



DESCRIPTION

PT16581 is an LCD Driver IC which can drive up to 124 segments. It can be used for frequency display in microprocessor-controlled radio receiver and in other display applications. PT16581 supports both 1/3 duty, and 1/4 duty drive. Pin assignment and application circuit are optimized for easy PCB layout and cost saving advantages.

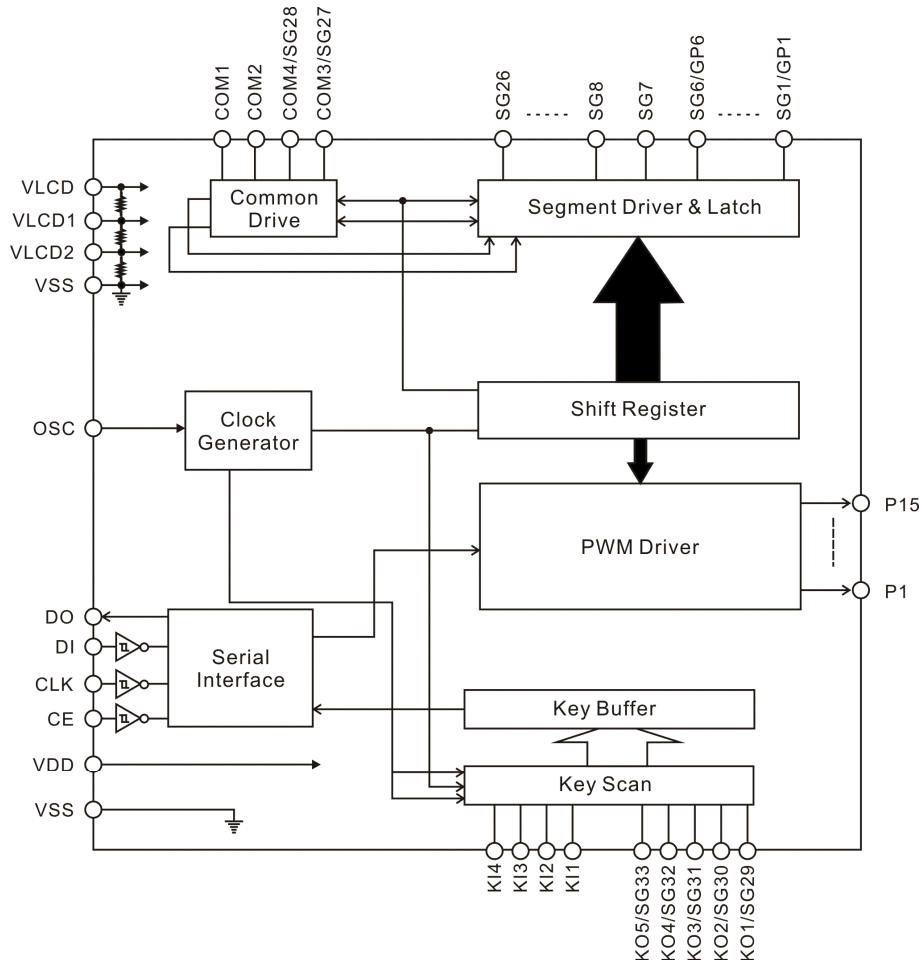
APPLICATION

- Electronic equipment with LCD display
- Car HVAC control panel

FEATURES

- CMOS technology
- Up to 66 segments for 1/2 duty - 96 segments for 1/3 duty - 124 segments for 1/4 duty drive can be displayed
- 1/2 duty - 1/2 Bias
- 1/3 duty - 1/2 Bias and 1/3 duty - 1/3 Bias drive techniques
- 1/4 duty - 1/2 Bias and 1/4 duty - 1/3 Bias drive techniques
- Power saving mode and all segments OFF function
- Direct display of display data without using a decoder
- RC oscillation circuit
- Power supply voltage: 4.5V to 6V
- CMOS/TTL compatible logic input pins
- LCD drive bias voltage can be provided internally or externally
- On-Chip voltage detection type reset circuit
- 15 programmable PWM signal output pins
- Available in 64 pins LQFP

BLOCK DIAGRAM





CONTENTS

| | | |
|------|---|----|
| 1. | APPLICATION CIRCUITS | 3 |
| 2. | ORDER INFORMATION | 4 |
| 3. | PIN CONFIGURATION | 4 |
| 4. | PIN DESCRIPTION | 5 |
| 5. | INPUT/OUTPUT CONFIGURATIONS | 6 |
| 6. | FUNCTION DESCRIPTION | 8 |
| 6.1 | LCD SERIAL DATA TRANSFER FORMAT (1/2 DUTY) | 8 |
| 6.2 | LCD SERIAL DATA TRANSFER FORMAT (1/3 DUTY) | 9 |
| 6.3 | LCD SERIAL DATA TRANSFER FORMAT (1/4 DUTY) | 11 |
| 6.4 | SERIAL DATA OUTPUT | 13 |
| 6.5 | LCD CONTROL DATA | 14 |
| 6.6 | OUTPUT DATA | 15 |
| 6.7 | DISPLAY DATA TO SEGMENT OUTPUT PIN CORRESPONDENCE(1/2 DUTY) | 16 |
| 6.8 | DISPLAY DATA TO SEGMENT OUTPUT PIN CORRESPONDENCE(1/3 DUTY) | 17 |
| 6.9 | DISPLAY DATA AND THE OUTPUT PIN CORRESPONDENCE(1/4 DUTY) | 18 |
| 6.10 | 1/3 DUTY, 1/2 BIAS DRIVE WAVEFORMS | 19 |
| 6.11 | 1/3 DUTY, 1/3 BIAS DRIVE WAVEFORMS | 20 |
| 6.12 | 1/4 DUTY, 1/2 BIAS DRIVE WAVEFORMS | 21 |
| 6.13 | 1/4 DUTY, 1/3 BIAS DRIVE WAVEFORMS | 22 |
| 6.14 | PWM SERIAL DATA TRANSFER FORMAT | 23 |
| 6.15 | PWM INSTRUCTION | 23 |
| 6.16 | PWM OUTPUT FUNCTION DESCRIPTION | 24 |
| 6.17 | SLEEP MODE FUNCTION | 25 |
| 6.18 | KEY SCAN OPERATION | 25 |
| 6.19 | MULTIPLE KEY OPERATION | 27 |
| 6.20 | VOLTAGE DETECTION TYPE RESET CIRCUIT (VDET) | 27 |
| 6.21 | NOTES ON THE CONTROLLER KEY DATA READ TECHNIQUES | 29 |
| 7. | ABSOLUTE MAXIMUM RATINGS | 31 |
| 8. | ALLOWABLE OPERATING RANGE | 31 |
| 9. | ELECTRICAL CHARACTERISTICS | 32 |
| 10. | PACKAGE INFORMATION | 34 |
| | IMPORTANT NOTICE | 35 |



2. ORDER INFORMATION

| Valid Part Number | Package Type | Top Code |
|-------------------|---------------|------------|
| PT16581-LQ | 64 Pins, LQFP | PT16581-LQ |

3. PIN CONFIGURATION

