H-sync can be monitored at A1, H-sync. On the board settings, the internal divider mode is selected and the divider N is set to 910. The EL4584 uses its internal divider to extract a clock pulse of the same H-sync input frequency from the oscillator and adjusts the on-board LC VCO to phase lock this signal to the input horizontal frequency. This divided clock signal can be monitored at A2, EXT DIV. The full clock frequency (which should equal to H-sync (15.734kHz)\*divider (910) = 14.318MHz) is available at A3, CLK OUT. Each board has been tested with a NTSC signal and C17 adjusted so EXT DIV locks to the H-sync. SW1 has 3 positions. LEFT grounds COAST and puts the EL4584 into normal mode (see data sheet for mode descriptions). CENTER floats COAST and is fast lock mode, and RIGHT pulls COAST to VDD and is coast mode. The signal should lock in normal mode. The DIP switches at the top of the board works as follows: from right to left, the

switches should be labeled 1, 2, 3, 4. Dip-SW4 controls pin B, SW3 controls C, SW2 controls A, and SW1 controls DIV SEL pin 7 on the EL4584. Refer to the data sheet for a table of divisors for each switch setting and the operation of DIV SEL. If using a NTSC signal, setting all switches ON will produce a CLK OUT frequency of 14.318MHz, and an EXT DIV frequency of 15.734kHz, and the EL4584 will lock.

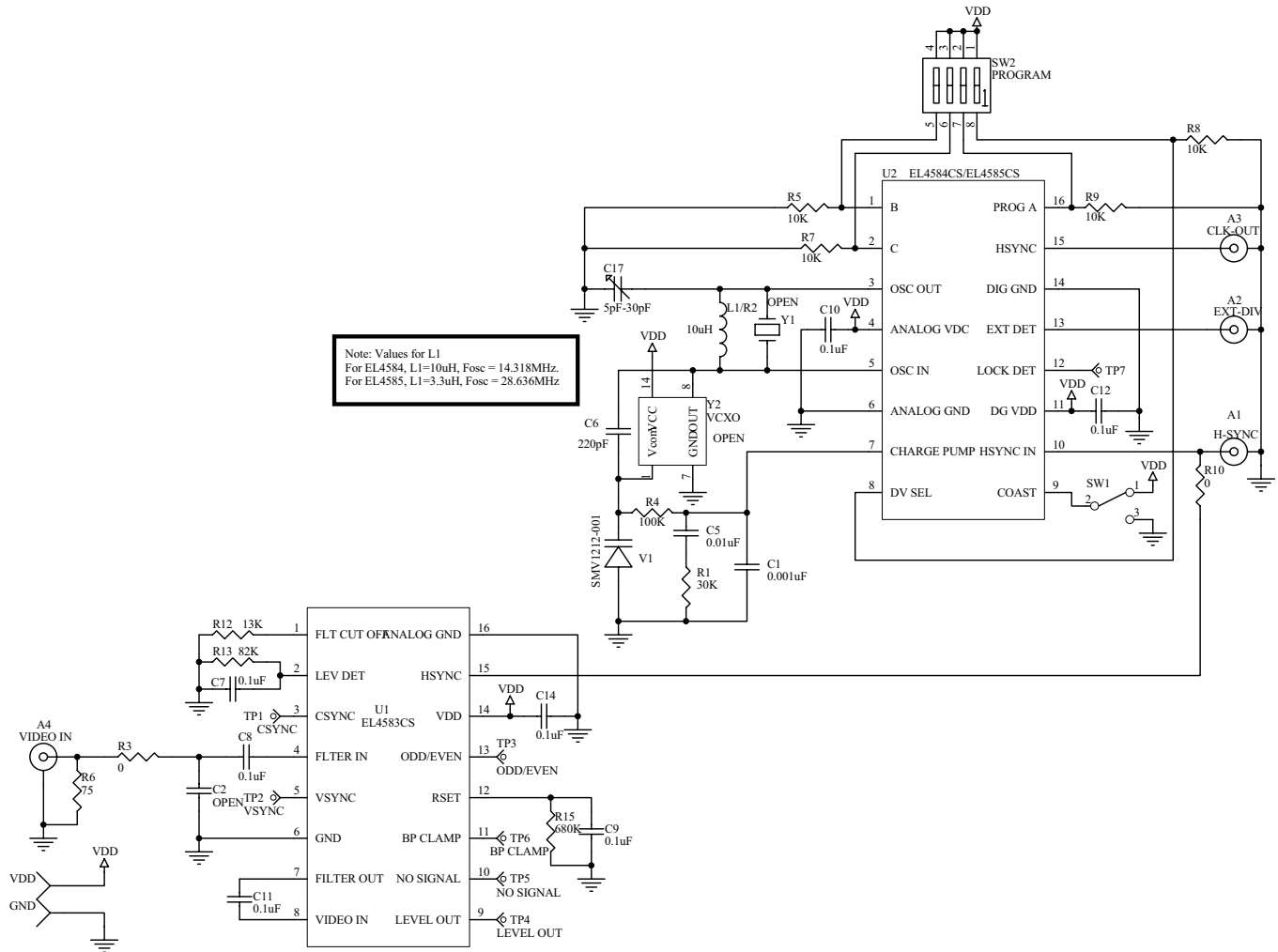
To convert the oscillator to work with the standard PAL frequency of 17.734MHz, simply substitute an inductor of about 8.2μH to bring the center frequency up closer to PAL frequency of 17.734MHz, and reset the dip switches to A = 0, B = 1, C = 1. Remember that LC VCOs have a wide pull range so they are very tolerant of component variations. In some cases the 10μH inductor may be able to produce the necessary PAL frequency as well as the NTSC frequency.

Crystal VCXOs and 4-pin VCXO hybrids can also be used. See the accompanying schematics and data sheet for more info.

### EL4585

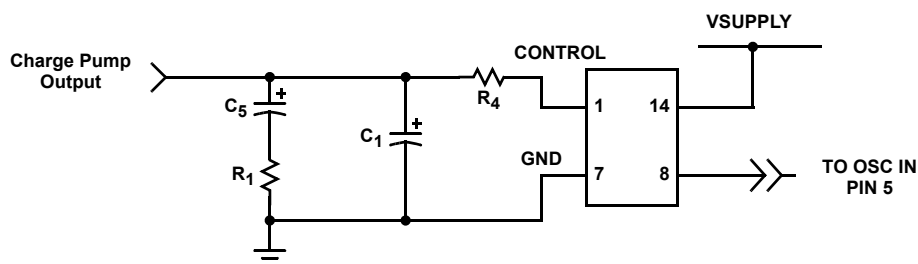
An EL4585 can be used in place of the EL4584 provided. With R1 changed to 3.3μH and the same settings as in the EL4584 section, The signal frequency at CLK OUT is 28.636MHz.

EL4583, EL4584, EL4585 Schematic

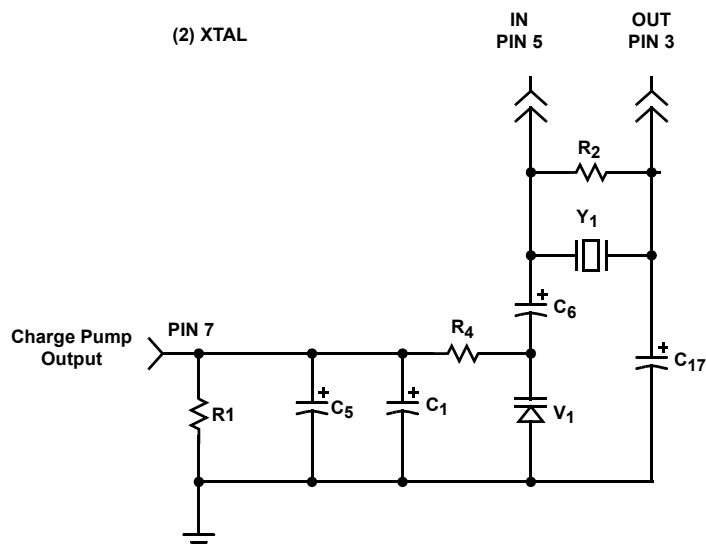


The VCO and loop filter section of the EL4583/4/5 demo board can be implemented in the following configurations:

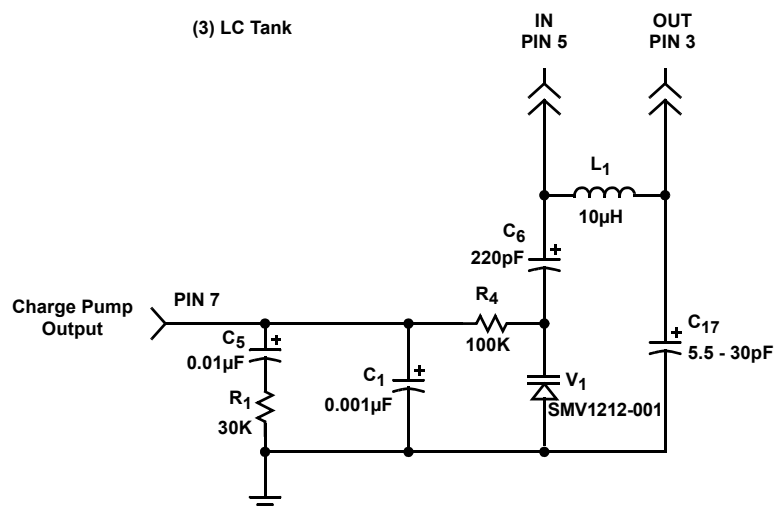
(1) VCXO



(2) XTAL



(3) LC Tank



Intersil Corporation reserves the right to make changes in circuit design, software and/or specifications at any time without notice. Accordingly, the reader is cautioned to verify that the Application Note or Technical Brief is current before proceeding.

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