

PDESCRIPTION

The PT16511 is 1/4 duty general-purpose LCD driver that can be used for frequency display in electronic tuners under the control of a microcontroller. The PT16511 can drive an LCD with up to 140 segments directly. The PT16511 can also control up to 4 general-purpose output ports.

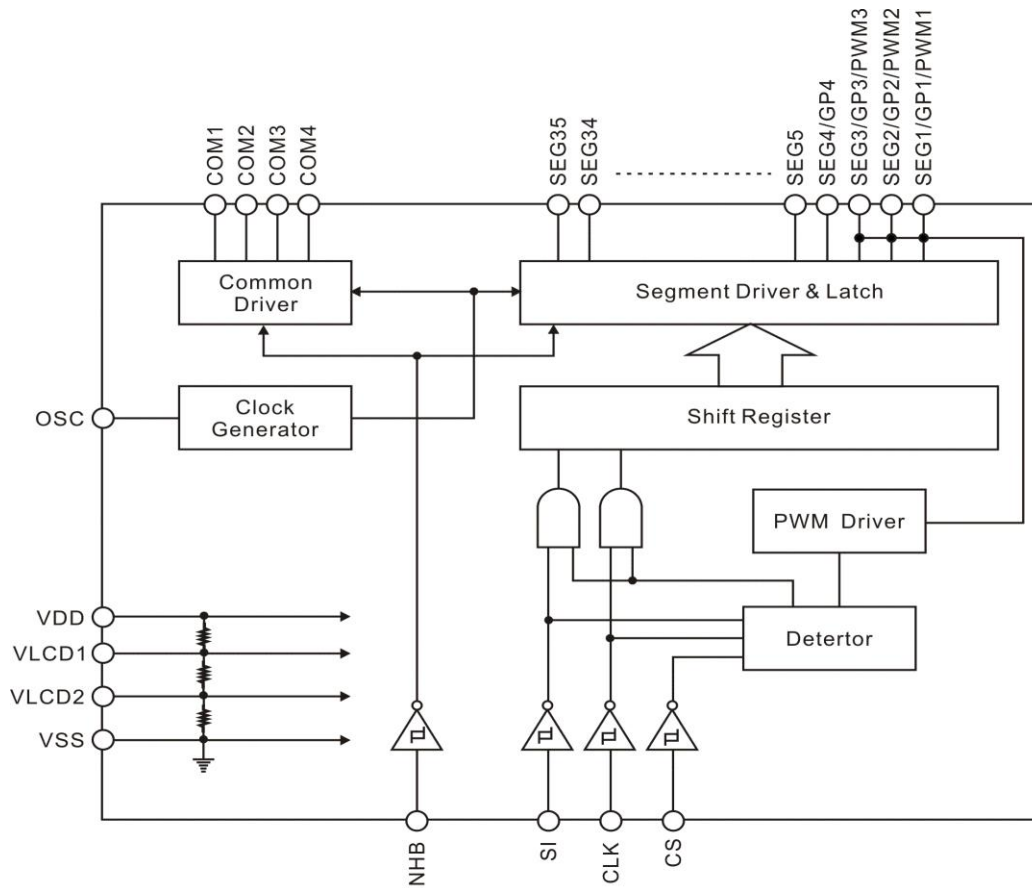
APPLICATION

- Electronic equipment with LCD Display

FEATURES

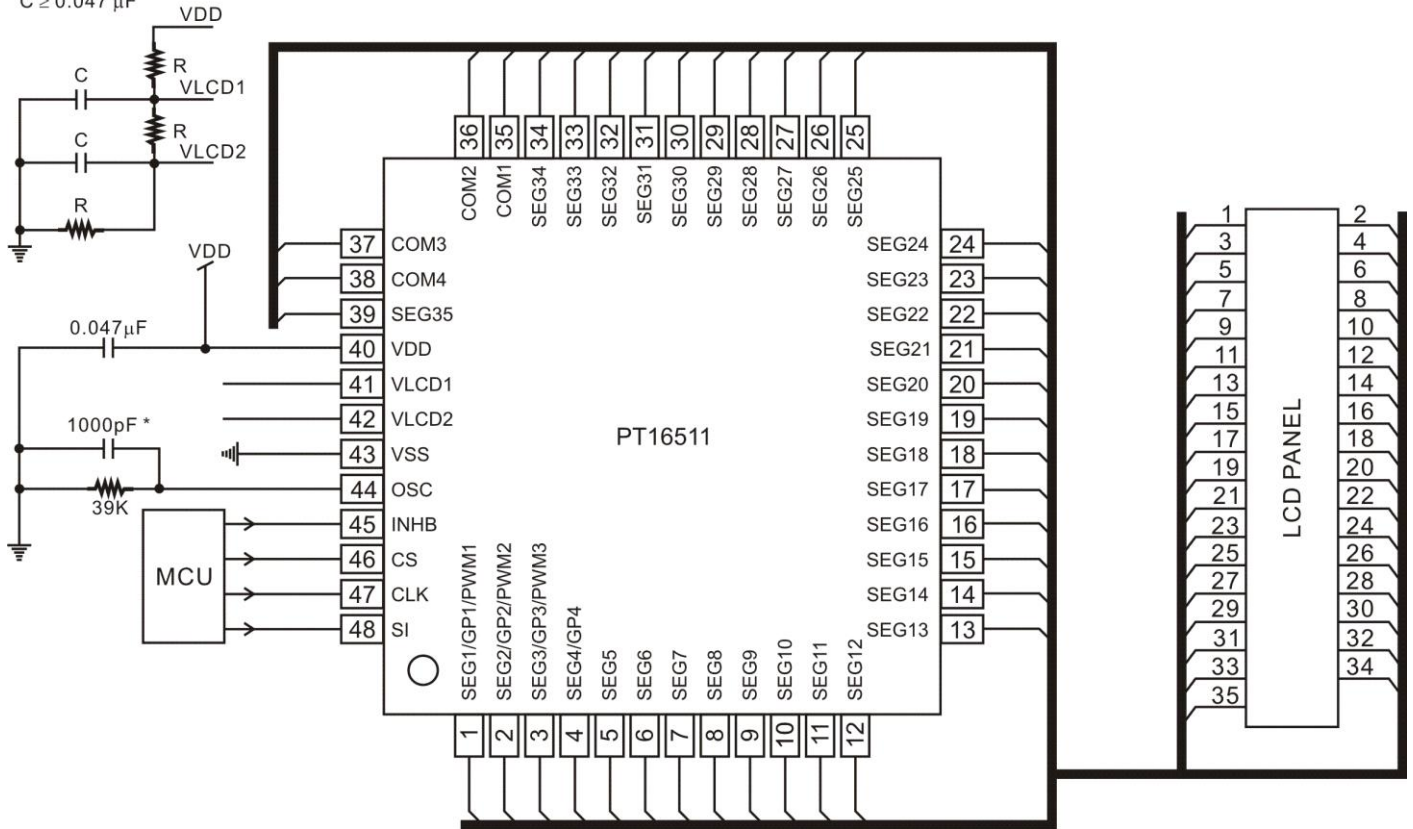
- Up to 140 segments for 1/4 duty drive can be displayed
- Serial interface for clock, Data Input, Strobe pins
- Serial data control of the power-saving mode based backup function and all the segments forced off function
- Serial data control of switching between the segment output port and the general-purpose output port functions
- Serial data control of frame frequency for common and segment output waveforms
- High generality, since display data is displayed directly without decoder intervention
- The INHB pin can force the display to the off state
- RC oscillator circuit
- Programmable PWM signal output pins
- AEC-Q100 Grade 2 Compliant for Automotive Applications

BLOCK DIAGRAM



APPLICATION CIRCUIT

$10\text{ K}\Omega \geq R \geq 2.2\text{ K}\Omega$
 $C \geq 0.047\ \mu\text{F}$



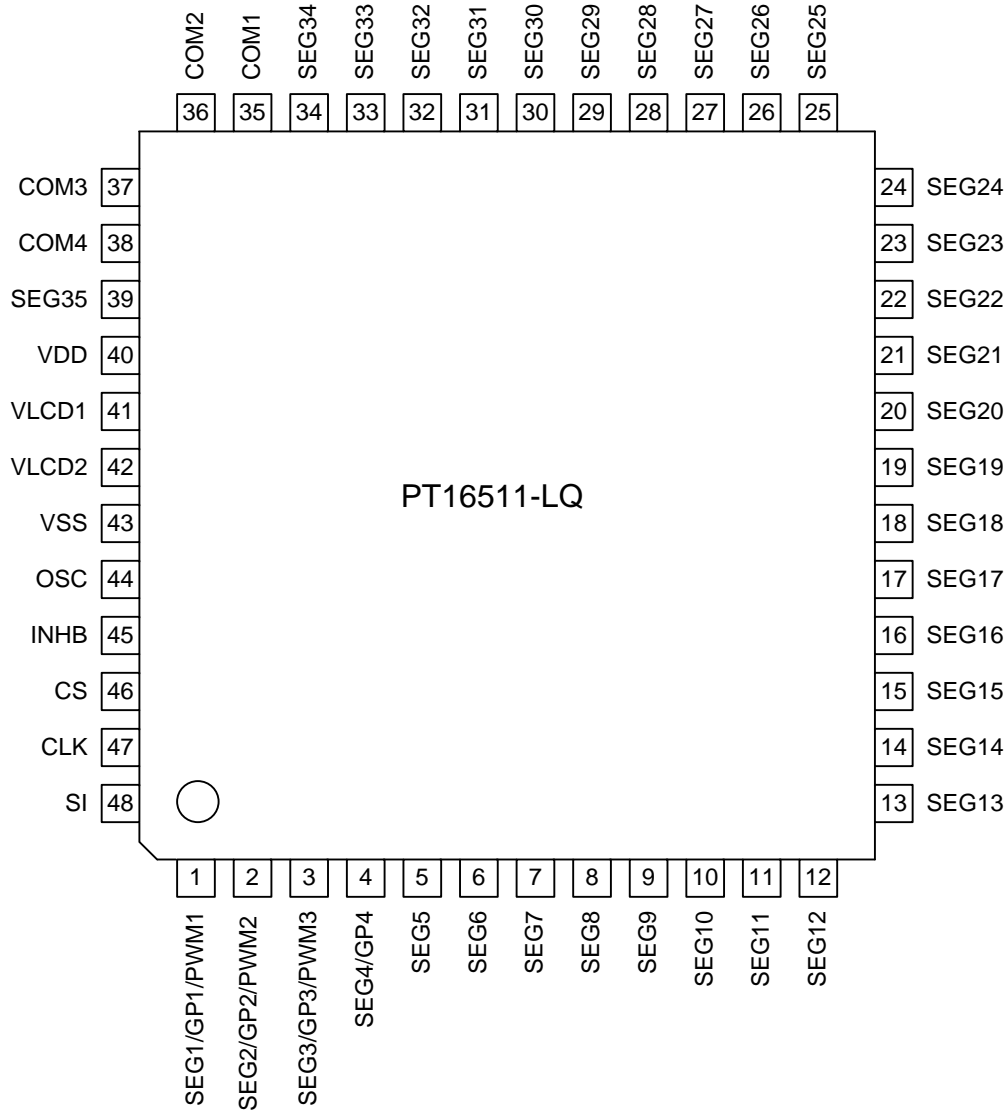
Notes:

- * = When a capacitor except the recommended external capacitance ($C_{osc} = 1000\text{ pF}$) is connected the OSC pin, we recommend that applications connect the OSC pin with a capacitor in the range 220 to 2200pF.
- The resistance value must be decide by the LCD panel size.


ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT16511-LQ	48-pin, LQFP	PT16511-LQ

PIN CONFIGURATION



PIN DESCRIPTION

Pin Name	I/O	Active	Handling when unused	Function	Pin No.
SEG1/GP1/PWM1 to SEG3/GP3/PWM3	O	-	Open	Segment outputs for displaying the display data transferred by serial data input. The pins SEG1/GP1/PWM1 to SEG4/GP4 can be used as general-purpose output ports when so set up by the control data.	1 to 3
SEG4/GP4					4
SEG5 to SEG34					5 to 34
SEG35					39
COM1 to COM4	O	-	Open	Common driver outputs. The frame frequency is f_0 Hz.	35 to 38
VDD	-	-	-	Logic block power supply. Provide a voltage in the range 4.5 to 6.0V.	40
VLCD1	I	-	Open	LCD drive 2/3 bias voltage (middle level) supply. It is possible to supply the 2/3 VDD voltage to this pin externally.	41
VLCD2	I	-	Open	LCD drive 1/3 bias voltage (middle level) supply. It is possible to supply the 1/3 VDD voltage to this pin externally.	42
VSS	-	-	-	Ground pin. Connect to ground.	43
OSC	I/O	-	VDD	Oscillator connection. An oscillator circuit is formed by connecting an external resistor and capacitor to this pin.	44
INHB	I	L	GND	Display off control input <ul style="list-style-type: none"> INHB = low (VSS)...off SEG1/ GP1/PWM1 to SEG4/GP4 = low (VSS) (These pins are forcibly set to the segment output port function and fixed at the VSS level) SEG5 to SEG35 = low (VSS) COM1 to COM4 = low (VSS) INHB = high (VDD)...on Note that serial data transfers can be performed when the display is forced off by this pin.	45
CS	I	H	GND	Serial data transfer inputs. These pins are connected to the control microprocessor. CS: Chip enable CLK: Synchronization clock SI: Transfer data	46
CLK	I				47
SI	I	-			48

Note:

NC=No connection

Please don't connect the NC pins to any voltage potential or connect with other pins in PCB layout.

IMPORTANT NOTICE

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Princeton Technology Corp.
2F, 233-1, Baociao Road,
Sindian Dist, New Taipei City 23145, Taiwan
Tel: 886-2-66296288
Fax: 886-2-29174598
<http://www.princeton.com.tw>