Sanyo LC85632 Manual

Digital alarm clock

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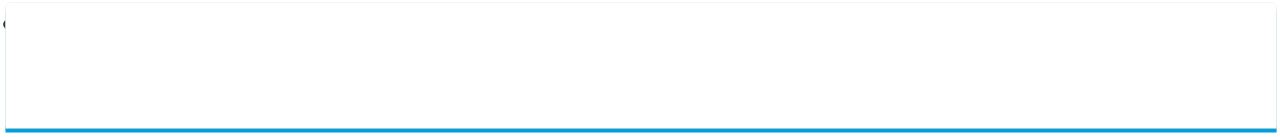

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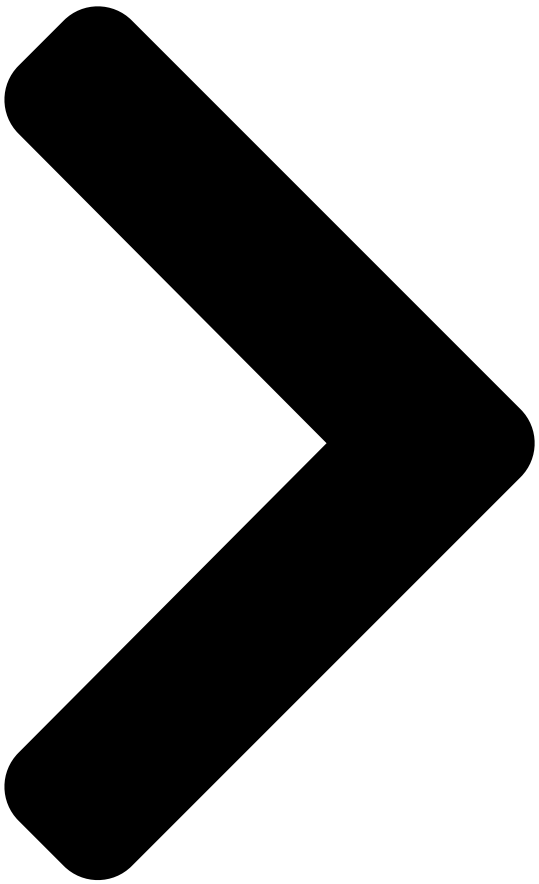


Ordering number : EN4659

Overview

The LC85632 is a multi-function digital clock IC that in addition to providing current time display supports a wide range of functions, including an alarm function, a sleep function, a calendar function, and a function to turn connected equipment on and off. Furthermore, the LC85632 provides a simpler user interface than that of earlier Sanyo products.

Applications

- Alarm clocks
- Clock radios

Functions

- Current time display

• Two independent alarm functions with snooze function
• Sleep timer function (up to 90 minutes)
• Calendar function
One year calendar (January 1 to December 31) that can display leap year's day (February 29).

Digital Alarm Clock

Package Dimensions

unit: mm

3196-DIP30SD

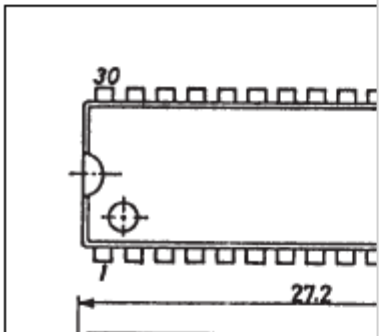
[LC85632]

O3098HA (OT)/71093JN B8-0531 No. 4659-1/34

CMOS IC

LC85632

SANYO: DIP30SD



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Related Manuals for Sanyo LC85632

Alarm Clock Sanyo RM-630 User Manual

Am/fm clock radio with night light (11 pages)

Alarm Clock Sanyo TPM2170 Owner's Manual

Mini b/w tv am/fm radio digital alarm clock (8 pages)

Alarm Clock Sanyo TPM2770 Service Manual

Mini b/w. television with am/em radio & digital alarm clock (24 pages)

Summary of Contents for Sanyo LC85632

Page 1
One year calendar (January 1 to December 31) that can display leap year's day (February 29) Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage.

Page 2: Pin Assignment
LC85632 Pin Assignment No. 4659-2/34...

Page 3: Pin Functions
LC85632 Pin Functions Internal equivalent Pin function Handling when unused circuit AM & PM LED output pins Open 10'SHRag & d Drive phase 1 Drive phase 2 AM & PM 10'SHRb & e 10'SHR ag & d 10'SHR ad 10'SHR g 10'SHRc &...

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LC85632 Continued from preceding page. Internal equivalent Pin function Handling when unused circuit TIME SET INPUT Input pin that starts the setting/update of the current time, Open the alarm time, or the calendar date. Normally left open (NOP). The application of a high level is taken as a + input, which increases the value of the setting, and a low is taken as a –...

Page 5: Mode Select
LC85632 Continued from preceding page. Internal equivalent Pin function Handling when unused circuit MODE SELECT Input pin for switching the operating mode. Either left open, connected Switches the display mode and the clock input to the to VDD, or connected to 50/60 Hz INPUT pin (pin 27).

Page 6
LC85632 Three Value Input Circuits: H: High level, M: Open, L: Low level, NOP: No operation • MODE SELECT Input level Mode 50 Hz/24 hour display 60 Hz/12 hour display 50 Hz/12 hour display • TIME SET INPUT Input level...

Page 7
LC85632 Specifications Absolute Maximum Ratings at Ta = 25°C, V = 0 V Parameter Symbol Applicable pin Conditions Ratings Unit Maximum power supply voltage –0.3 to +7.0 Input voltage All input pins other than the –0.3 to V + 0.3...

Page 8
LC85632 Electrical Characteristics at Ta = 25°C, V = 5 V, V = 0 V Ratings Parameter Symbol Applicable pin Conditions Unit Output high level current 10' SHRag & d Output on, (Note 1) –32 – 2.0 V Output off leakage current Output off, –20...

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Figure 1 shows the correspondence between the LC85632 segment outputs and the LED panel. For example, pin 2 (the 10'SHRag & d pin) drives the segments 'a', 'g', and 'd' in the 10'SHR digit. Table 1 shows the correspondence between the drive phases and the segments that light.

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LC85632 Figure 2 shows the sections where LEDs are lit for each drive phase. This

figure is based on the generalized drawing shown in figure 1, and the shaded sections show the segments that are lit by the corresponding phase.

Page 11 LC85632 Figure 3 shows actual wiring examples for 12 hour and 24 hour displays for the Tottori Sanyo, Ltd., SL-1042-30T LED panel. However, since the SL-1042-30T LED panel does not have an alarm A display LED, an external LED is used for alarm A display.

Page 12 The following figures show the circuit diagrams for LED panels that can also display the alarm and calendar functions. These panels are the SL-1994-54T (for 12 hour display) and the SL-1994-55T (for 24 hour display), and are both made by Tottori Sanyo, Ltd. The calendar day/month cannot be used with this circuit.

Page 13 LC85632 Oscillator Circuit A 4800 Hz oscillator can be constructed by connecting a resistor and a capacitor to the CR OSC pin (pin 19). This oscillator is used as the internal clock for detecting the loss of external power, for alarm tones, and for the dimmer duty cycle.

Page 14 LC85632 Operating State Transition Diagram Figure 6 Operating State Transitions 1: Overall No. 4659-14/34...

Page 15 LC85632 Power on State Initial state Display Current time, flashing Numbers 12 00 (Phase Colon (Phase ALM IND — Depends on the display AM/PM mode Operation Normal clock Application of a ALARM Not set high or low level SLEEP Not set...

Page 16 LC85632 From initial state Application of a high or low level to the ALM-A/B DISP & SEL pin, thus selecting the alarm display and setting mode. State Initial state Display Alarm Numbers 12 00 Colon Flashing ALM IND Either A or B flashing...

Page 17 LC85632 From initial state Application of a high or low level to the CAL DISP & SNOOZE pin in the initial state (1) state, thus displaying the calendar. State Initial state Display Calendar Numbers Application of a high Colon or low level to the CAL...

Page 18 LC85632 Current time display and setting block (From initial state To the current time display and there an ON setting block input? Start the sleep count Turn on the display and set the RADIO OUTPUT pin high. Have 2 seconds passed...

Page 19: Operation

LC85632 Operation Clearing the Initial Reset State In the initial state when power is first applied, the display reads 12:00 (or 0:00 for 24 hour display) and the numbers and the colon flash alternately. This is called the “initial reset state”. The period of the flashing is 1 Hz.

Page 20 LC85632 Setting the Time * RT-TIME SET/DIMMER [Pin 29] OPEN DIMMER Current time setting mode (1/4 DUTY) (Current time display) * TIME SET INPUT [Pin 20] OPEN DOWN (Back) (Current time display) (Forward) (1) Normal operation (current time display mode)

Page 21 LC85632 Alarm * ALM-A/B DISP & SEL. [Pin 25] OPEN Alarm B set time display Alarm A set time display (Setting enabled) (Current time display) (Setting enabled) (1) Entering alarm mode Alarm A set time display (setting enabled): High level Alarm B set time display (setting enabled): Low level This pin should be left open in normal operation.

Page 22 LC85632 (6) Restart of and alarm interrupted by the snooze function • A snooze operation completes 6 to 7 minutes after its start. • If the current time is changed during a snooze operation, the snooze period will be shortened by the amount the time is changed, regardless of whether the time was advanced or moved backwards.

Page 23 LC85632 • The conditions concerning alarm output are as follows: — In principle, the later occurring alarm is given priority. Example: The alarms will operate as follows if alarm A is set for 12:02 and alarm B is set for 12:04.

Page 24 LC85632 Calendar (1) Overview This IC includes a one year calendar on-chip. It only supports month and date displays, and does not provide a day of the week display. The following calendar table is included on-chip. Month Days This calendar function can display February 29 to handle leap year’s day.

Page 25 LC85632 • Operating conditions — Normal operation When the time advances from 23:59 to 0:00 (0:00 a.m.), the date is advanced by 1 day. — Current time setting mode The clock time setting is advanced or set back in current time setting mode. If the time setting passes through 0:00 a.m.

Page 26 LC85632 Manual and Sleep * MANUAL & SLEEP [Pin 26] OPEN OFF input ON input (Current time display) Sleep-in (1) Function This pin has the following functions. • RADIO OUTPUT pin (pin 22) output control • Alarm output stop control •...

Page 27 LC85632 • If another ON input is applied during “On” display, the IC enters sleep mode. The following operations are performed in sleep mode. — The display is changed from “On” to “90”. Figure 19 Sleep Setting Time Display — The display is held in that form for a 1 to 2 second period, and if another ON input is applied during this display, the display changes to 60.

Page 28 LC85632 AC Input * 50/60 Hz INPUT [Pin 27] Input AC input (f = 50 Hz/60 Hz) (1) The AC input should be 50 or 60 Hz. This input uses the 50/60 Hz INPUT pin. This input is used as the reference clock during normal operation.

Page 29 LC85632 (3) The IC determines whether power has been lost based on whether there is an AC input to the 50/60 Hz INPUT pin. • Determining that power has been lost When the AC input falls under 1 Hz, the IC determines that power has been lost and stops display output.

Page 30: Self Test Mode

LC85632 Self Test Mode * TEST [Pin 18] OPEN LED self test mode Normal operation IC test, illegal setting This IC provides a self-test mode for testing the LED display and the three value input pins. It supports the following tests.

Page 31 LC85632 Display Priority Ordering The priority order for display when inputs are applied to two or more of the following pins at the same time is shown in the box below. • CAL DISP & SNOOZE (pin 21) • ALM-A/B DISP & SEL (pin 25) •...

Page 32 LC85632 Figure 23 LC85632 Block Diagram No. 4659-32/34...

Page 33 LC85632 Figure 24 LC85632 Application Circuit No. 4659-33/34...

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