

LH155N

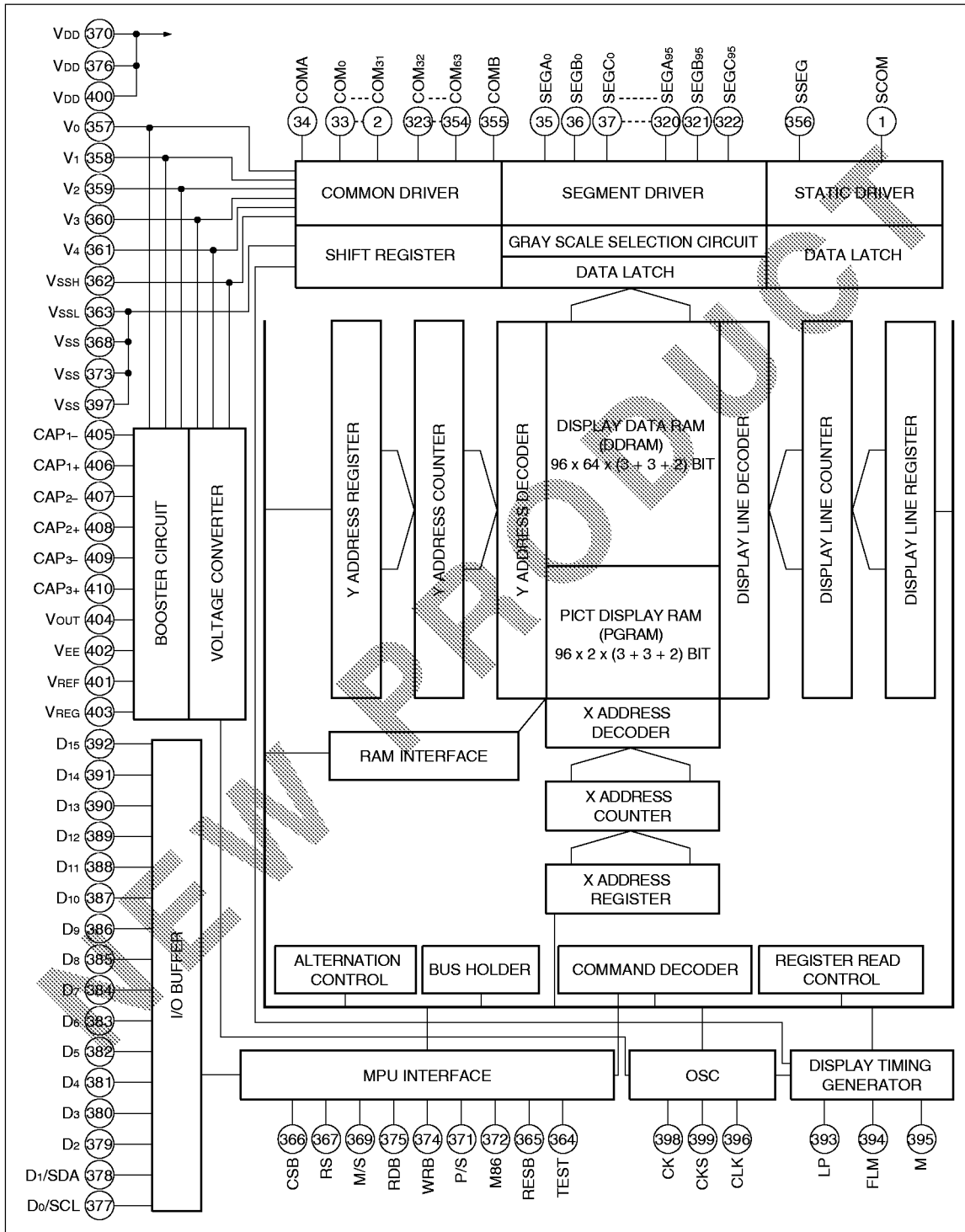
DESCRIPTION

The LH155N is an LCD driver with a built-in RAM suitable for driving medium/small scale dot-matrix gray scale LCD panels, and which is capable of being connected to the bus line of a microcomputer. The LH155N stores in the RAM the parallel or serial display data transferred from the microcomputer and generates LCD drive signals. Since the data of the display RAM corresponds to the gray scale in the LCD, there is a lot of freedom in displaying. The LH155N has 288 segment outputs and 66 common outputs in a single chip, making it possible to create an LCD system with the fewest number of the chips. Display of 96 x 66 pixels in 256 colors is made possible by connecting the 3 outputs of the segment driver to the STN color LCD panel, where the 3 outputs are equal to one pixel of RGB. The LH155N enables an LCD system for battery-operated, hand-carrying information equipment by securing lower power consumption and wider operating voltage range.

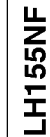
FEATURES

- Display RAM memory capacity
 - DDRAM : $96 \times 64 \times (3 + 3 + 2) = 49\,152$ bits (for graphic)
 - PGRAM : $96 \times 2 \times (3 + 3 + 2) = 1\,536$ bits (for icon)
- Gray scale display : Selectable 8 out of 32 gray scale levels by PWM control
- B/W display : Selectable 1 of 2 panels in a VRAM, where one panel is 288 x 64 bits
- Partial display : Displays specific graphic area
- Displays static icon
- General 8-bit MPU interface : Possible to connect 80-family and 68-family MPUs to bus line
- RAM data access : Selectable data width of either 8/16-bit data
- Possible to make serial interface
- Ratio of display duty cycle :
 - 1/10, 1/18, 1/26, 1/34, 1/42, 1/50, 1/58 (for partial display) or 1/66 (selectable by command)
- 288-bit automatic transfer from display RAM to display data latch
- Abundant command functions
 - Display data read/write
 - Setting up LCD alternating signal cycle
 - Setting up display starting-line : per line
 - Display ON/OFF
 - Display control of normal and reverse modes
 - Setting up common starting-line : per 8 lines
 - Increment control of display RAM address
 - Write control of read modifying
 - Internal register read
 - Power saving mode
 - Partial display mode
- LCD drive circuit
 - Segment drive circuit : 288 outputs (SEGA₀ to SEGA₉₅, SEGB₀ to SEGB₉₅, SEGC₀ to SEGC₉₅)
 - Common drive circuit : 66 outputs (COM₀ to COM₆₃, COMA, COMB)
 - Static drive circuit : a pair of outputs
- LCD drive power circuit
 - Built-in booster circuit : Two, three or four times voltage boost is possible (selectable by command)
 - Built-in voltage converter : Generates LCD drive voltages (V₀, V₁, V₂, V₃ and V₄) based on the boosted voltage
 - Built-in voltage regulator
 - Built-in power bias ratio : 1/5, 1/6, 1/7, 1/8 or 1/9 bias (selectable by command)
 - Built-in electronic volume : Controllable in 128 steps
 - Supply voltages
 - Logic system : +1.8 to +3.3 V
 - LCD drive system : +5.0 to +13.2 V
- Operating temperature : -30 to +85 °C
- Package : 410-pin TCP (Tape Carrier Package)

BLOCK DIAGRAM



(Unit : mm)



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