

MITSUBISHI <DIGITAL ASSP> M66003-xxxxFP

GUIDE

DESCRIPTION

The M66003 is a 18-digit 5×7-segment vacuum fluorescent display (VFD) controller using the silicon gate CMOS technology. It contains 166 ROM characters and 16 user-defined RAM characters and receives display character codes and various commands from MCU to control VFD.

FEATURES

- Built in 5×7-dot segment character ROM (166 characters . Customization is possible.)
- Built in character RAM for user definition (16 characters)
- Display digit length can be changed. (from 10 to 18 digits)
- One-digit display cycle setting can be changed. (2 cycles)
- Dimmer is adjustable. (16 grades)
- Instruction ON or OFF SEG35 output for every digit
- Built in automatic display digit increment function
- Auto increment of display digit
- Built in simultaneous all-digit display ON/OFF command
- Connection to MCU by three signal lines, CS, SCK and SDATA

SDATA

- Instruction execution with 1, 2 or 3 bytes *
- Turn ON/OFF instruction for every digit-
- Normal or upside-down setting for display
- Normal or inversed view for 5x7 characters
- Shift left function for display window inside Display code RAM
- Positive supply voltage $V_{CC}=5V \pm 10\%$
- Pull-down voltage $V_P=V_{CC}-40V$ typ.

$V_{CC}-45V$ max. (peak)

*: Except for character RAM setting

APPLICATION

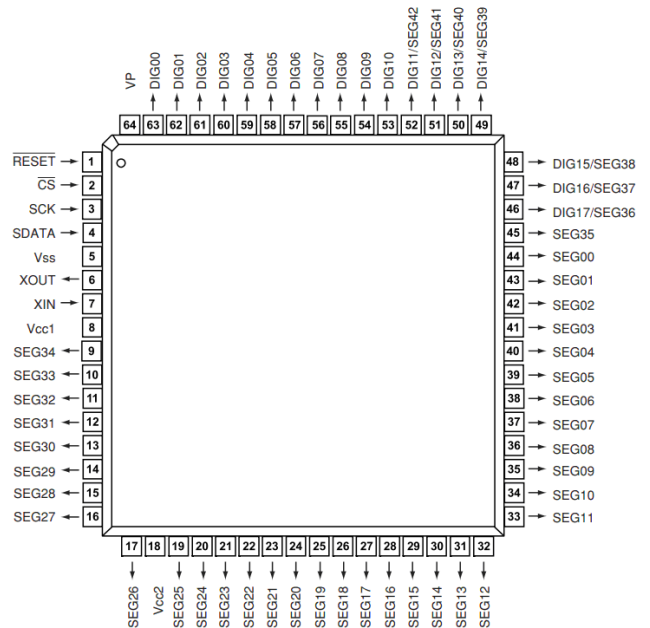
AV equipments, vacuum fluorescent display controller for POS system, etc.

FUNCTION

The M66003 is a 18-digit 5×7-segment VFD (Vacuum Fluorescent Display) controller and contains 166 ROM characters which can be customized and 16 RAM characters that user can define freely. Character display codes and various commands are received as 8-bit serial data from MCU.

It has maximum 42 segment output pins (using only 10 digits) from SEG00 to DIG10/SEG42 to 35 segment output pins (using 18 digits) from SEG00 to SEG34 (34 segments are used for 5×7 character display) . SEG35 output, which is independent of other segment, is used by inputting SEG35 either ON or OFF command (for first 16 digits).

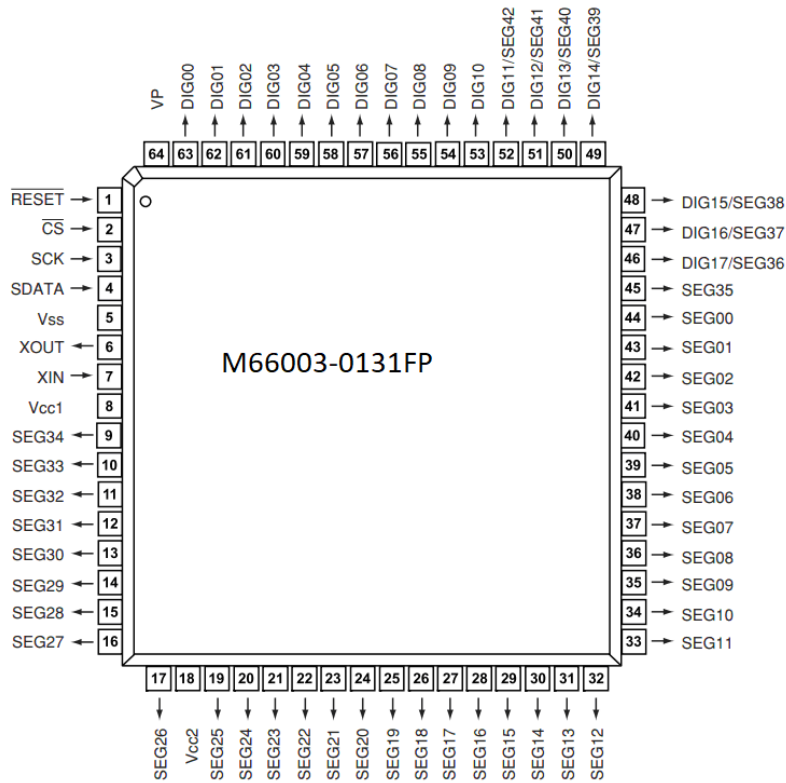
Once display data is fixed, display continues automatically until new data is input. Therefore, MCU can execute other jobs and is lightened of its load.



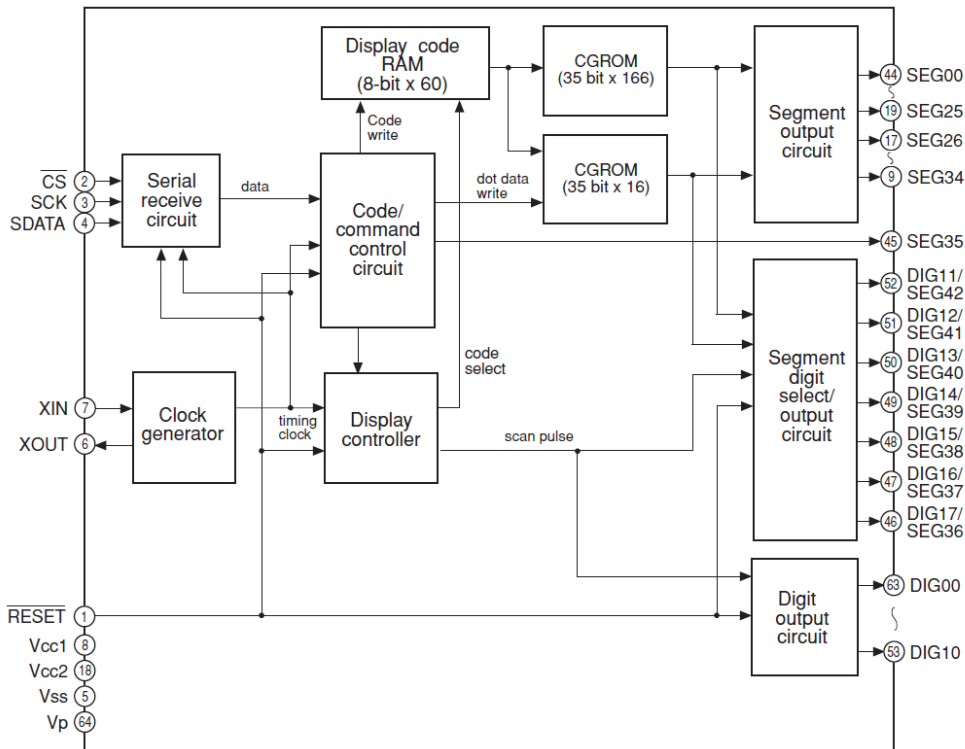
PIN DESCRIPTIONS

Pin No.	Port Name	Function Name	I/O	Detail of Function
1	RESET	/RESET	Reset input	When "L", M66003 is initialized.
2	CS	/CEFL	Chip select input	When "L", communication with the MCU is possible.
3	SCK	CKFL	Shift clock input	When "H", any instruction from the MCU is neglected.
4	SDATA	DTFL	Serial data input	Serial input data is taken and shifted by the positive edge of SCK.
5	Vss	VSS		GND (0V)
6	XOUT	XOUT	Clock out	When use as a CR oscillator, connect external resistor and capacitor.
7	XIN	XIN	Clock in	When use an external clock input external clock to XIN, and XOUT must be opened.
8	Vcc1	VDD		Positive power supply for internal logic.
9	SEG34	P11	Segment output	Connect to segment (anode) pins of VFD.
10	SEG33	P2		
11	SEG32	P3		
12	SEG31	P4		
13	SEG30	P5		
14	SEG29	P6		
15	SEG28	P7		
16	SEG27	P8		
17	SEG26	P9		
18	Vcc2	VDD		Positive power supply for DIG and SEG outputs.
19	SEG25	P10	Segment output	Connect to segment (anode) pins of VFD.
20	SEG24	P11		
21	SEG23	P12		
22	SEG22	P13		
23	SEG21	P14		
24	SEG20	P15		
25	SEG19	P16		
26	SEG18	P17		
27	SEG17	P18		
28	SEG16	P19		
29	SEG15	P20		
30	SEG14	P21		
31	SEG13	P22		
32	SEG12	P23		
33	SEG11	P24		
34	SEG10	P25		
35	SEG09	P26		
36	SEG08	P27		
37	SEG07	P28		
38	SEG06	P29		
39	SEG05	P30		
40	SEG04	P31		
41	SEG03	P32		
42	SEG02	P33		
43	SEG01	P34		
44	SEG00	P35		
45	SEG35	P36		
46	DIG17/SEG36	P37	Digital output	Connect to digit (grid) pins of VFD.
47	DIG16/SEG37	G17		
48	DIG15/SEG38	G16		
49	DIG14/SEG39	G15		
50	DIG13/SEG40	G14		
51	DIG12/SEG41	G13		
52	DIG11/SEG42	G12		
53	DIG10	G11		
54	DIG09	G10		
55	DIG08	G9		
56	DIG07	G8		
57	DIG06	G7		
58	DIG05	G6		
59	DIG04	G5		
60	DIG03	G4		
61	DIG02	G3		
62	DIG01	G2		
63	DIG00	G1		
64	VP	VP		Negative power supply to pull down.

PINOUT



M66003-0101FP
FL Display Driver



M66003-0101FP ...0131FP (10 Digits_42 segments to 18 Digits_35Segments)
-settings will be made depending on the type of display used (number of digits and segments)

Package Drawing
P-LQFP64-14X14-0.80

Renesas code
PLQP0064GA-A

Mass (typ.)
0.7 g

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	13.9	14.0	14.1
E	13.9	14.0	14.1
A ₂	—	1.4	—
H _D	15.8	16.0	16.2
H _E	15.8	16.0	16.2
A	—	—	1.7
A ₁	0	0.1	0.2
b _p	0.32	0.37	0.42
b ₁	—	0.35	—
c	0.09	0.145	0.20
c ₁	—	0.125	—
θ	0°	—	8°
e	—	0.8	—
x	—	—	0.20
y	—	—	0.10
Z _D	—	1.0	—
Z _E	—	1.0	—
L	0.3	0.5	0.7
L ₁	—	1.0	—

NOTE)
1. DIMENSIONS "*1" AND "*2"
DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT
INCLUDE TRIM OFFSET.

