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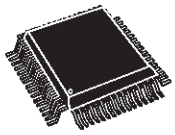
SGS-THOMSON MICROELECTRONICS

ST7277

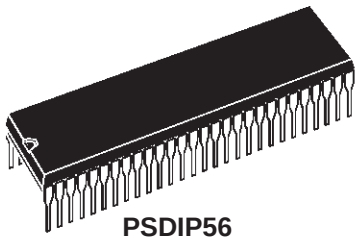
8-BIT USB MCU FOR MONITORS WITH UP TO 60K ROM, 2K RAM, ADC, TIMER, INFRA RED, SYNC, PWM/BRM, DDC/DMA, I^2C & SCI

BRIEF DATA

- User ROM: up to 60 Kbytes
- Data RAM: up to 2 Kbytes (256 bytes stack)
- 8 MHz Maximum Internal Clock Frequency in fast mode, 4 MHz in normal mode
- Run, Wait and Halt CPU modes
- RAM Retention Mode
- Sync Processor for Mode Recognition, power management and composite video blanking, clamping and free-running frequency generation.
  - – Corrector mode
  - – Analyzer mode
- USB (Universal Serial Bus) for monitor function
  - – Integrated 3.3V voltage regulator
  - – Integrated Transceiver
  - – Suspend and Resume operations
- Fast I^2C Multi Master Interface
- DDC Bus Interface fully compliant with DDC1, 2B, 2B+, 2AB, 2Bi standards
- 32 I/O lines
  - – 8 Open Drain I/Os with high current capacity (10 mA) on port A
  - – 5 lines programmable as interrupt inputs
- 16-bit timer with 2 input captures and 2 output compare functions (with 1 output pin)
- 8-bit Analog to Digital Converter with 8 channels on port B
- 8 10-bit PWM/BRM Digital to Analog outputs
- One 12-bit PWM/BRM Digital to Analog output
- Asynchronous Serial Communications Interface
- Infra red controller
- Master Reset and Power on/off reset[1]
- Programmable Watchdog for system reliability
- 56-pin Shrink Dual In line Plastic package or 64-pin Plastic Quad Flat Pack
- Fully static operation
- 0 to + 70 °C Operating Temperature Range
- 4.0V to 5.5V supply operating range
- 24 MHz Quartz Oscillator



PQFP64



PSDIP56

See Ordering Information at the end of the Document

- 63 basic instructions/17 main address modes
- 8x8 unsigned multiply instruction
- True bit manipulation
- Versatile Development Tools (DOS and Windows) including assembler, linker, C-compiler, archiver, source level debugger, and hardware emulator

Note 1: Power On/Off reset not implemented in this revision.

This is preliminary information on a new product in development or undergoing evaluation. Details are subject to change without notice.

1 GENERAL DESCRIPTION

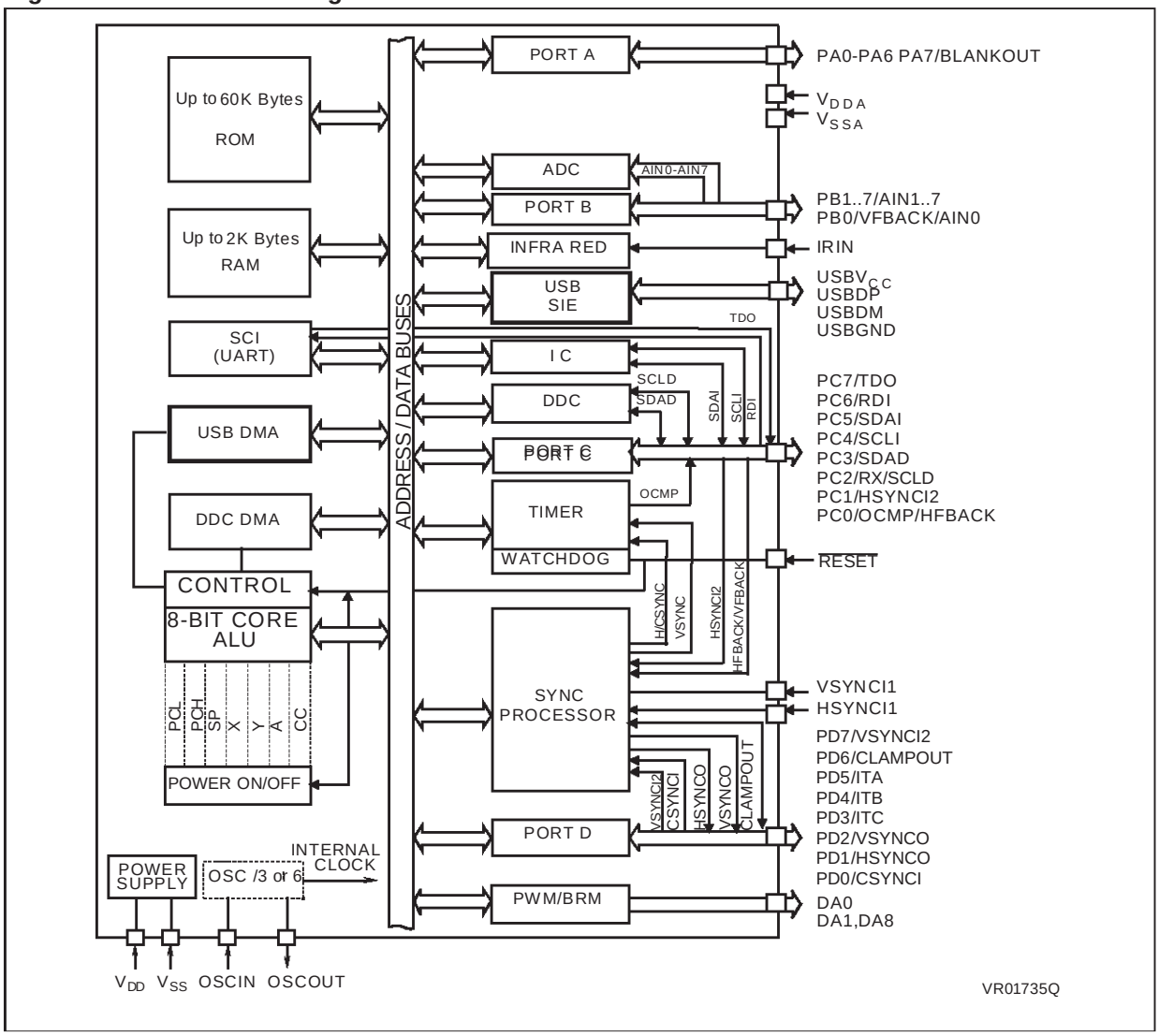
1.1 INTRODUCTION

The ST7277 is a HCMOS microcontroller unit (MCU) from the ST7 family with dedicated peripherals for Monitor applications.
It is based around an industry standard 8-bit core and offers an enhanced instruction set. The processor runs with an external clock at 24 MHz with a 5V supply. Due to the fully static design of this device, operation down to DC is possible. Under software control the ST7277 can be placed in WAIT or HALT mode thus reducing power consumption. The enhanced instruction set and addressing modes afford real programming potential.

In addition to standard 8-bit data management the ST7 features true bit manipulation, 8x8 unsigned multiplication and indirect addressing modes.

The device includes an on-chip oscillator, CPU, Sync Processor for video timing & Vfback analysis, up to 60K ROM, up to 2K RAM, USB/DMA, I/O, a timer with 2 input captures and 2 output compares, an 8-channel Analog to Digital Converter, DDC/DMA, I^2C multi Master, SCI Serial Communications Interface, Watchdog Reset, an Infra Red Control preprocessor, and one 12-bit and eight 10-bit PWM/BRM outputs for analog DC control of external functions.

Figure 1. ST7277 Block Diagram



1.2 DEVICE SUMMARY

PSDIP56	ST72771N9B1	ST72771N6B1	ST72771N5B1	ST72771N4B1
PQFP64	**ST72771R9Q1**	**ST72771R6Q1**	**ST72771R5Q1**	**ST72771R4Q1**
ROM (bytes)	60K	32K	24K	16K
RAM (bytes)	2K	1K	768	512
ADC	8 channels	8 channels	8 channels	8 channels
16-Bit Timer	1	1	1	1
I2C Bus	one multimaster	one multimaster	one multimaster	one multimaster
DDC/DMA	yes	yes	yes	yes
Sync Processor	yes	yes	yes	yes
PWM	9	9	9	9
I/O	32	32	32	32
USB	yes	yes	yes	yes
IR	yes	yes	yes	yes
SCI	yes	yes	yes	yes
EPROM Device	ST72E771N9D1 (CSDIP56) or ST72E771R9G1 (CQFP64)			

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