DESCRIPTION

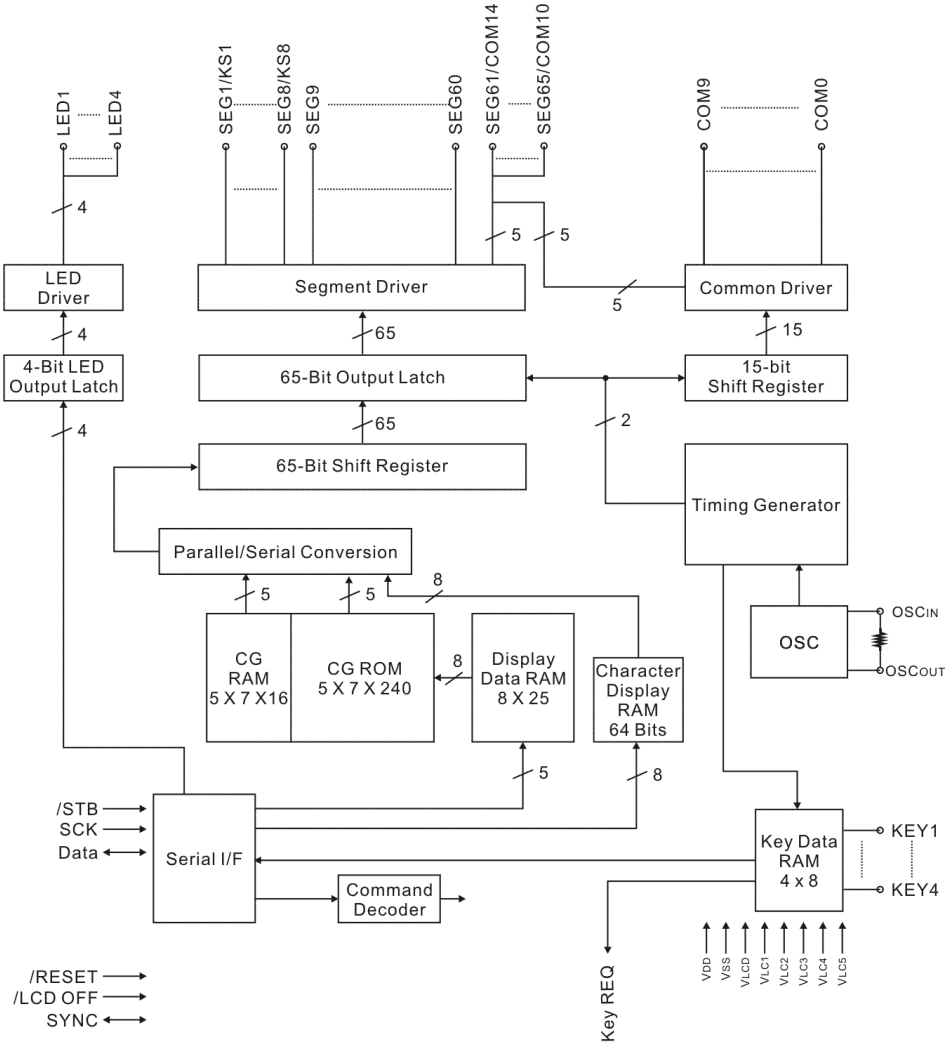
The PT16588 is a controller/driver with 1/8 and 1/15 duty dot matrix LCD display capability. It has 60 segment outputs, 10 common outputs, and 5 dual segment/common outputs, giving a maximum display capability of 12 columns x 2 lines (at 1/15 duty).

LED drive outputs, key scanning key source outputs, and key data inputs are also provided, making it ideal for use in a car stereo front panel, etc.

FEATURES

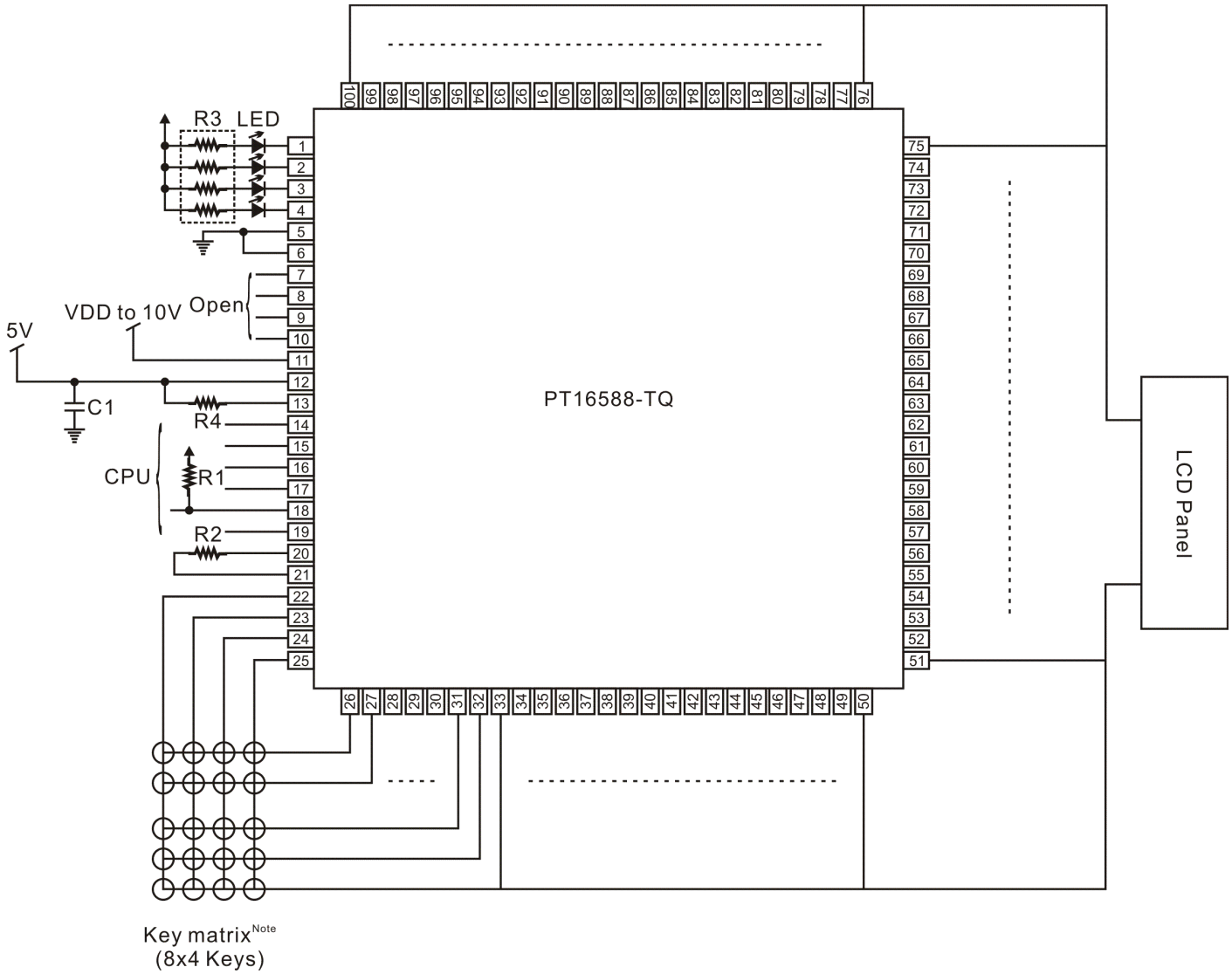
- Dot matrix LCD controller/driver
- Pictograph display segment drive capability (MAX. 64)
- LCD driver unit power supply VLCD independently settable (MAX. 10 V)
- On-chip key scan circuit (8 × 4 matrix)
- Alphanumeric character and symbol display capability provided by on-chip ROM (5 × 7 dots)
- 240 characters + 16 user-defined characters
- Display contents
  - 1/8 duty: 13 columns × 1 line, 64 pictograph displays, 4 LEDs
  - 1/15 duty: 12 columns × 2 lines, 60 pictograph displays, 4 LEDs
- Serial data input/output (SCK, /STB, DATA)
- On-chip oscillator
- Reduced power consumption possible using standby mode

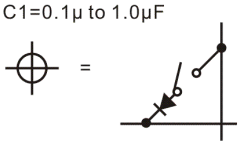
BLOCK DIAGRAM



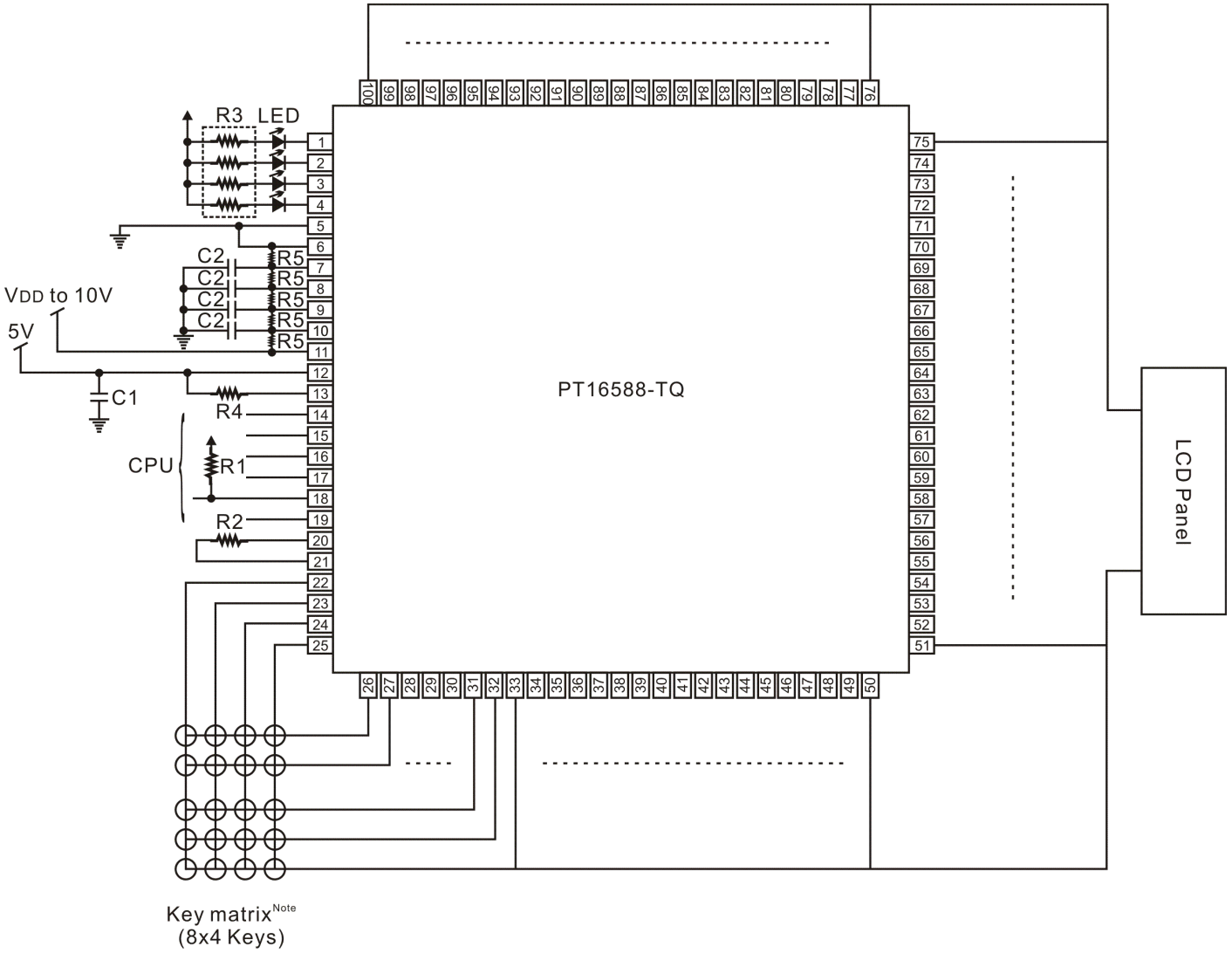
APPLICATION CIRCUITS

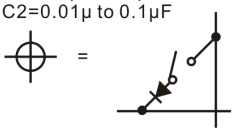
WITH INTERNAL POWER SUPPLY CIRCUIT, 1/15 DUTY



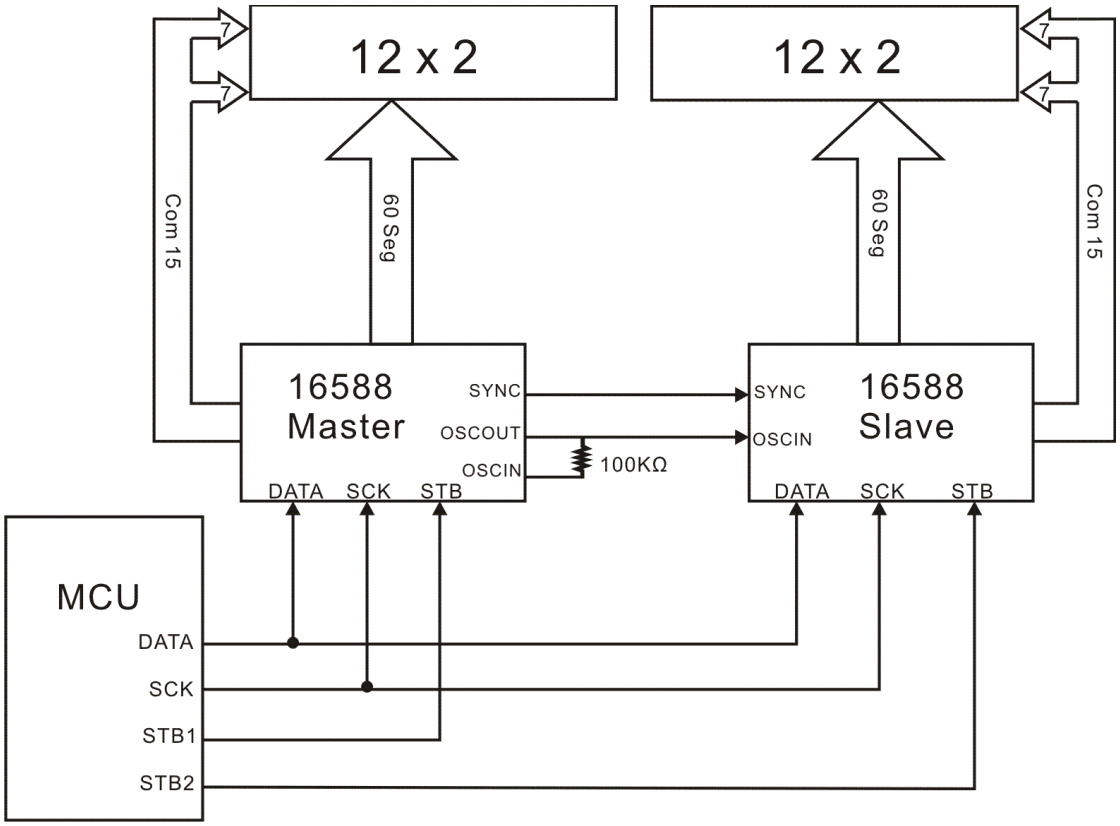
Notes:
1. R1, R4=1K to 10KΩ
2. R2=100KΩ
3. R3=330 to 1KΩ
4. C1=0.1μ to 1.0μF
5. 

WITH EXTERNAL DRIVE CIRCUIT, 1/15 DUTY



Notes:
1. R1, R4, R5=1K to 10KΩ
2. R2=100KΩ
3. R3=330 to 1KΩ
4. C1=0.1μ to 1.0μF
5. C2=0.01μ to 0.1μF
6. 

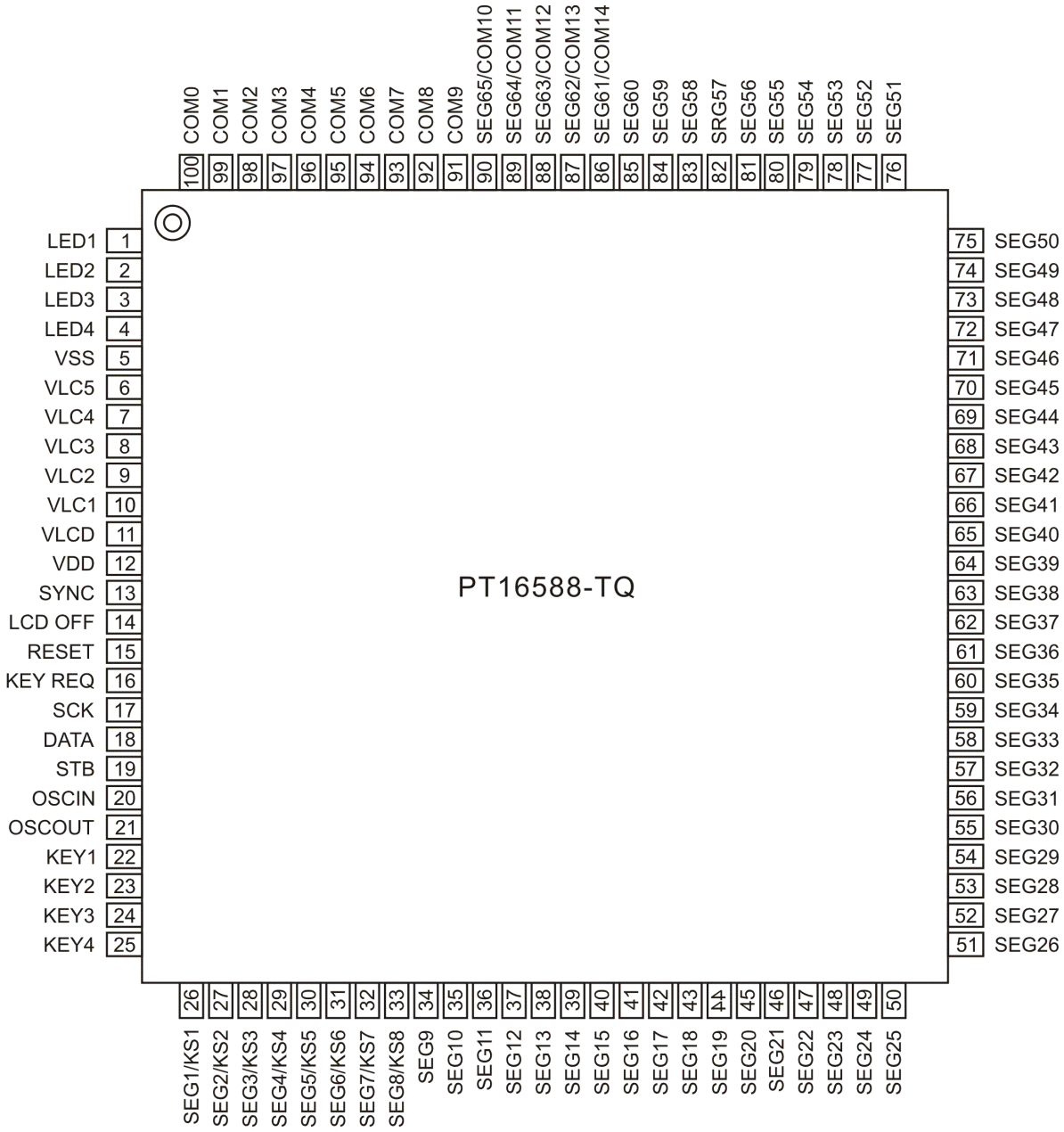
MULTI-CHIP-MODE



ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT16588-TQ	100-Pin TQFP	PT16588-TQ

PIN CONFIGURATION



PIN DESCRIPTION

Pin Name	Symbol	I/O	Description	Pin No.
LED	LED1 to LED4	O	LED outputs are Nch open-drain	1 to 4
GND	VSS		GND pin	5
LCD drive power supply	VLC1 to VLC5		Dot matrix LCD drive power supply. Connect VLC5 to ground when an internal oscillator is used.	10 to 6
LCD drive voltage	VLCD		LCD drive power supply pin	11
Logic power supply	VDD		Internal logic power supply pin	12
Synchronization	SYNC	I/O	Synchronization signal input/output pin. When 2 or more chips are used, wired-OR connection is made to each chip. A pull-up resistor is also required when one chip is used.	13
LCD off	/LCD OFF	I	When “L”, a forced LCD off operation is performed, and SEGn & COMn output the unselected waveform.	14
Reset	/RESET	I	Initial state is set when “L”.	15
Key request	Key REQ	O	“H” if there is key data, “L” if there is none. Key data can be read irrespective of the state of this pin. Output is CMOS output.	16
Shift clock	SCK	I	Data shift clock. Data is read on rising edge, and output on falling edge.	17
Data	DATA	I/O	Performs input of commands, key data, etc., and key data output. Input is performed from the MSB on the rise of the shift clock, and the first 8 bits are recognized as a command. Output is performed from the MSB on the fall of the shift clock. Output is Nch open-drain.	18
Strobe	/STB	I	Data input is enabled when “H”. Command processing is performed on a fall.	19
Oscillation	OSC_{IN}	I	Connect oscillator resistor. When an external oscillator is used, input a clock signal to the OSC_{IN} pin and leave OSC_{OUT} pin open.	20
	OSC_{OUT}	O		21
Key data	KEY1 to KEY4	I	Key scanning key data inputs	22 to 25
Segment /key source dual function	SEG1/KS1 to SEG8/KS8	O	Pins with dual function as dot matrix LCD segment outputs and key scanning key source outputs	26 to 33
Segment	SEG9 to SEG60	O	Dot matrix LCD segment outputs	34 to 85
Segment /common dual function	SEG61/COM14 to SEG85/COM10	O	Switchable to either dot matrix LCD segment outputs or common outputs	86 to 90
Common	COM0 to COM9	O	Dot matrix LCD common outputs	91 to 100

IMPORTANT NOTICE

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