# LCD Controllers/Drivers

## PCF2113X

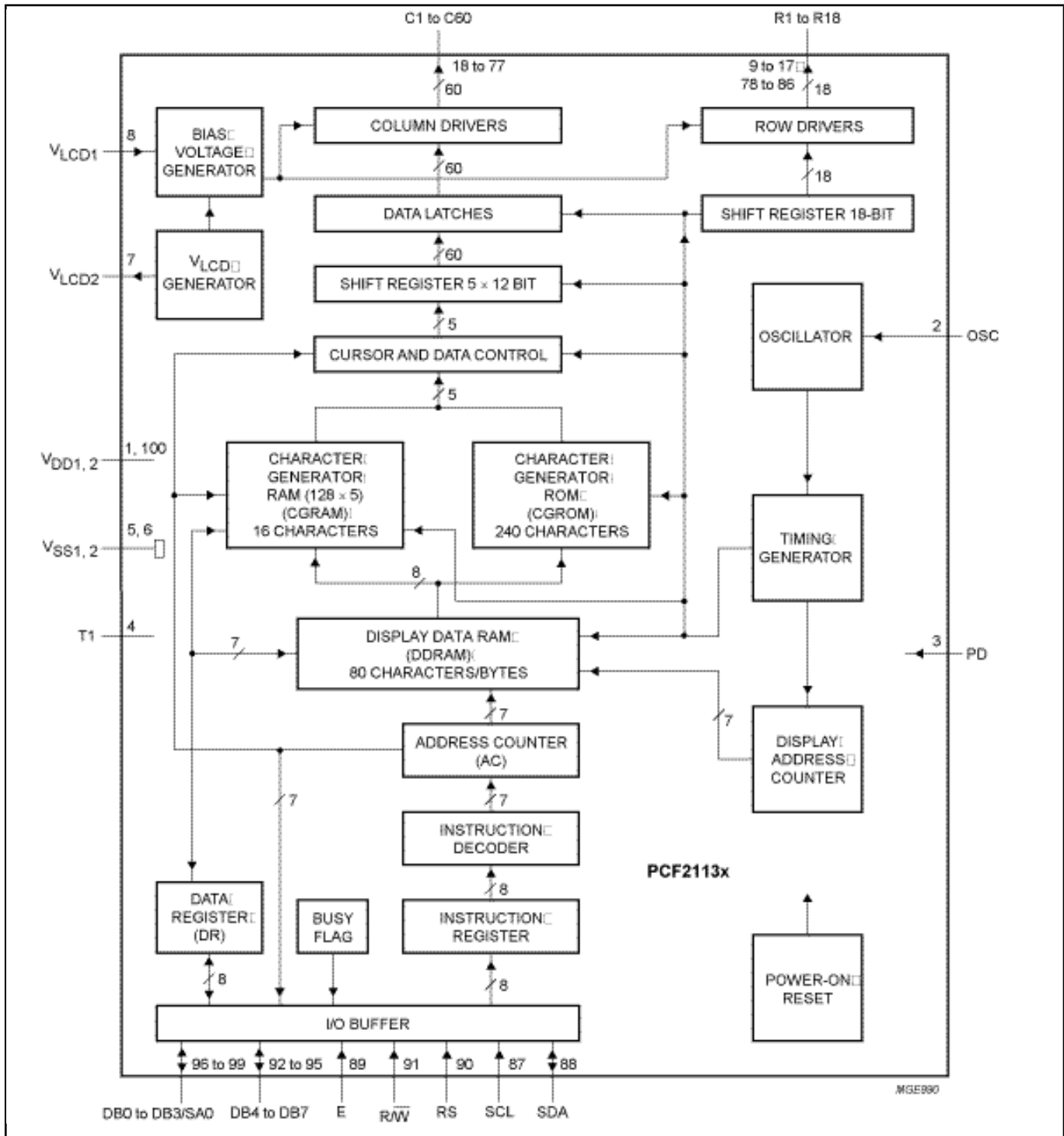**Archived**

Last Updated: Oct 14, 2024

The PCF2113x is a low-power CMOS LCD controller and driver, designed to drive a dot matrix LCD display of 2 lines of 12 characters or 1 line of 24 characters with 5 x 8 dot format. All necessary functions for the display are provided in a single chip, including on-chip generation of LCD bias voltages, resulting in a minimum of external components and lower system current consumption. The PCF2113x interfaces to most microcontrollers via a 4-bit or 8-bit bus or via the 2-wire I²C-bus. The chip contains a character generator and displays alphanumeric and kana (Japanese) characters.

The letter 'x' in PCF2113x characterizes the built-in character set. Various character sets can be manufactured on request.

## PCF2113AU, PCF2113DH, PCF2113DU, PCF2113EU, PCF2113WU Block Diagram

C1 to C60      R1 to R18

18 to 77 /60      9 to 17, 78 to 86 /18

COLUMN DRIVERS      ROW DRIVERS

$V_{LCD1}$ — 8 — BIAS VOLTAGE GENERATOR

/60

/18

DATA LATCHES ← SHIFT REGISTER 18-BIT

$V_{LCD2}$ — 7 — $V_{LCD}$ GENERATOR

/60

SHIFT REGISTER 5 × 12 BIT

/5

OSCILLATOR — 2 — OSC

CURSOR AND DATA CONTROL

/5

$V_{DD1,2}$ — 1, 100

CHARACTER GENERATOR RAM (128 × 5) (CGRAM) 16 CHARACTERS

CHARACTER GENERATOR ROM (CGROM) 240 CHARACTERS

$V_{SS1,2}$ — 5, 6

TIMING GENERATOR

8

T1 — 4

7

DISPLAY DATA RAM (DDRAM) 80 CHARACTERS/BYTES

3 — PD

/7

/7

DISPLAY ADDRESS COUNTER

ADDRESS COUNTER (AC)

/7

INSTRUCTION DECODER

/8

PCF2113x

DATA REGISTER (DR)

BUSY FLAG

INSTRUCTION REGISTER

POWER-ON RESET

/8

/8

I/O BUFFER

96 to 99   92 to 95   89   91   90   87   88

DB0 to DB3/SA0   DB4 to DB7   E   R/$\overline{W}$   RS   SCL   SDA

MGE980

View additional information for LCD Controllers/Drivers.