

A diagram of an I2C bus system. It features two parallel diagonal lines representing the data and clock buses. Five circular nodes are connected to these lines, representing devices on the bus. The text 'I2C bus' is written across the center of the diagram.

I²C bus

serial data

serial clock

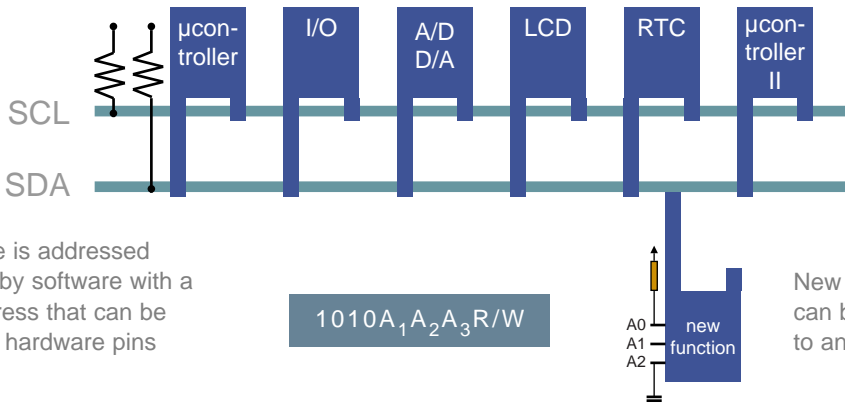
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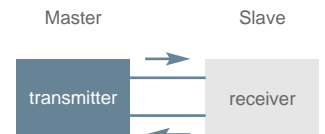
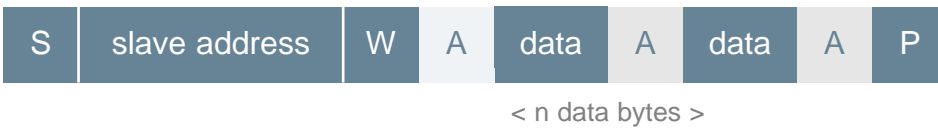
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I²C Bus Basics - Address and Data



Write data



Read data

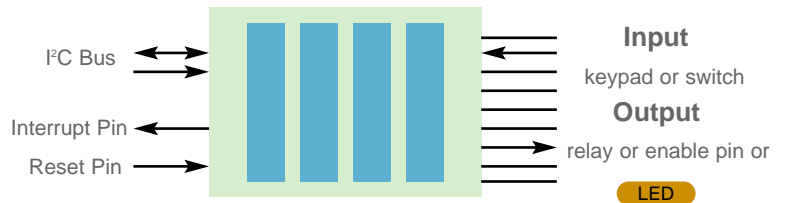


S = Start condition
 A = Acknowledge
 P = Stop condition

Data is transmitted at speeds of 100kHz, 400kHz or 3.4 MHz.

I²C General Purpose I/O Expanders

- Used for general-purpose input and output (GPIO) extension from the I²C/SMBus.
- Connect parallel I/O to the serial I²C/SMBus and provide expansion capability for the I/O controller Hub (South Bridge).
- Four sets registers for:
 - Configuration (I or O)
 - Input (value)
 - Output (value)
 - Polarity (active high or low)
- Devices have either Interrupt or Hardware Reset pin.
- PCA9554, 8-bit I²C and SMBus I/O Port with Interrupt



- PCA9554, 8-bit I²C and SMBus I/O Port with Interrupt
- PCA9554A, 8-bit I²C and SMBus I/O Port with Interrupt
- PCA9555, 16-bit I²C and SMBus I/O Port with Interrupt
- PCA9556, Octal SMBus and I²C Registered Interface
- PCA9557, Octal SMBus and I²C Registered Interface

# of Outputs	Reset and POR	Interrupt and POR	POR and 2K EEPROM	Interrupt and POR and 2K EEPROM
Quasi Output (20-25 ma sink and 100 uA source)				
8	-	PCA9556/57	PCA9556/57	PCA9556/57
16	-	PCF8575	-	-
True Output (20-25 ma sink and 10 mA source)				
8	PCA9556/57	PCA9556/57A	PCA9558	-
16	-	PCA9555	-	-

I²C LED Drivers and Blinkers

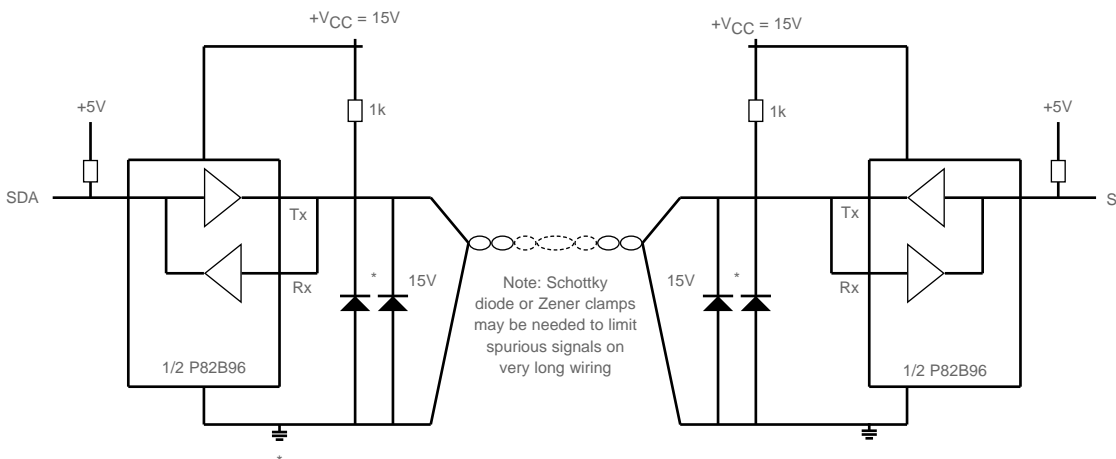
- Used for general-purpose LED driving and blinking
- Internal oscillator, no external components required.
- Two user definable blink rates and duty cycles.
- Single transmission to turn LEDs on, off, or blink at one of the two programmable blink rates.
- I²C/SMBus not tied up by sending repeated transmissions to blink LEDs.
- Hardware Reset pin.
- High current open drain outputs.

- PCA9550, 2-Bit I²C/SMBus LED Driver and Blinker
- PCA9551, 8-bit I²C/SMBus LED Driver and Blinker
- PCA9552, 16-bit I²C/SMBus LED Driver and Blinker



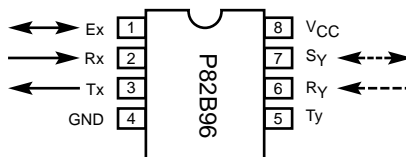
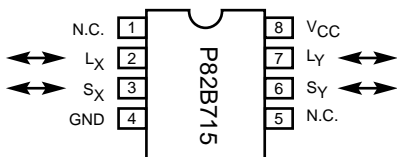
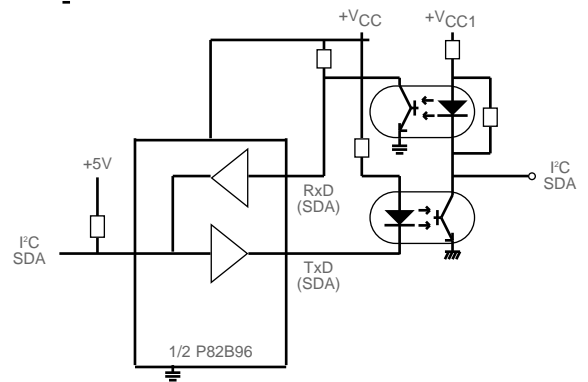
# of Outputs	Reset and POR
2	PCA9550
8	PCA9551
16	PCA9552

I²C Bus Extenders

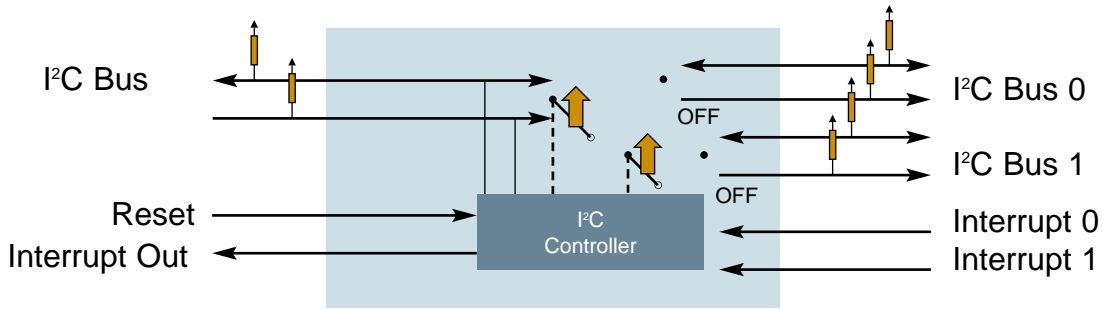


KEY POINTS

- High drive output are used to extend the reach of the I²C bus and exceed the 400 pF/system limit.
- Typical distances - twisted wire (310'), Flat Ribbon Cable (1320')
- P82B96 has split high drive outputs which allows differential transmission and Opto-Electrical isolation of the I²C Bus



I²C Switches



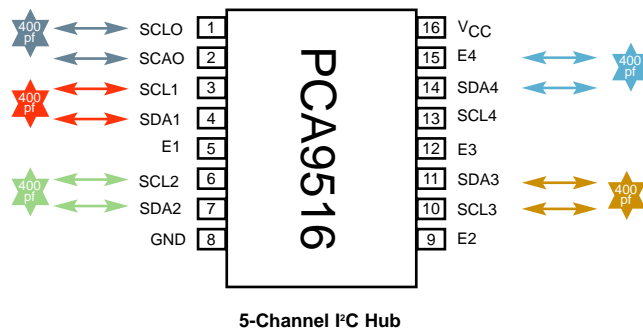
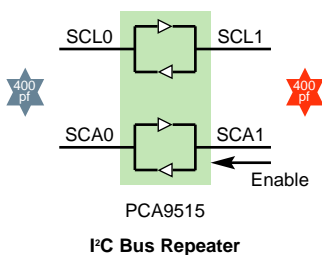
FEATURES

- Fan out main I²C/SMBus to multiple channels
- Select off or individual downstream channels one at a time, all at once or in any combination.
- I²C/SMBus commands used to select channel
- Hardware Reset pin or POR opens all channels
- Interrupt logic provides flag to master

KEY POINTS

- Switches allow the master to communicate to one channel or multiple downstream channels at a time but don't isolate the bus capacitance
- Other Applications include: sub-branch isolation and I²C/SMBus level shifting (1.8, 2.5, 3.3 or 5.0V)

I²C Bus Repeater and Hub



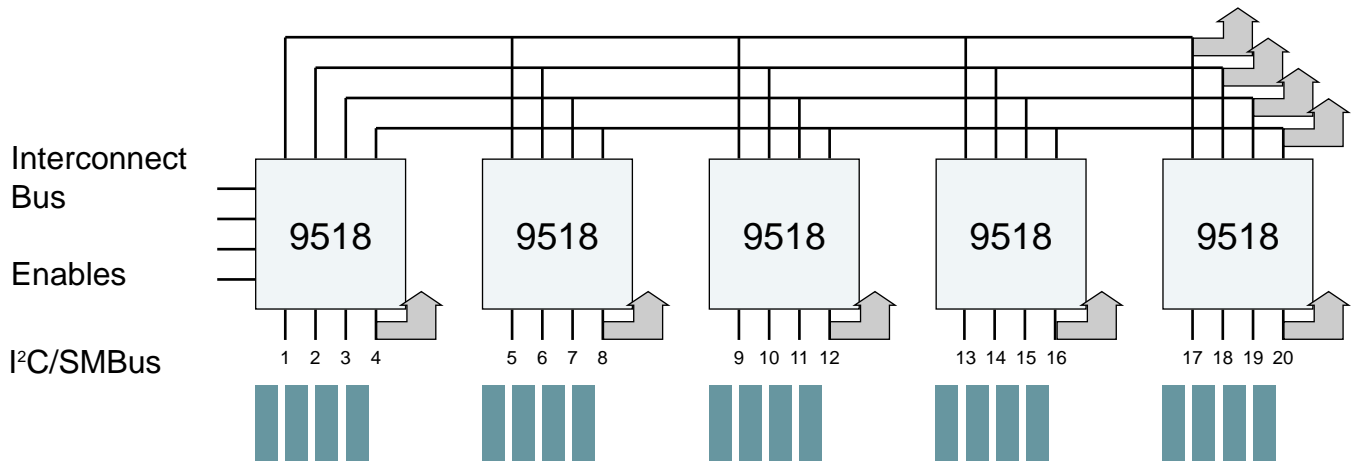
FEATURES

- Bi-directional I²C drivers isolate the I²C bus capacitance to each segment.
- Multi-master capable (e.g., repeater transparent to bus arbitration and contention protocol) with only one repeater delay between segments.
- Segments can be individually isolated

KEY POINTS

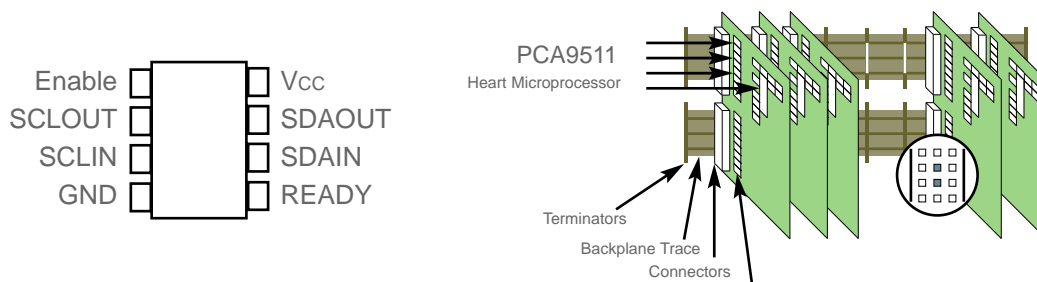
- Accommodate more I²C devices or a longer bus length (i.e., up to 400 pF/segment)
- Voltage Level Translation - 3.3V or 5V voltage levels allowed on the segment.
- **Only one hub or repeater is allowed in a I²C system**

PCA9518, Expandable 5-Channel I²C Hub



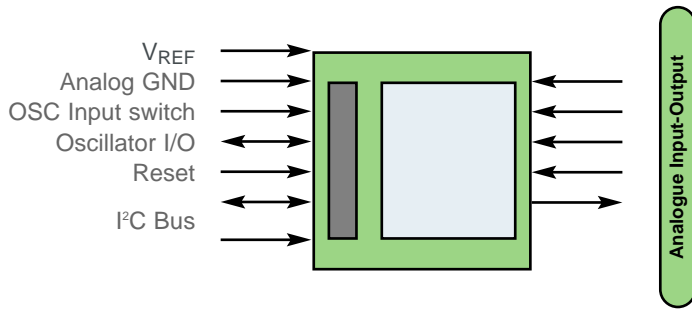
- Similar to the PCA9516 but with four extra open drain signal pins that allow the internal device logic to be interconnected into an unlimited number of segments with only one repeater delay between any two segments.
- The PCA9518, like the PCA9515/16, is transparent to bus arbitration and contention protocols in a multi-master environment and any master can talk to any other master on any segment.
- The enable pins can be used to isolate four of the five segments per device. Place a pull up resistor on the unisolatable segment and leave it unused if there is a requirement to enable or disable the segment.

I²C Hot Swap Bus Buffer



- Allows I/O card insertion into a live backplane without corruption of the data and clock busses.
- Control circuitry prevents connected to the card until a stop bit or bus idle occurs on the backplane.
- After connection, bi- directional buffering isolates capacitance and allowing 400 pF on either side.
- PCA9511 can be used in series and more than one can be used in the same I²C system.
- Rise time accelerator allows use of weaker DC pull- up currents while still meeting rise time requirements.
- SDA and SCL lines are precharged to 1V, minimising current required to charge chip parasitic capacitance.
- Incorporates a digital ENABLE input pin, which forces the part into a low current mode when asserted low.
- Open drain READY output pin indicates that the backplane and card sides are connected together.

I²C Analog / Digital Converter



Features

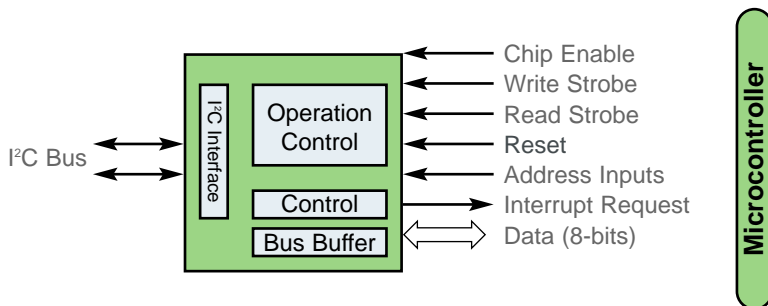
- 4 channel
- Internal oscillator
- Hardware Reset pin and Power On Reset (POR)

KEY POINTS

- Converts signals from digital to analog and analog to digital
- Two programmable thresholds above and below mean

	Voltage range	Max I ² C freq	Resolution
PCA8591	2.5 - 5.5V w/5V tolerance	100 kHz	100 kHz

Parallel Bus to I²C Bus Controller



FEATURES

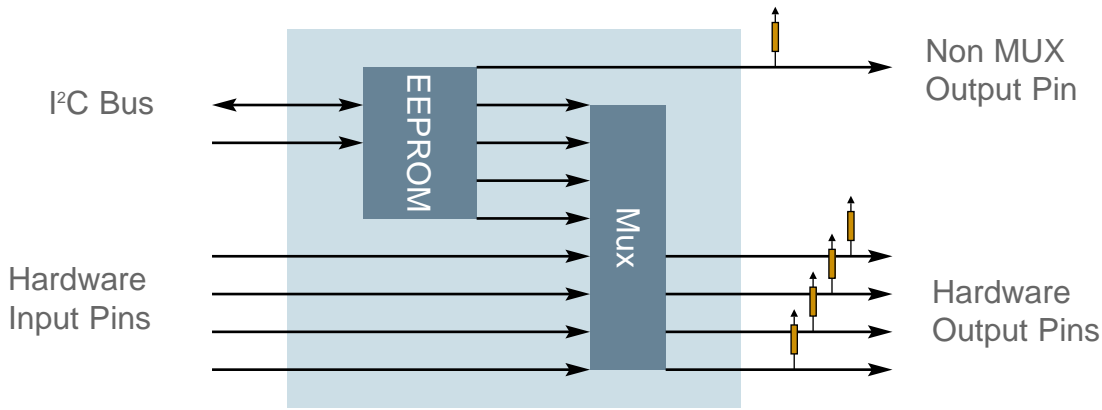
- Provides both master and slave functions.
- Controls all the I²C bus specific sequences, protocol, arbitration and timing
- Hardware Reset pin and Power On Reset (POR)

KEY POINTS

- Serves as an interface between most standard parallel-bus microcontrollers/ microprocessors and the serial I²C bus
- Allows the parallel bus system to communicate with the I²C

	Voltage range	Max I ² C freq	Clock source	Parallel interface
PCA8584	4.5 - 5.5V	90 kHz	External	Slow
PCA9564	2.3 - 3.6V w/5V tolerance	360 kHz	Internal	Fast

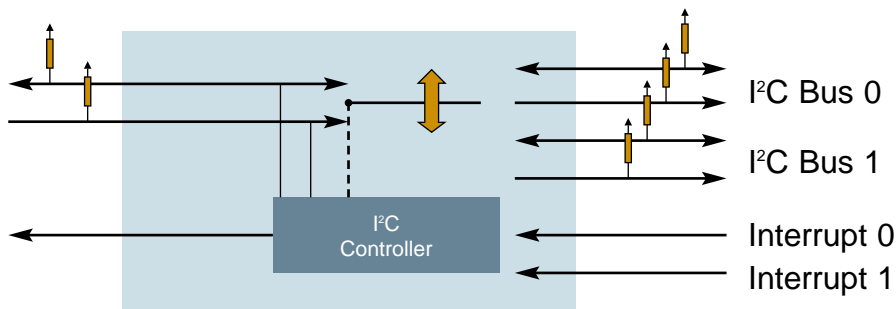
Multiplexed/Latched I²C EEPROMs



- Replacement for jumpers or dip switches.
- I²C controlled integrated EEPROM and Multiplexer eliminates need to open equipment to modify jumpers/dip switches by hand.
- Multiplex between the default values or the setting programmed from the I²C bus and stored in the onboard I²C EEPROM register.
- The non-volatile I²C EEPROM register values stay resident even when the device is powered down.
- PCA8550, 4-bit Multiplexed/l-bit Latched 5-bit EEPROM
- PCA9559, 5-bit Multiplexed/l-bit Latched 6-bit EEPROM
- PCA9560, Dual 5-bit Multiplexed/l-bit Latched EEPROM
- PCA9561, Quad 6-bit Multiplexed EEPROM

	# of Non Volatile registers	# of register bits	# of hardware input bits	# of Muxed output	Non-muxed output
PCA8550	1	5	4	4	YES
PCA9559	1	6	5	5	YES
PCA9560	2	6	5	5	YES
PCA9561	4	6	6	6	NO

I²C Multiplexers



FEATURES

- Fan out main I²C/SMBus to multiple channels
- Select off or individual downstream channel
- I²C/SMBus commands used to select channel
- Power On Reset (POR) opens all channels
- Interrupt logic provides flag to master for system monitoring.

KEY POINTS

- Many specialised devices have only one I²C address and sometimes many are needed in the same system.
- Multiplexers allow the master to communicate to one downstream channel at a time but don't isolate the bus capacitance
- Other Applications include sub-bach isolation.

# of Channels	POR Only	Interrupt Logic and POR
2	PCA9540	PCA9542
4	-	PCA9544

p a r t 2

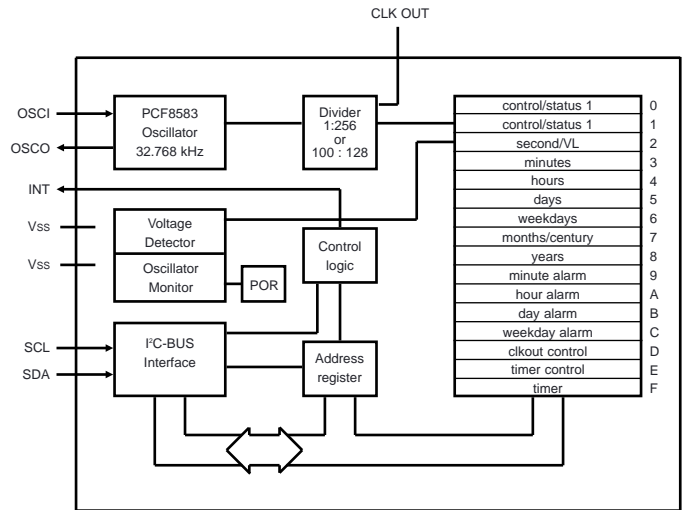
Real-time Clock/calendar PCF8563

DESCRIPTION

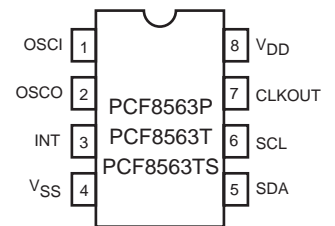
The PCF8563 is a CMOS real-time clock/calendar optimized for low power consumption. A programmable clock output, interrupt output and voltage-low detector are also provided. The built-in word address register is incremented automatically after each written or read data byte.

FEATURES

- Provides year, month, day, weekday, hours, minutes and seconds based on 32.768 kHz quartz crystal
- Century flag
- Wide operating supply voltage range: 1.0 to 5.5V
- Low back-up current; typical 0.25µA at V_{DD} = 3.0V and T_{amb} = 25°C
- 400 kHz two-wire I²C-bus interface (at V_{DD} = 1.8 to 5.5V)
- Programmable clock output for 32.768 kHz, 1.24 Hz, 32 Hz 1 Hz
- Alarm and timer functions
- Integrated oscillator capacitor
- Internal power-on reset



Type number	Package
PCF8563P/F4	DIP 8
PCF8563T/F4	SO 8
PCF8563TS/F4	TSSOP 8



Clock/calendar with Power Fail Detector PCF8573

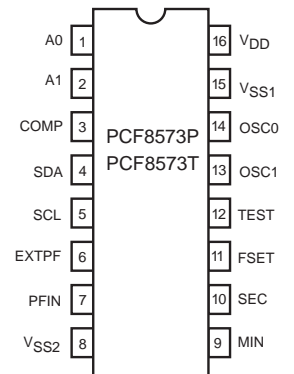
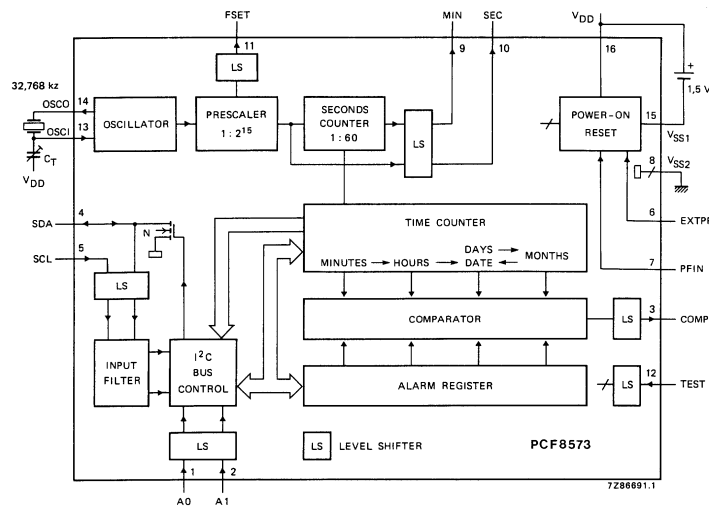
DESCRIPTION

The PCF8573 is a low threshold, CMOS circuit that functions as a real time clock/calendar.

The IC incorporates an addressable time counter and an addressable alarm register for minutes, hours, days and months.

FEATURES

- Serial output I²C-bus
- Alarm register for presetting a time for alarm or remote switching functions
- On-chip power fail detector
- Additional pulse outputs for seconds and minutes
- Separate ground pin for the clock allows easy implementation of battery back-up during supply interruption
- 1.2V nickel cadmium battery
- Crystal oscillator control (32.768 kHz)
- Low power consumption



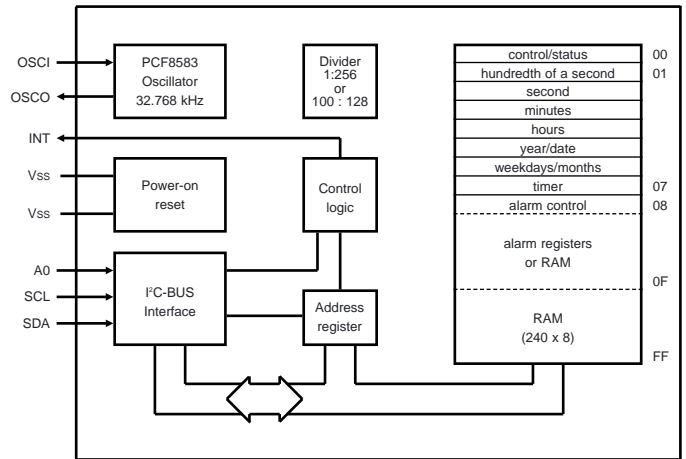
Type number	Package
PCF8573P	DIP 16
PCF8573T	SO 16



Clock/calendar with 240 x 8-bit RAM PCF8583

DESCRIPTION

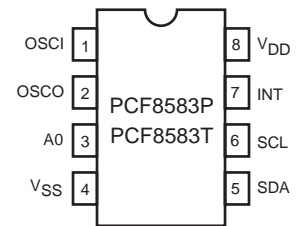
The PCF8583 is a clock/calendar circuit based on a 256 x 8-bit static CMOS RAM. The built-in word address register is incremented automatically after each written or read data byte. Address pin AO is used for programming the hardware address, allowing the connection of two devices to the bus without additional hardware. The built-in 32.768 kHz oscillator circuit and the first 8 bytes of the RAM are used for the clock/calendar and counter functions. The next 8 bytes may be programmed as alarm registers or used as free RAM space. The remaining 240 bytes are free RAM locations.



FEATURES

- Clock operating supply voltage (0 to +70 °C): 1.0 V to 6.0 V max. 50µA
- 240 x 8-bit low-voltage RAM
- Data retention voltage: 1.0 V to 6 V
- Clock function with four year calendar
- Universal timer with alarm and overflow indication
- 24 or 12 hour format
- 32.768 kHz or 50 Hz time base
- Slave address: - READ: A1 or A3
- WRITE: A0 or A2

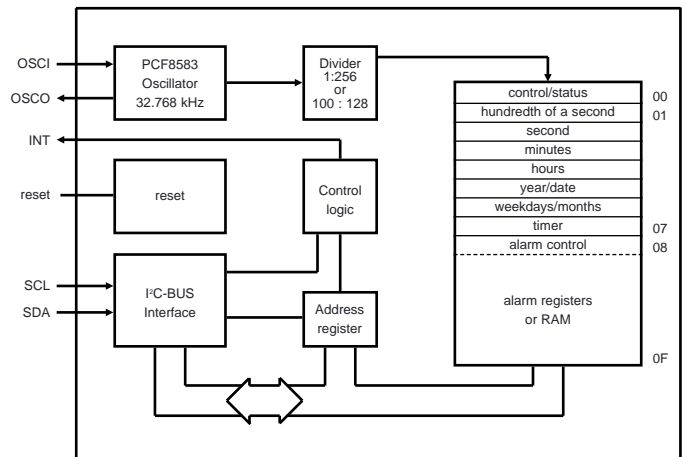
Type number	Package
PCF8583P/F5	DIP 8
PCF8583T/F5	SOL 8



Low power clock/calendar PCF8593

DESCRIPTION

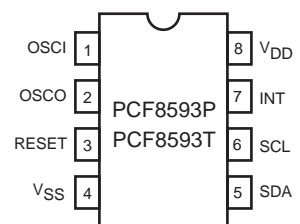
The PCF8593 is a CMOS clock/calendar circuit, optimized for low power consumption. The built-in word address register is incremented automatically after each written or read data byte. The built-in 32.768 kHz oscillator circuit and the first 8 bytes of RAM are used for the clock/calendar and counter functions. The next 8 bytes may be programmed as alarm registers or used as free RAM space.



FEATURES

- Operating supply voltage: 2.5 to 6.0 V
- 8 bytes scratchpad RAM (when alarm not used)
- Data retention voltage: 1.0 to 6.0 V
- Operating current (f_{scl} = 0 Hz, 32 kHz time base, V_{DD} = 2.0 V): TYP. 1µA
- Clock function with four year calendar
- Universal timer with alarm and overflow indication
- 24 or 12 hour format
- 32.768 kHz or 50 Hz time base
- Automatic word address incrementing
- Slave address: - READ A3
- WRITE A2

Type number	Package
PCF8593P	DIP 8
PCF8593T	SO 8



8-bit / 16-bit I/O expander for I²C PCF8574, 8575

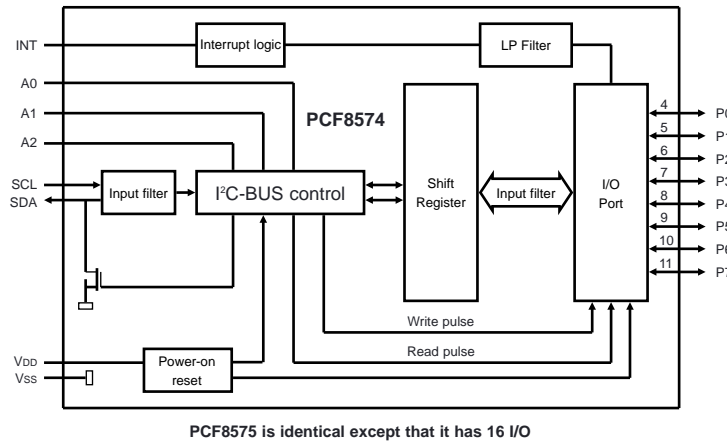
DESCRIPTION

The devices consist of an 8-bit/16-bit quasi-bidirectional port and an I²C-bus interface. The PCF8574/8575 have a low current consumption and include latched outputs with high current drive capability for directly driving LEDs. It also possesses an interrupt line (INT) which can be connected to the interrupt logic of the microcontroller.

The PCF8574 and PCF8574A versions differ only in their slave address. The PCF8574A has an additional address bit, therefore 16 devices can be addressed as opposed to 8.

FEATURES

- I²C to parallel port expander
- Open-drain interrupt output
- Remote I/O port for for the I²C-bus
- Operating supply voltage 2.5 to 6V PCF8574
- Low standby current consumption of 10µA maximum



PCF8575 is identical except that it has 16 I/O

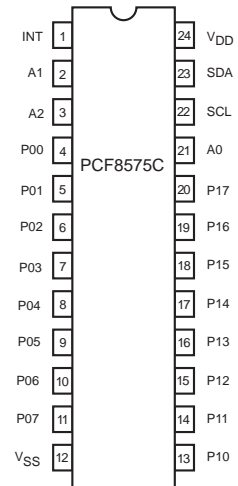
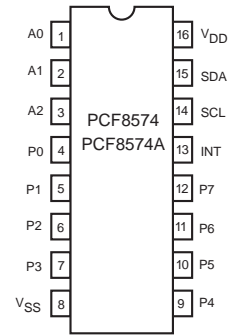
slave address for 8574/8575

0	1	0	0	A2	A1	A0	R/W
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slave address for 8574A

0	1	1	1	A2	A1	A0	R/W
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Part No.	Package
PCF8574AP	DIP 16
PCF8574AT	SOL 16
PCF8574P	DIP 16
PCF8574T	SOL 16
PCF8575CTS/F1	SSOP 24
PCF8575CT/F1	SOL 24



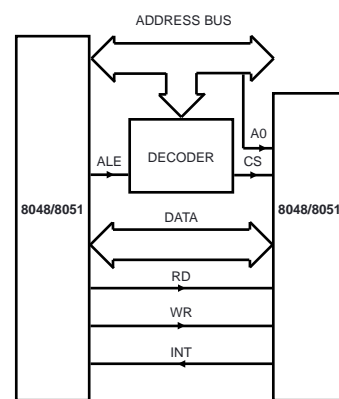
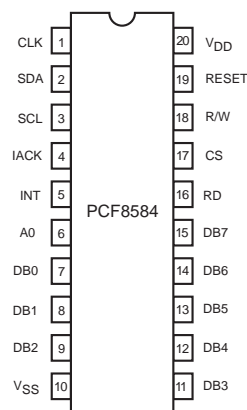
I²C bus Controller PCF8584

DESCRIPTION

The PCF8584 acts as an interface device between standard high-speed parallel buses and the serial I²C-bus. On the I²C-bus, it can act either as master or slave. Bidirectional data transfer between the I²C-bus and the parallel-bus microcontroller is carried out on a byte-wise basis, using either an interrupt or polled handshake. Interface to either 80XX-type (e.g. 8048, 8051, Z80) or 68000-type buses is possible. Selection of bus type is automatically performed.

FEATURES

- Parallel-bus to I²C-bus protocol converter and interface
- Compatible with most parallel-bus microcontrollers
- Both master and slaver functions
- Automatic detection and adaption to bus interface type
- Programmable interrupt vector
- Multi-master capability
- I²C-bus monitor mode
- Long-distance mode (4-wire)
- Operating supply voltage 4.5 to 5.5 V



Part No.	Package
PCF8584P	DIP 20
PCF8884T	SOL 20

slave address

0	1	1	1	A2	A1	A0	R/W
---	---	---	---	----	----	----	-----

CMOS I²C EEPROMS PCF8582, 8594, 8598, 85116

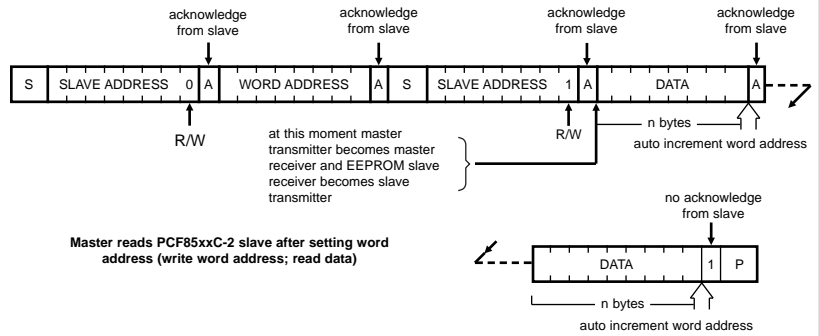
DESCRIPTION

This family of CMOS I²C EEPROMs covers formats 256x8, 512x8, 1024x8 and 2048x8. Address select pins allow for a total of 2048 bytes of memory made up from 8 PCF8582, 4 PCF8594, 2 PCF8598 on a single PCF85116. The PCF85116 has a second address field which allows selection of one of eight 256 byte blocks. When WP is taken high the upper half of a PCF8594, PCF8598 and the whole of PCF85116 is write-protected.

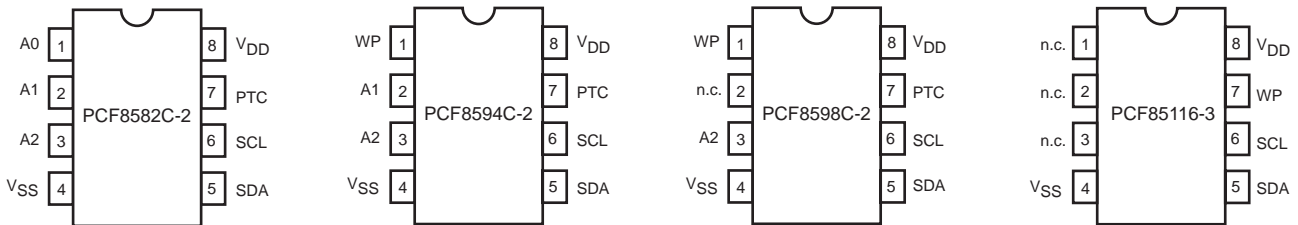


FEATURES

- Max standby 10µA at 5.5V typical 4µA
- Operational down to 2.7V
- Single on 8 byte write modes (PCF85116 up to 32 bytes)
- Sequential on Random Read
- High Reliability by using redundant cells
- Internal Write Times
- Write Protect



Type number	Package	Format	Max Current
PCF8582C-2P/03	DIP 8	256x8	2.0µA
PCF8582C-2T/03	SO 8	256x8	2.0µA
PCF8594C-2P/02	DIP 8	512x8	2.5µA
PCF8594C-2T/02	SO 8	512x8	2.5µA
PCF8598C-2P/02	DIP 8	1024x8	4.0µA
PCF8598C-2T/02	SOL 8	1024x8	4.0µA
PCF85116-3P/01	DIP 8	2048x8	1.0µA
PCF85116-3T/01	SO 8	2048x8	1.0µA



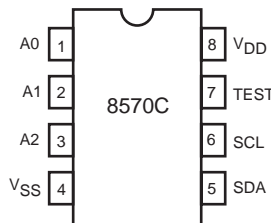
Low Voltage 258 x 8 - bit RAM PCF8570C

DESCRIPTION

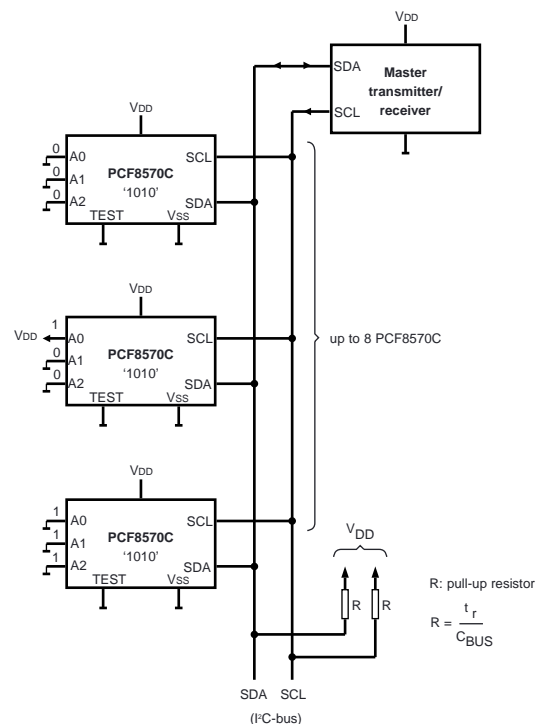
The PCF85700C is ideal for applications requiring extremely low-current and low-voltage RAM retention, such as battery or capacitor - backed. See diagram for a typical multiple PCF8570C application.

FEATURES

- Operating supply voltage 2.5 to 6.0 V
- Low data retention voltage; minimum 1.0 V
- Low standby current; maximum 15 µA
- Power-saving mode; typical 50 nA
- Serial input/output bus (I²C-bus)
- Address by 3 hardware address pins
- Automatic word address incrementing



Type number	Package
PCF8570P/F5	DIP 8
PCF8570T/F5	SOL 8



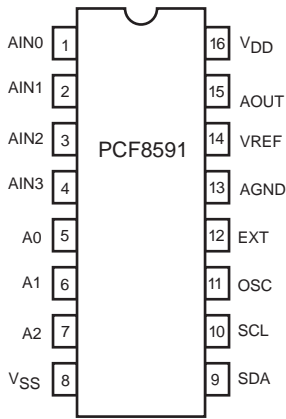
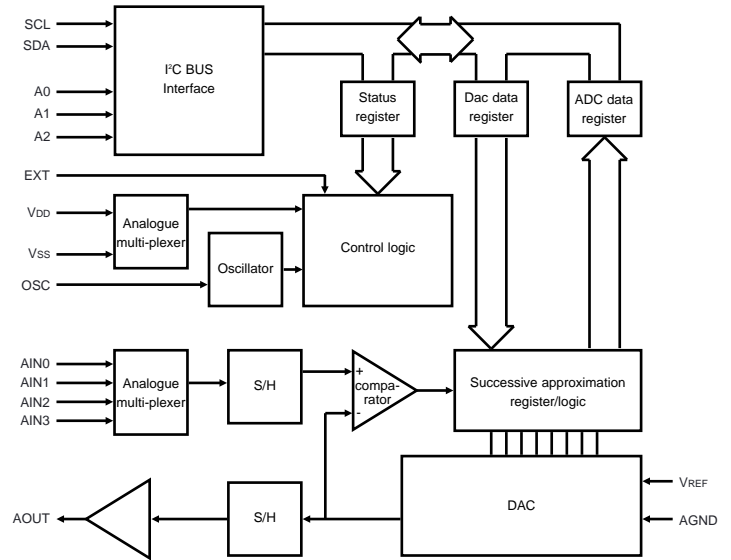
8-bit A/D and D/A Converter PCF8591

DESCRIPTION

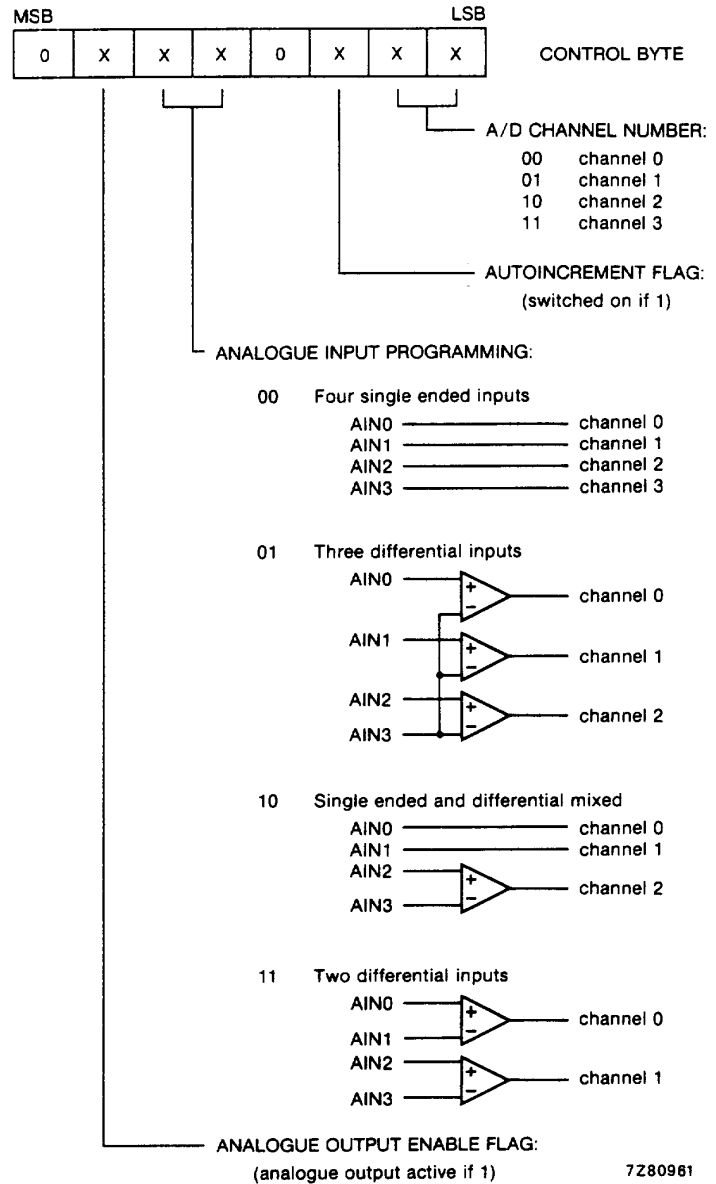
The PCF8591 is a low power 8-bit CMOS data acquisition device with four analog inputs, one analog output. Three address pins A), A1 and A2 are used for programming the hardware address, allowing the use of up to eight devices. The functions of the device include analog input multiplexing, on-chip track and hold function, 8-bit analog-to-digital conversion and an 8-bit digital-to-analog conversion. The maximum conversion rate is given by the maximum speed of the I²C-bus.

FEATURES

- Single power supply
- Operating supply voltage 2.5 V to 6 V
- Low standby current
- Serial input/output via I²C-bus
- Address by 3 hardware address pins
- Sampling rate given by I²C-bus speed
- 4 analog inputs programmable as single-ended or differential inputs
- Auto-incremented channel selection
- Analog voltage range from V_{SS} to V_{DD}
- On-chip track and hold circuit
- 8-bit successive approximation A/D conversion
- Multiplying DAC with one analog



Type number	Package
PCA8591P	DIP 16
PCA8591T	SO16



Universal LCD driver for low multiplex rates PCF8576C

DESCRIPTION

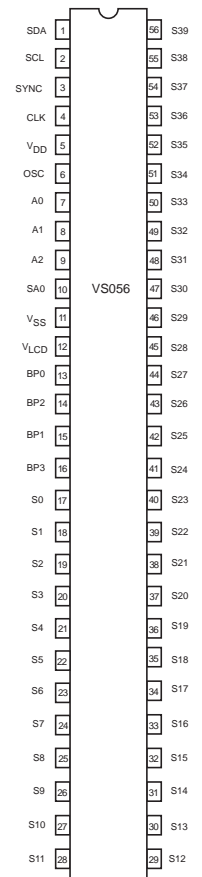
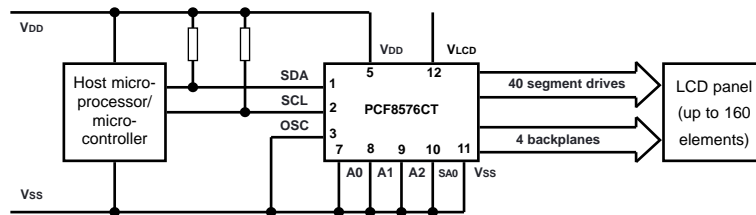
The PCF8576C is a versatile peripheral device designed to interface to any microprocessor / microcontroller to a wide variety of LCDs. It can directly drive any static or multiplexed LCD containing up to four backplanes and up to 40 segments. The display configurations possible with the PCF8576C depend on the number of active backplane outputs required; a selection of display configurations is given in Table 1.

FEATURES

- Selectable backplane drive configuration: static or 2, 3, or 4 backplane multiplexing
- Selectable display bias configuration: static, 1/2 or 1/3
- Internal LCD bias generation with voltage-follower buffers
- 40 segment drives: up to twelve 8-segment numeric characters; up to six 15-segment alphanumeric characters; or any graphics of up to 160 elements
- Versatile blinking modes
- Low power consumption

Type number	Package
PCF8576CT/F1	VS056
PCF8576CH/F1	LQFP64

slave address							
0	1	1	1	0	0	A0	R/W



LCD Direct/Duplex Driver with I²C PCF8577C

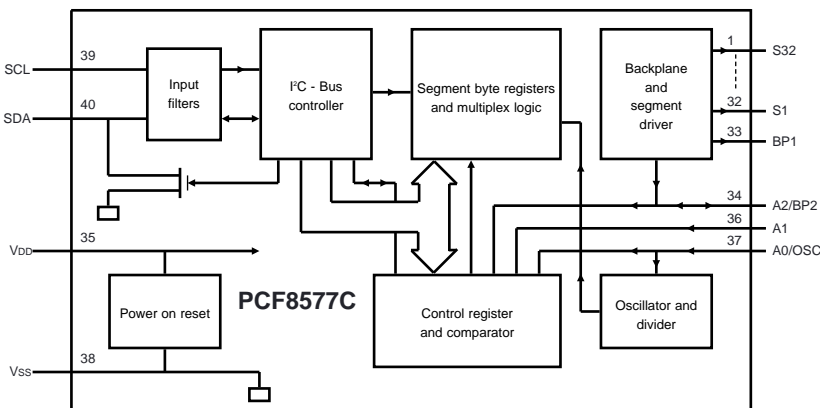
DESCRIPTION

The PCF8577C is a single chip, CMOS circuit, It is designed to drive liquid crystal displays with up to 32 segments directly, or 64 segments in a duplex configuration.

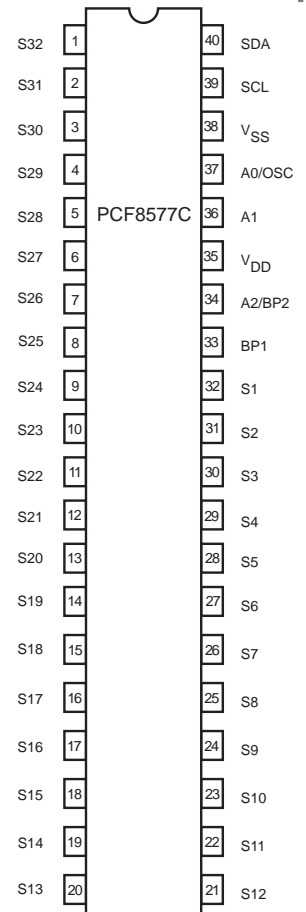
FEATURES

- Direct/duplex drive modes with up to 32/64 LCD-segment drive capability per device
- Auto-incremented loading across device subaddress boundaries
- Operating supply voltage: 2.5 to 6 V
- Low power consumption
- Single-pin built-in oscillator
- Display memory switching in direct drive mode
- Power-on reset blanks display

Type number	Package
PCF8577CP	DIP40
PCF8577CT	VSO40



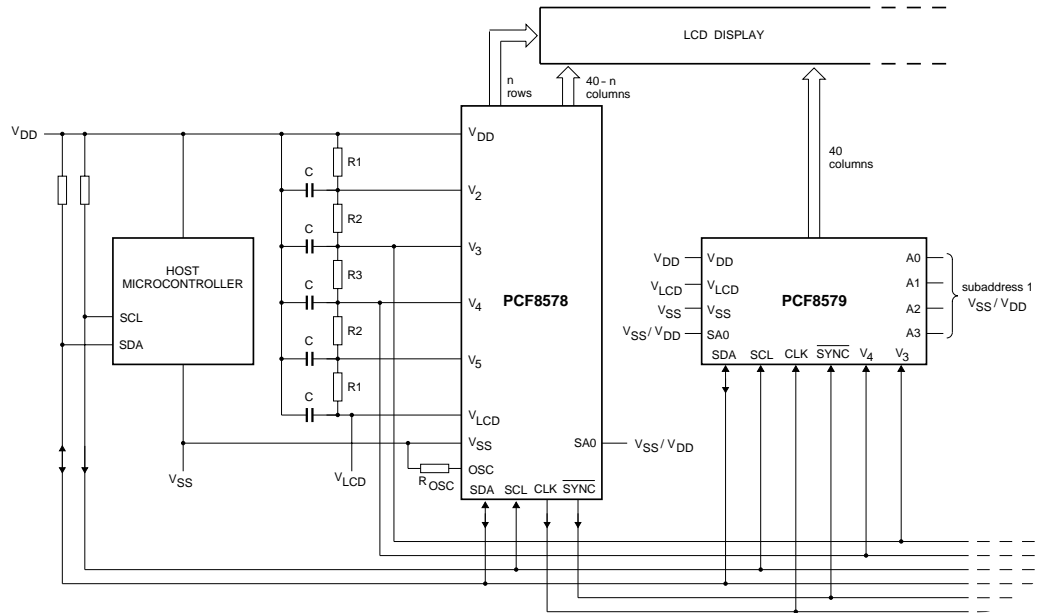
slave address							
0	1	1	1	0	1	0	R/W



LCD row/column driver for dot matrix displays PCF8578, 8579

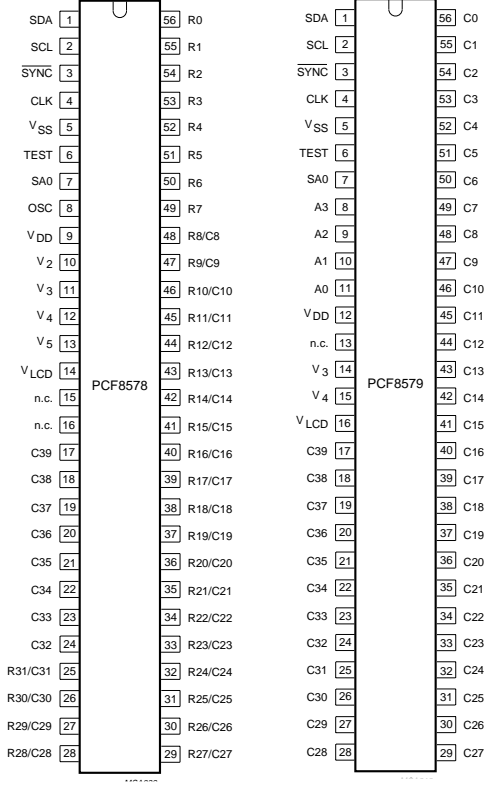
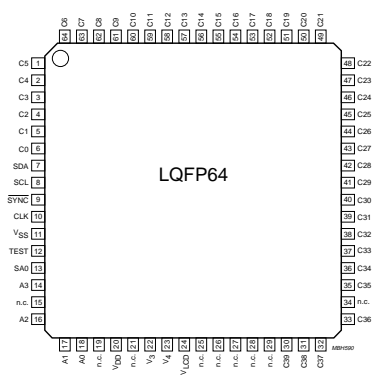
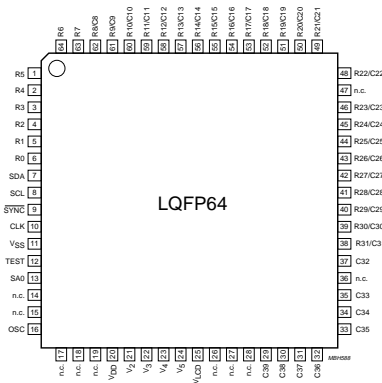
DESCRIPTION

The PCF8578 is a low power CMOS LCD row/column driver, designed to drive dot matrix graphic displays at multiplex rates of 1 : 8, 1 : 16, 1 : 24 or 1 : 32. The device has 40 outputs, of which 24 are programmable, configurable as 32 / 8 , 24 / 16 , 16 / 24 or 8 / 32 rows/columns. The PCF8578 can function as a stand-alone LCD controller/driver for use in small systems, or for larger systems can be used in conjunction with up to 32 PCF8579s for which it has been optimized. Together these two devices form a general purpose LCD dot matrix driver chip set, capable of driving displays of up to 40960 dots.



FEATURES

- Stand-alone or may be used with up to 32 PCF8579s (40960 dots possible)
- 40 driver outputs, configurable as 32/8, 24/16, 16/24 or 8/32 row/columns
- Selectable multiplex rates; 1 : 8, 1 : 16, 1 : 24 or 1 : 32
- Provides display synchronisation for PCF8579
- On-chip oscillator, requires only 1 external resistor
- Power-on reset black display



Type number	Package
PCF8578T	VS056
PCF8578H	LQFP64
PCF8579T	VS056
PCF8579H	LQFP64

slave address

0	1	1	1	0	A0	R/W
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Universal LCD driver for low multiplex rates **PCF8566**

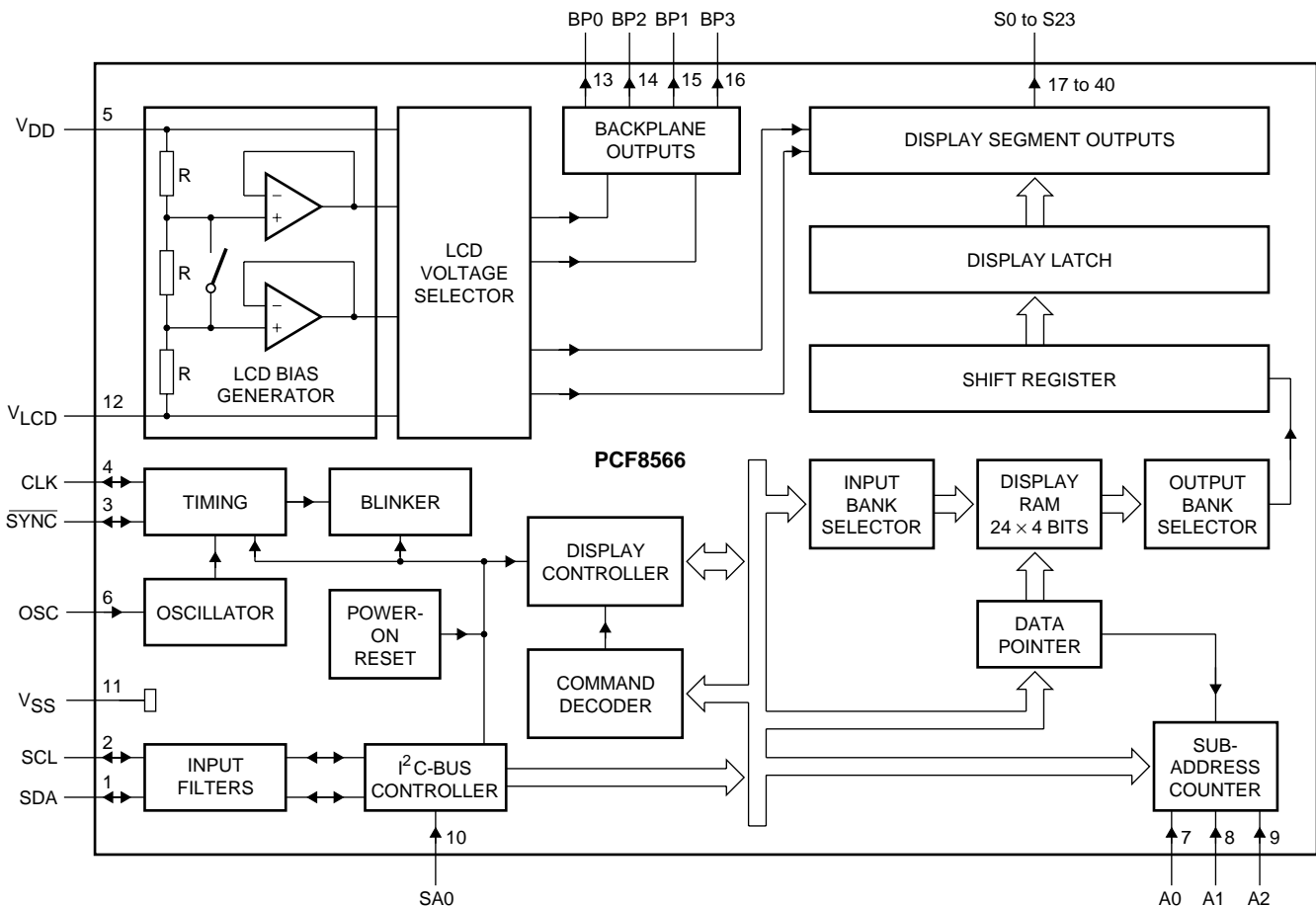
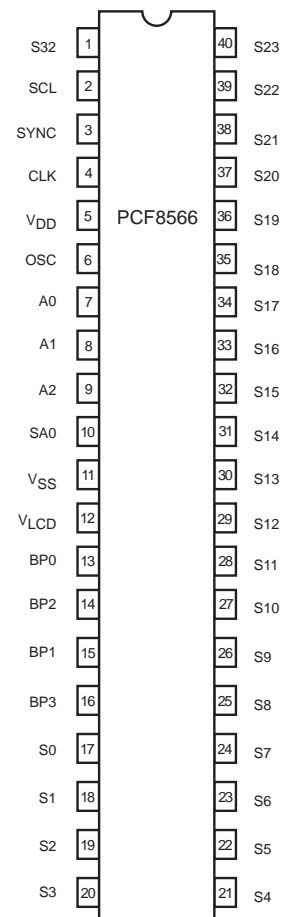
DESCRIPTION

The PCF8566 is a peripheral device which interfaces to almost any Liquid Crystal Display (LCD) having low multiplex rates. It generates the drive signals for any static or multiplexed LCD containing up to four backplanes and up to 24 segments and can easily be cascaded for larger LCD applications.

FEATURES

- Single-chip LCD controller/driver
- Selectable backplane drive configuration: static or 2, 3, or 4 back plane multiplexing
- Selectable display bias configuration: static, 1/2 or 1/3
- Internal LCD bias generation with voltage-follower buffers
- 24 segment drives: up to twelve 8-segment numeric characters; up to six 15-segment alphanumeric characters; or any graphics of up to 96 elements
- Versatile blinking modes
- 2.5 to 6V power supply range
- Low power consumption
- May be cascaded for large LCD applications (up to 1536 segments possible)

Type number	Package
PCF8566P	DIP 40
PCF8566T	SO 40

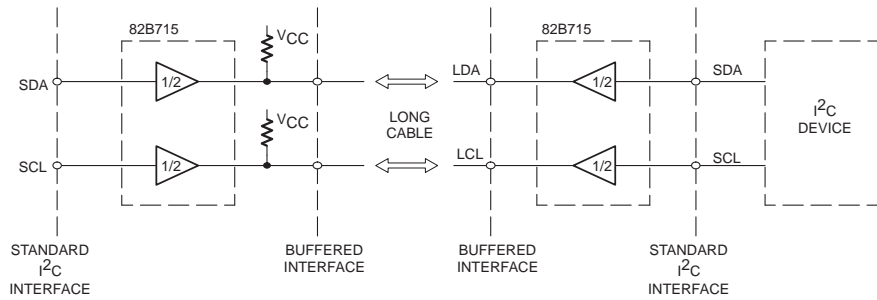


I²C Bus extender P82B715

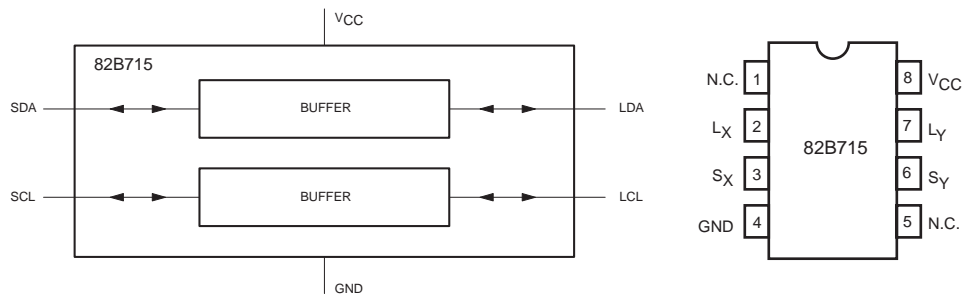
DESCRIPTION

The 82B715 is a bipolar integrated circuit intended for application in I²C bus systems.

While retaining all the operating modes and features of the I²C system it permits extension of the practical separation distance between components on the I²C bus by buffering both the data (SDA) and the clock (SCL) lines.



The I²C bus capacitance limit of 400pF restricts practical communication distances to a few meters. Using one 82B715 at each end of longer cables reduces the cable loading capacitance on the I²C



FEATURES

- Dual, bi-directional, unity voltage gain buffer
- I²C bus compatible
- Logic signal levels may include both supply and ground
- X10 impedance transformation
- Wide supply voltage range

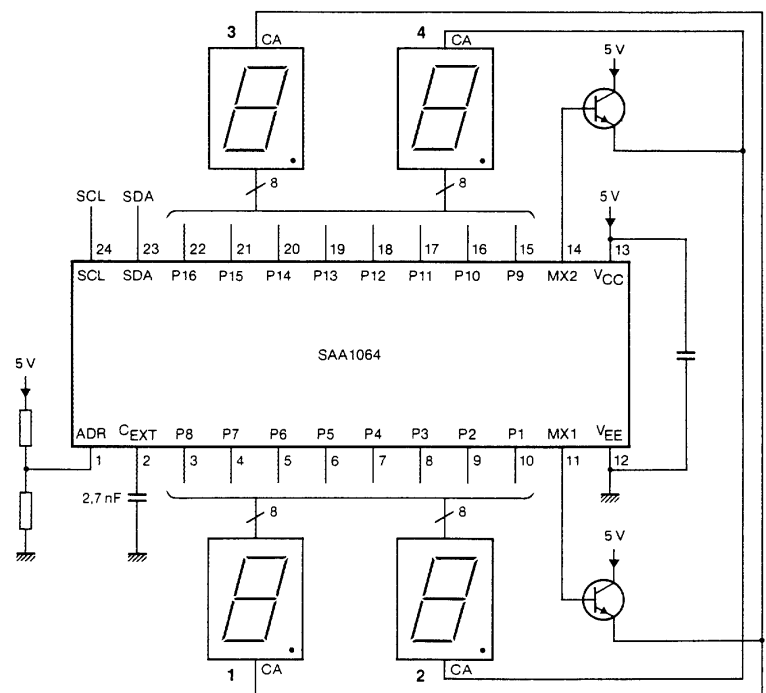
Type number	Package
P82B715N	DIP 40
P82B715D	SO 40

4 Digit LED-driver with I²C-Bus interface SAA1064

DESCRIPTION

The LED-driver is a bipolar integrated circuit made in an I²L compatible 18 volts process. The circuit is especially designed to drive four 7-segment LED displays with decimal point by means of multiplexing between two pairs of digits. It features an I²C-Bus slave transceiver interface with the possibility to program four different SLAVE ADDRESSES, a POWER RESET flag, 16 current sink OUTPUTS, controllable by software up to 21mA, two multiplex drive outputs for common anode segments, an on-chip multiplex drive outputs for common anode segments, an on-chip multiplex oscillator, control bits to select static, dynamic and blank mode, and one bit for segment test.

Part No.	Package
SAA1064	DIP 24
SAA1064T	SOL 24

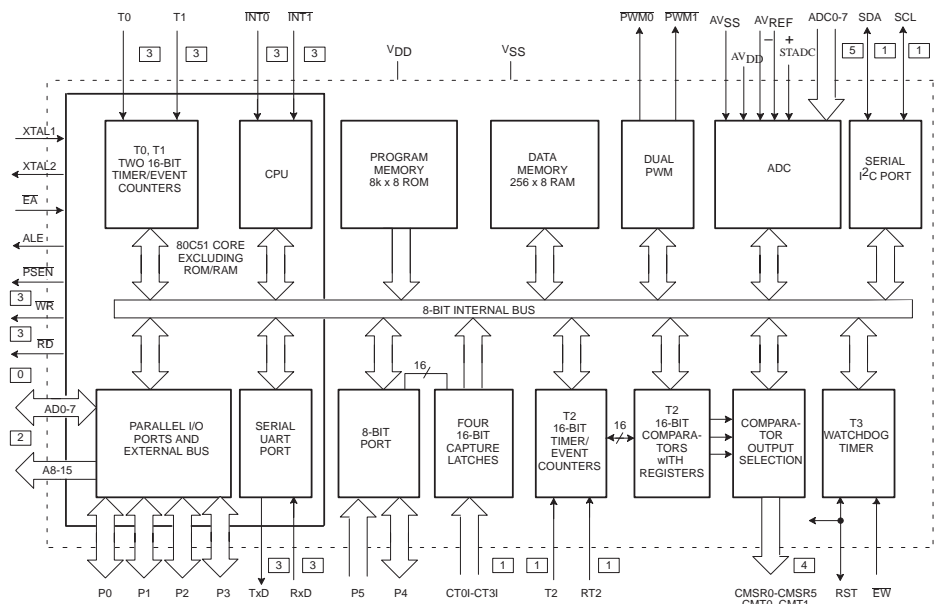


slave address							
0	1	1	1	0	A1	A0	R/W

DESCRIPTION

The PCF8577C is a single chip, silicon gate CMOS circuit. It is designed to drive liquid crystal displays with up to 32 segments directly, or 64 segments in a duplex configuration.

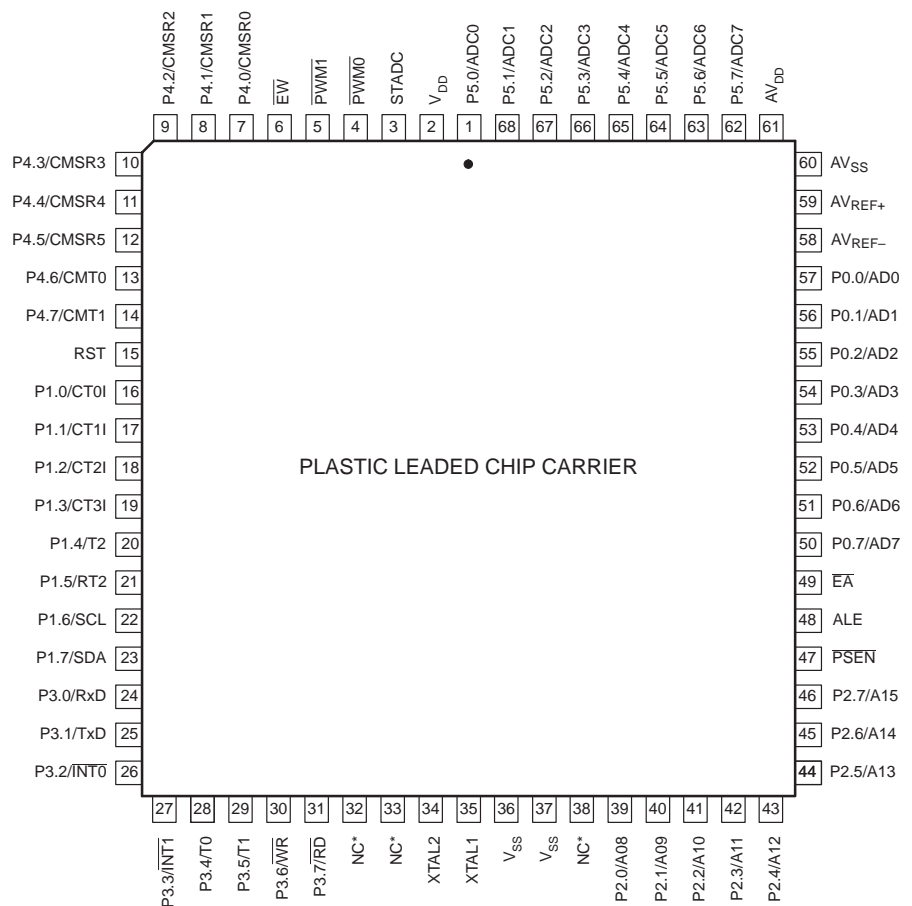
The two-line I²C-bus interface substantially reduces wiring overheads in remote display applications. I²C-bus traffic is minimised in multiple IC applications by automatic address incrementing, hardware subaddressing and display memory switching (direct drive mode). To allow partial V_{DD} shutdown the ESD protection system of the SCL and SDA pins does not use as diode connected to V_{DD}.



FEATURES

- Direct/duplex drive modes with up to 32/64
- LCD-segment drive capability per device
- Operating supply voltage: 2.5 to 6 V
- Low power consumption
- I²C-bus interface
- Optimized pinning for single plane wiring
- Single-pin built-in oscillator
- Auto-incremented loading across device
- Display memory switching in direct drive mode
- May be used as I²C-bus output expander
- System expansion up to 256 segments
- Power-on reset blanks display

Part No.	Package
P80C552 EBA108	PLCC-68
P80C552 IBA108	PLCC-68

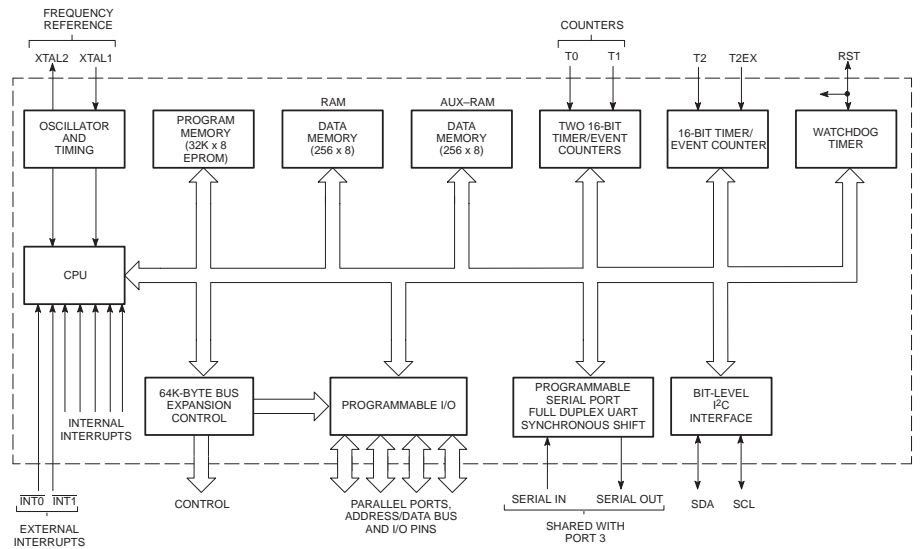


Philips P87C 524 / 528

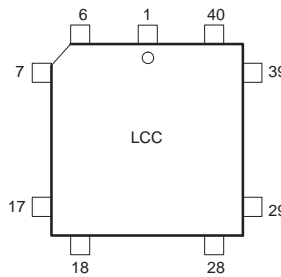
DESCRIPTION

The 87C524 and P87C528 are CMOS single-chip 8-bit microcontrollers.

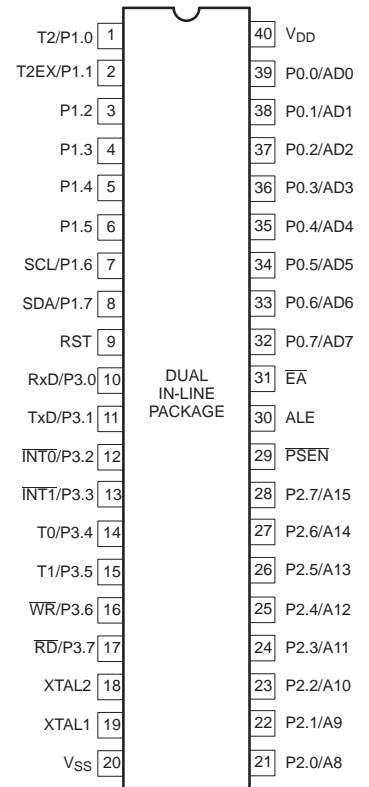
- 80C51 instruction set
 - P87C524 - 16k x 8 EPROM
 - 512 x 8 RAM
 - P87C528 - 324 x 8 EPROM
 - Memory addressing capability 64k ROM and 64k RAM
 - Three 16-bit counter/timer
 - Full duplex UART
- Power control modes:
 - Idle mode
 - Power-down mode
 - Warm start from power-down
- Two speed ranges at $V_{CC} = 5V \pm 10\%$



Part No.	Package
P87C524EBPN	DIP-40
P87C528EBLKA	PLCC-44
P87C528EBPN	DIP-44
P87C528LKA	PLCC-44



Pin	Function	Pin	Function
1	NC*	23	NC*
2	P1.0/T2	24	P2.0/A8
3	P1.1/T2EX	25	P2.1/A9
4	P1.2	26	P2.2/A10
5	P1.3	27	P2.3/A11
6	P1.4	28	P2.4/A12
7	P1.5	29	P2.5/A13
8	P1.6/SCL	30	P2.6/A14
9	P1.7/SDA	31	P2.7/A15
10	RST	32	PSEN
11	P3.0/RxD	33	ALE
12	NC*	34	NC*
13	P3.1/TxD	35	E \bar{A}
14	P3.2/INT0	36	P0.7/AD7
15	P3.3/INT1	37	P0.6/AD6
16	P3.4/T0	38	P0.5/AD5
17	P3.5/T1	39	P0.4/AD4
18	P3.6/WR	40	P0.3/AD3
19	P3.7/RD	41	P0.2/AD2
20	XTAL2	42	P0.1/AD1
21	XTAL1	43	P0.0/AD0
22	V $_{SS}$	44	V $_{DD}$



Compact 80C51 with Analogue I/O P87C 752

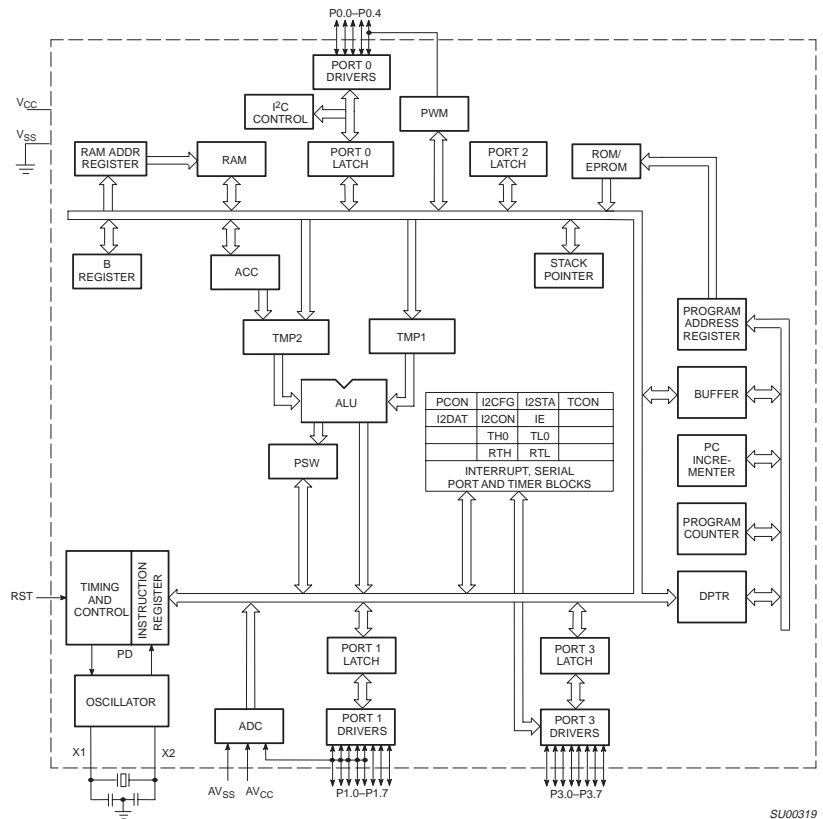
DESCRIPTION

The Philips P87C752 offers many of the advantages of the 80C51 architecture in a small package and at low cost.

The P87C752 contains a EPROM, a 64 y 8 RAM, 21 I/O lines, a 16-bit auto-reload counter/timer, a fixed-priority level interrupt structure, a bidirectional inter-integrated circuit (I²C) serial bus interface, an on-chip oscillator, a five channel multiplexed 8-bit A/D converter, and an 8-bit PWM output.

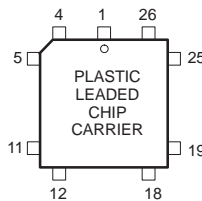
FEATURES

- Inter-integrated Circuit (I²C) serial bus interface
- Small package sizes
 - 28-pin DIP, PLCC 02SSOP
- Wide oscillator frequency range
- Low power consumption:
 - Normal operation: less than 11mA @ 5 V, 12 MHz
- 5-channel 8-bit A/D converter
- 8-bit PWM output/timer



SU00319

Part No.	Package
P87C752-1A28	PLCC-28
P87C752-4N28	DIP-24
P87C752-4DB	SSOP-24



Pin	Function	Pin	Function
1	P3.4/A4	15	P1.2/ADC2/D2
2	P3.3/A3	16	P1.3/ADC3/D3
3	P3.2/A2/A10	17	P1.4/ADC4/D4
4	P3.1/A1/A9	18	AV _{SS}
5	P3.0/A0/A8	19	AV _{CC}
6	P0.2/V _{PP}	20	P1.5/INT0/D5
7	P0.1/SDA/OE-PGM	21	P1.6/INT1/D6
8	P0.0/SCL/ASEL	22	P1.7/T0/D7
9	RST	23	P0.3
10	X2	24	P0.4/PWM OUT
11	X1	25	P3.7/A7
12	V _{SS}	26	P3.6/A6
13	P1.0/ADC0/D0	27	P3.5/A5
14	P1.1/ADC1/D1	28	V _{CC}

