DESCRIPTION

The PT16576 is 1/3 duty and 1/4 duty general-purpose LCD driver that can be used for frequency display in electronic tuners under the control of a microcontroller. The PT16576 can drive an LCD with up to 340 segments directly. The PT16576 can also control up to 8 general-purpose output ports.

FEATURES

- Switching between 1/3 duty and 1/4 duty drive techniques under serial data control.
- Switching between 1/2 bias and 1/3 bias drive techniques under serial data control.
- Up to 258 segments for 1/3 duty drive and 340 segments for 1/4 duty drive can be displayed.
- Serial interface for clock, Data Input, Data Output, 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.
- Built-in display contrast adjustment circuit
- Independent VLCD for the LCD driver block
- The /INH pin can force the display to the off state.
- RC oscillator circuit
- AEC-Q100 Grade2 Compliant for Automotive Applications

APPLICATION

- Electronic equipment with LCD Display

BLOCK DIAGRAM
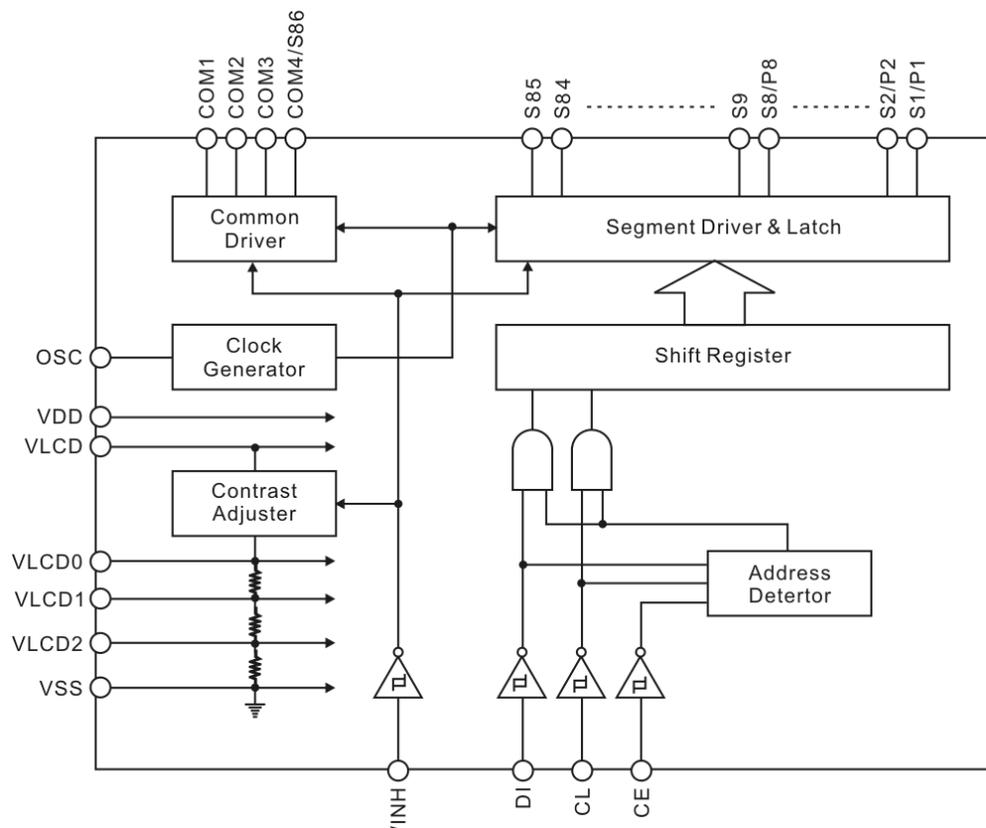
APPLICATION CIRCUIT

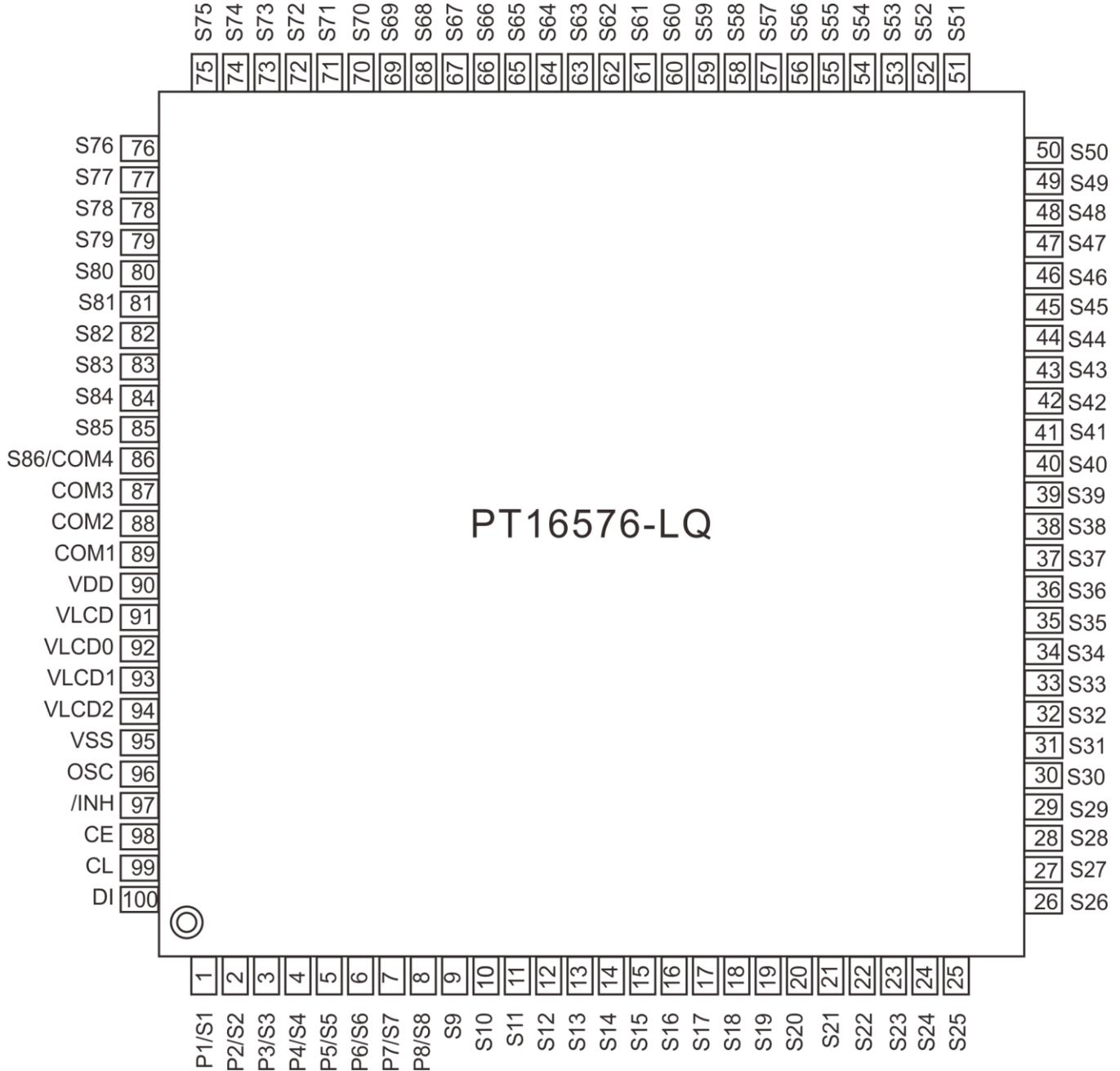$10K\Omega \geq R \geq 2.2K\Omega$
$C \geq 0.047\mu F$
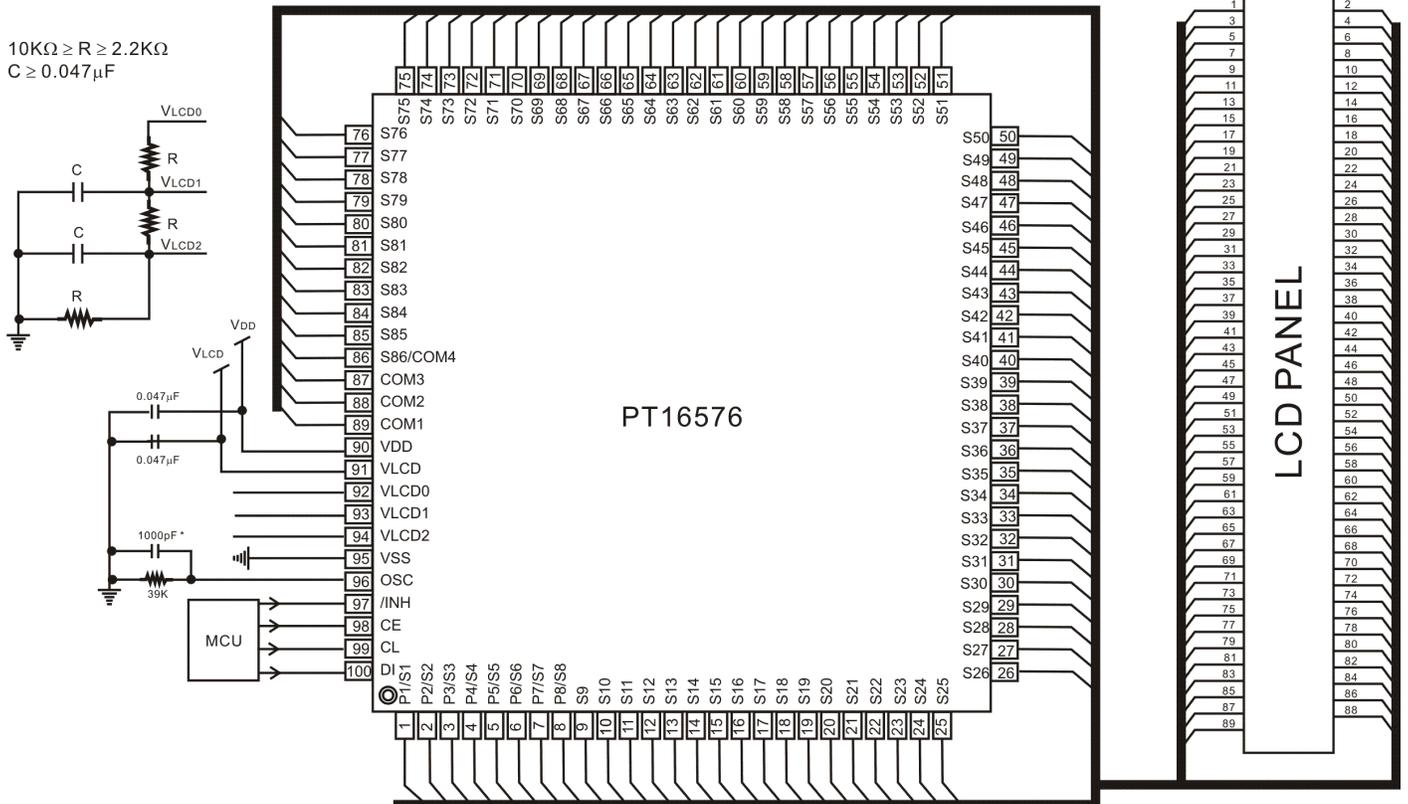
Note:

*=When a capacitor except the recommended external capacitance (Cosc=1000pF) is connected the OSC pin, we recommend that applications connect the OSC pin with a capacitor in the range 220 to 2200pF.

ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT16576-LQ	100 Pins, LQFP	PT16576-LQ

PIN CONFIGURATION

Top pins (left to right): S75(75), S74(74), S73(73), S72(72), S71(71), S70(70), S69(69), S68(68), S67(67), S66(66), S65(65), S64(64), S63(63), S62(62), S61(61), S60(60), S59(59), S58(58), S57(57), S56(56), S55(55), S54(54), S53(53), S52(52), S51(51)

Left pins (top to bottom): S76(76), S77(77), S78(78), S79(79), S80(80), S81(81), S82(82), S83(83), S84(84), S85(85), S86/COM4(86), COM3(87), COM2(88), COM1(89), VDD(90), VLCD(91), VLCD0(92), VLCD1(93), VLCD2(94), VSS(95), OSC(96), /INH(97), CE(98), CL(99), DI(100)

Right pins (top to bottom): S50(50), S49(49), S48(48), S47(47), S46(46), S45(45), S44(44), S43(43), S42(42), S41(41), S40(40), S39(39), S38(38), S37(37), S36(36), S35(35), S34(34), S33(33), S32(32), S31(31), S30(30), S29(29), S28(28), S27(27), S26(26)

Bottom pins (left to right): P1/S1(1), P2/S2(2), P3/S3(3), P4/S4(4), P5/S5(5), P6/S6(6), P7/S7(7), P8/S8(8), S9(9), S10(10), S11(11), S12(12), S13(13), S14(14), S15(15), S16(16), S17(17), S18(18), S19(19), S20(20), S21(21), S22(22), S23(23), S24(24), S25(25)

PT16576-LQ

PIN DESCRIPTION

Pin Name	I/O	Active	Handling when unused	Function	Pin No.
S1/P1 to S8/P8 S9 to S85	O	-	Open	Segment outputs for displaying the display data transferred by serial data input. The pins S1/P1 to S8/P8 can be used as general-purpose output ports when so set up by the control data.	1 to 8 9 to 85
COM1 to COM3 COM4/S86	O	-	Open	Common driver outputs. The frame frequency is f_O Hz. The COM4/S86 pin can be used as a segment output in 1/3 duty.	89 to 87 86
OSC	I/O	-	VDD	Oscillator connection. An oscillator circuit is formed by connecting an external resistor and capacitor to this pin.	96
CE CL DI	I	H	GND	Serial data transfer inputs. These pins are connected to the control microprocessor. CE: Chip enable CL: Synchronization clock DI: Transfer data	98
	I	⌐⌐			99
	I	-			100
/INH	I	L	GND	Display off control input • /INH=low (V_{SS})…off S1/P1 to S8/P8=low (V_{SS}) (These pins are forcibly set to the segment output port function and fixed at the V_{SS} level) S9 to S85=low (V_{SS}) COM1 to COM3=low (V_{SS}) COM4/S86=low(V_{SS}) • /INH=high (V_{DD})…on Note that serial data transfers can be performed when the display is forced off by this pin.	97
VLCD0	O	-	Open	LCD Drive 3/3 bias voltage (high level) supply. This level can be modified using the display contrast adjustment circuit. However, note that V_{LCD0} must be greater than or equal to 2.7V. Also, since this IC provides the built-in display contrast adjustment circuit, applications must not attempt to provide this level from external circuits.	92
VLCD1	I	-	Open	LCD drive 2/3 bias voltage (middle level) supply. It is possible to supply the 2/3 V_{LCD0} voltage to this pin externally. This pin must be shorted to V_{LCD2} if 1/2 bias is used.	93
VLCD2	I	-	Open	LCD drive 1/3 bias voltage (middle level) supply. It is possible to supply the 1/3 V_{LCD0} voltage to this pin externally. This pin must be shorted to V_{LCD1} if 1/2 bias is used.	94
VDD	-	-	-	Logic block power supply. Provide a voltage in the range 2.7 to 6.0V.	90
VLCD	-	-	-	LCD driver block power supply. When V_{LCD0} is between $0.7V_{LCD}$ and $0.95V_{LCD}$, supply a voltage in the range 4.0 to 6.0V. When V_{LCD0} and V_{LCD} will be equal, supply a voltage in the range 2.7 to 6.0V.	91
VSS	-	-	-	Ground pin. Connect to ground.	95

IMPORTANT NOTICE

Princeton Technology Corporation (PTC) reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and to discontinue any product without notice at any time.

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