

DESCRIPTION

PT6397 is a Vacuum Fluorescent Display (VFD) Controller. 32 segment/grid output driver lines, one display memory, control circuit and RTC circuit are all incorporated into a single chip to build a highly reliable peripheral device for a single-chip microcomputer and STB application. Serial data is fed to PT6397 via a 4-wire serial interface or I²C bus. It is housed in a 52-pin LQFP package.

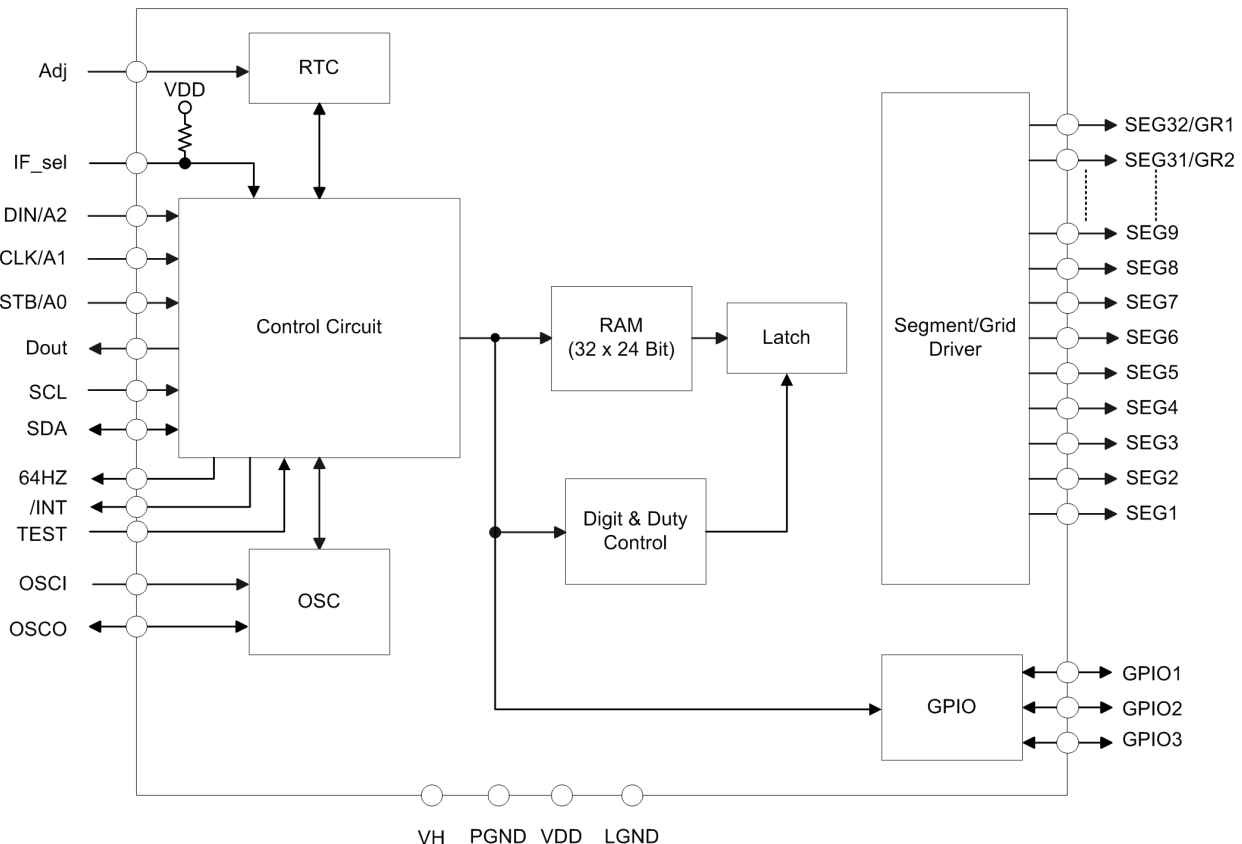
APPLICATIONS

- Microcomputer peripheral devices
- STB application

FEATURES

- CMOS technology
- Multiple display modes: 32 segments/0 grid to 8 segments/24 grids
- 8-step dimming circuitry
- 3 GPIO ports
- 4-wire serial interface for clock, data input, data output and strobe
- I²C bus interface: 400Kbits/s, slave mode only
- RTC circuit:
 - Clock counter and calendar counter in BCD format
 - Alarm function with interrupt
 - 12-hour or 24-hour time display system
 - Recognize leap year from the year 2000 to 2099
- Provides RTC display with two segment configuration types: 4-timing & 5-timing formats
- Provides 32 bits segment/grid driver outputs
- No external resistors needed for driver outputs
- Crystal oscillator: 4.194304MHz
- Internal power-on reset
- Available in 52-pin LQFP

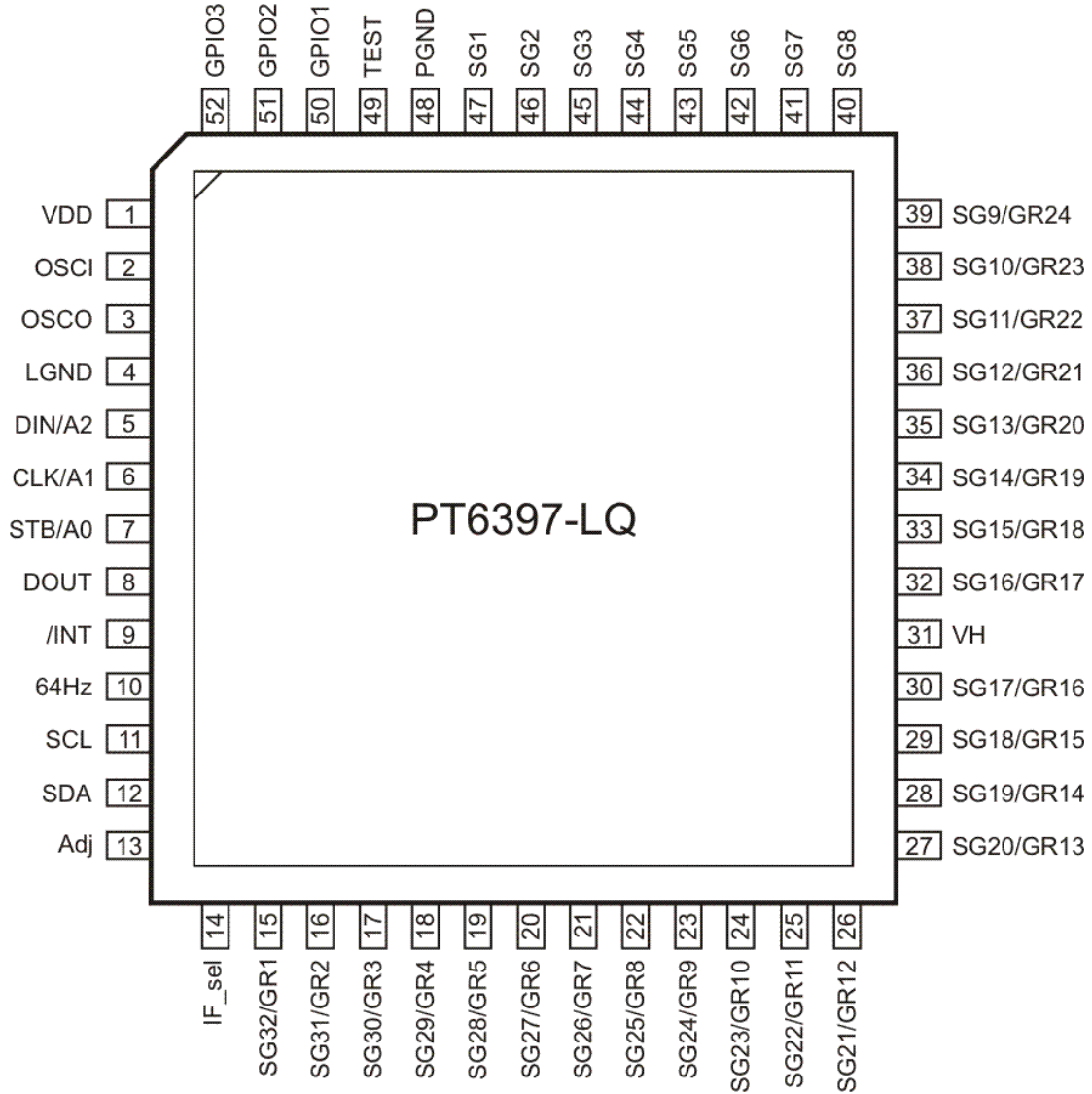
BLOCK DIAGRAM



1. ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT6397-LQ	52 Pins, LQFP	PT6397-LQ

2. PIN CONFIGURATION





3. PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
VDD	-	Logic power supply	1
OSCI	I	Oscillator input(4.194304MHz crystal input)	2
OSCO	O	Oscillator output(4.194304MHz crystal output)	3
LGND	-	Logic ground	4
DIN/A2 (Schmitt Trigger)	I	This pin is data input pin when IF_sel is set to 4-wire serial interface. Data must be ready at the rising edge of CLK (shift-in data must be started from LSB to MSB). The I ² C device address A2 input pin when the IF_sel is set to I ² C serial interface.	5
CLK/A1 (Schmitt Trigger)	I	Clock input pin when IF_sel is set to 4-wire serial interface. Serial data is read at the rising edge and outputs data is valid at the falling edge. The I ² C device address A1 input pin when the serial interface is set to I ² C serial interface.	6
STB/A0 (Schmitt Trigger)	I	When IF_sel is set to 4-wire serial interface, it is a low-active serial interface strobe pin. The data input after STB actived is processed as a command. When STB is "HIGH", CLK is ignored. The I ² C device address A0 input pin when the serial interface is set to I ² C serial interface.	7
DOUT	O	Data output pin(N-Channel, Open-Drain) This pin is output of serial data at the falling edge of the shift clock(starting from the LSB).	8
/INT	O	Alarm interrupt pin(N-Channel, Open-Drain) When the setting of alarm date is matched with RTC date, /INT will be set to "0".	9
64Hz	O	OSC's frequency output=4.194304MHz / 2 ¹⁶ , Duty=50%	10
SCL	I	The clock pin of I ² C interface	11
SDA	I/O	The data pin of I ² C interface	12
Adj (See Note)	I	Clock adjust. Pulse width must be 3 clocks(OSC) at least.	13
IF_sel	I	Serial interface mode setting, pull -high with resistor IF_sel: "0" → I ² C serial interface "1" → 4-wire serial interface	14
SG32/GR1 to SG17/GR16	O	High voltage segment/grid output pins	15 to 30
VH	-	High voltage driver supply pin	31
SG16/GR17 to SG9/GR24	O	High voltage segment/grid output pins	32 to 39
SG8 to SG1	O	High voltage segment output pins	40 to 47
PGND	-	High voltage driver GND pin	48
Test	I	"1": test mode; "0": normal mode	49
GPIO1 to GPIO3	I/O	General purpose I/O pin, default is set as input port	50 to 52

Note:

The "Adj" pin is used to adjust the RTC, and the adjust is effective by pulse trigger, the following operations are performed by sending a pulse to "Adj" pin.

For minute digits, ranging from "00" ~ "29" Minute digits of RTC counters which is smaller than 30 are reset to 00. For minute digits, ranging from "30" ~ "59". Minute digits of RTC counters which is equal to or larger than 30 are reset to 00 and the hour digits are incremented by 1.

Ex.

(X-1) hours, 30 minutes, 0 second

X hours, 0 minute, 0 second → X hours, 0 minute, 0 second

X hours, 29 minutes, 59 seconds

X hours, 30 minutes, 0 second

X hours, 59 minutes, 59 seconds → (X+1) hours, 0 minute, 0 second

(X+1) hours, 29 minutes, 29 seconds

The "year", "month" and "day" will be updated when (X) is the last hours.

IMPORTANT NOTICE

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