

## 1. 8-BIT MICROCONTROLLER

### 80C51FA/83C51FA EVENT-CONTROL CHMOS SINGLE-CHIP

#### Extended Automotive

- High Performance CHMOS Process
- Three 16-Bit Timer/Counters
- Timer 2 is an Up/Down Timer/Counter
- Programmable Counter Array with: High Speed Output, Compare/Capture, Pulse Width Modulator, Watchdog Timer Capabilities
- 8K On-Chip ROM
- This microcontroller has a 256 x 8 on-chip RAM. In addition it can address up to 64 Kbytes of external data memory.
- Boolean Processor
- 32 Programmable I/O Lines
- 7 Interrupt Sources
- Programmable Serial Channel with: Framing Error Detection, Automatic Address Recognition
- TTL and CMOS Compatible Logic Levels
- 64K External Program Memory Space
- 64K External Data Memory Space
- MCSÉ 51 Microcontroller Fully
- Compatible Instruction Set
- Power Saving Idle and Power Down Modes
- ONCE (On-Circuit Emulation) Mode
- Available in PLCC and PDIP Packages
- Available in 12 MHz and 16 MHz Versions

#### Opis pinów

##### PORT 0

Dwukierunkowy, wejścia obsługują logikę TTL

##### PORT1

Dwukierunkowy, z zewnętrznymi pullupami, wejścia obsługują logikę TTL, T2, ECI, CEX0-4

##### PORT2

Dwukierunkowy, z zewnętrznymi pullupami, wejścia obsługują logikę TTL, stosowany do obsługi pamięci programu i pamięci danych

##### PORT3

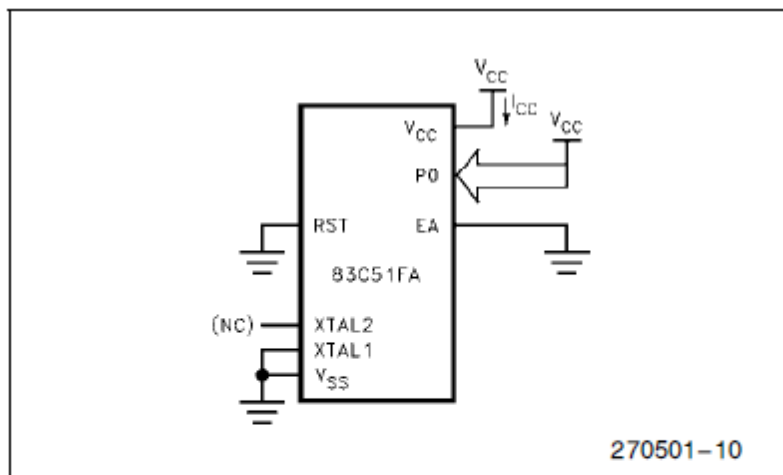
Dwukierunkowy, z zewnętrznymi pullupami, wejścia obsługują logikę TTL, RxD,TxD, INT0-1, zapis i odczyt z zewnętrznej pamięci, wejścia timerów

ALE/PROG - Address Latch Enable

PSEN – zapis do zewnętrznej pamięci

EA – zewnętrzny dostęp,

XTAL1, XTAL2 – wejście i wyjście odwracającego wzmacniacza oscylatora



**Figure 9.  $I_{CC}$  Test Condition,  
Power Down Mode.  
All other pins disconnected.  
 $V_{CC} = 2.0V$  to  $5.5V$ .**

## 2. Sterownik przekaźników

8 high-current outputs:

- Low-loading bus-compatible inputs
- Power-on clear ensures safe operation
- Will operate in addressable or demultiplex mode
- Allows random (addressed) data entry
- Easily expandable
- Pin-compatible with 9334 (Siliconix or Fairchild)

Opis pinów

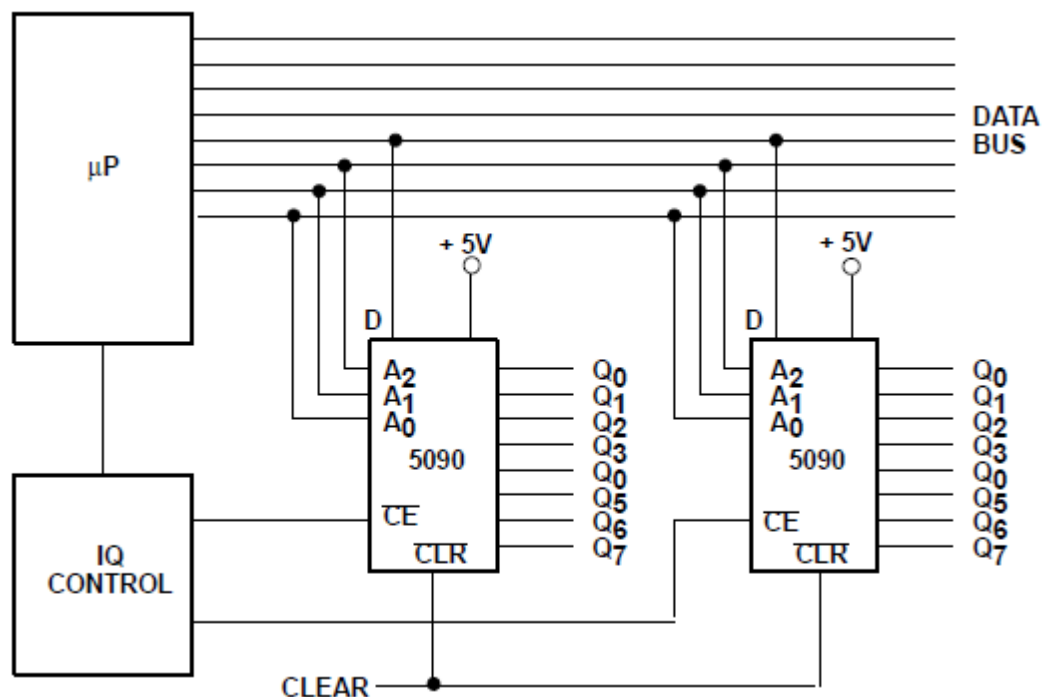
A 0-2 - trzy bitowy adres pinów do których przesyłana jest wartość

Q 0-7 – osiem wyjść

D – bit dostępu (“1” turns output switch “ON”, “0” turns output switch “OFF”)

CE – chip enable

CLR – clear



### 3. Expander

Urządzenie technologii CMOS, zużywające małą moc

- 2.5 to 6 V single power supply (dependent on MSM80C48/49 operating frequency.)
- Fully static operation
- Bidirectional I/O ports
- TTL coimpatible (ports 4 - 7)
- Functional compatiiblity with Intel i8243

PROG – wejście zegara

CS - wejście wyboru chipu

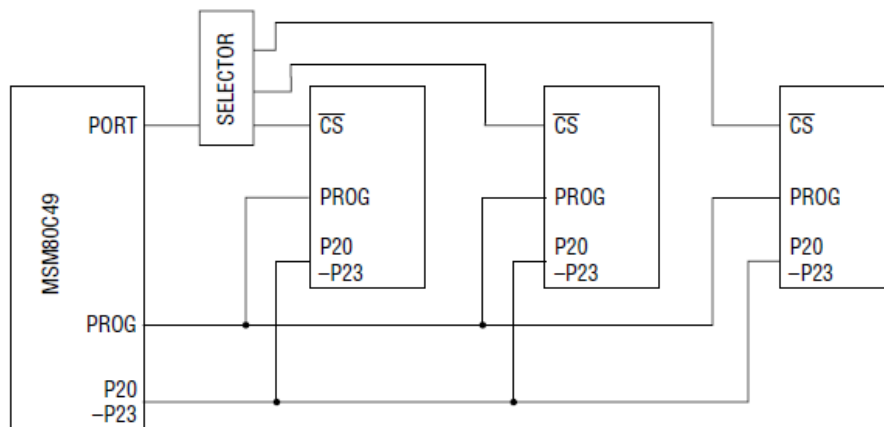
P20 – P23 czterobitowe dwukierunkowe porty, transferują pomiędzy akumulatorem i portem

P40 – P73 czterobitowe dwukierunkowe porty

VCC, GND

Execution of MOVDpp, A, ORLDpp, A, ANLDpp, and A by MSM80C49 enables direct output of accumulator contents to ports 4 thru 7, and output to the ports after ORing or ANDing with port data.

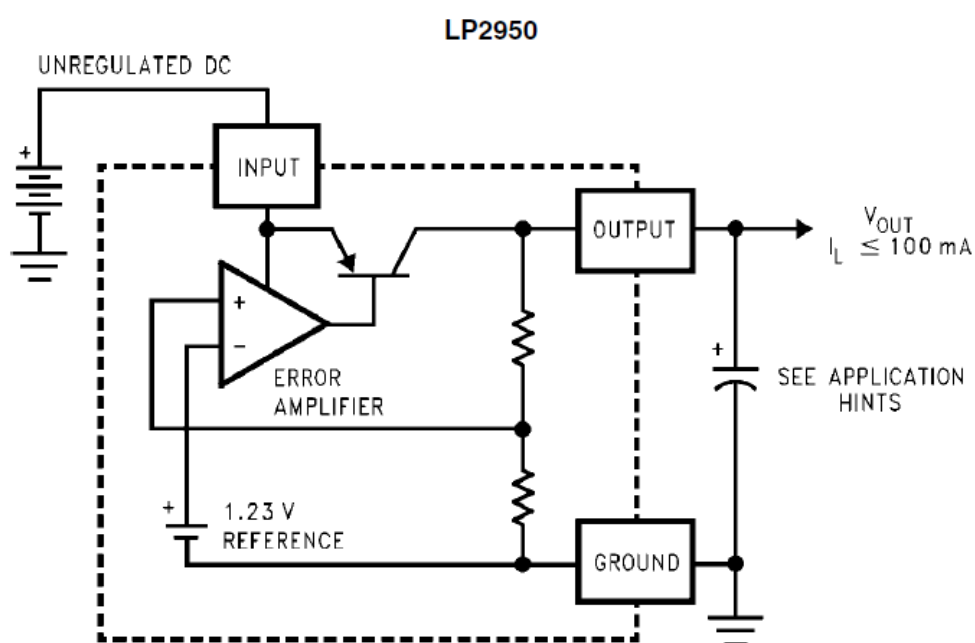
#### MSM82C43 Multiple connection example



#### 4. Regulator napięciowy małej mocy LP2950

Also, the part may be pin-strapped for a 5V, 3V, or 3.3V output (depending on the version), or programmed from 1.24V to 29V with an external pair of resistors.

- 5V, 3V, and 3.3V versions available
- ■ High accuracy output voltage
- ■ Guaranteed 100mA output current
- ■ Extremely low quiescent current
- ■ Low dropout voltage
- ■ Extremely tight load and line regulation
- ■ Very low temperature coefficient
- ■ Use as Regulator or Reference
- ■ Needs minimum capacitance for stability
- ■ Current and Thermal Limiting
- ■ Stable with low-ESR output capacitors (10mΩ to 6Ω)



A 1.0 $\mu$ F (or greater) capacitor is required between the output and ground for stability at output voltages of 5V or more. At lower output voltages, more capacitance is required (2.2 $\mu$ F or more is recommended for 3V and 3.3V versions). Without this capacitor the part will oscillate.

## 5. Pamięć EEPROM

- Industry Standard MICROWIRE Bus
- Single Supply Voltage:
  - 4.5 to 5.5V for M93Cx6
  - 2.5 to 5.5V for M93Cx6-W
  - 1.8 to 5.5V for M93Cx6-R
- Dual Organization: by Word (x16) or Byte (x8)
- Programming Instructions that work on: Byte,
- Word or Entire Memory
- Self-timed Programming Cycle with Auto-Erase
- Ready/Busy Signal During Programming
- Speed:
  - 1MHz Clock Rate, 10ms Write Time (Current product, identified by process identification letter F or M)
  - 2MHz Clock Rate, 5ms Write Time (New Product, identified by process identification letter W or G or S)
- Sequential Read Operation
- Enhanced ESD/Latch-Up Behaviour
- More than 1 Million Erase/Write Cycles

Piny:

S - Chip Select Input

D - Serial Data Input

Q - Serial Data Output

C - Serial Clock

ORG - Organisation Select

VCC - Supply Voltage (0.50 - 6.5 V)

VSS - Ground

## MEMORY ORGANIZATION

The M93Cx6 memory is organized either as bytes (x8) or as words (x16). If Organization Select (ORG) is left unconnected (or connected to VCC) the x16 organization is selected; when Organization Select (ORG) is connected to Ground (VSS) the x8 organization is selected. When the M93Cx6 is in stand-by mode, Organization Select (ORG) should be set either to VSS or VCC for minimum power consumption. Any voltage between VSS and VCC applied to Organization Select (ORG) may increase the stand-by current.

## 6. Tranzystor mocy

Internal Thermal Limiting

Internal Current and Power Limiting

Specified 100 mA Output Current • 0.5  $\mu$ A Typical Base Current

Directly Interfaces with TTL or CMOS  
 +36 Volts On Base Causes No Damage  
 2  $\mu$ s Switching Time

LP395 szybki monolityczny tranzystor z ochroną przeciążeniową. Jest zaprojektowany by dostarczyć prąd 100 mA. Należy pamiętać o tym aby wprowadzić 4,7 kohm rezystor przy bazie aby zapobiec oscylacjom

## Typical Applications

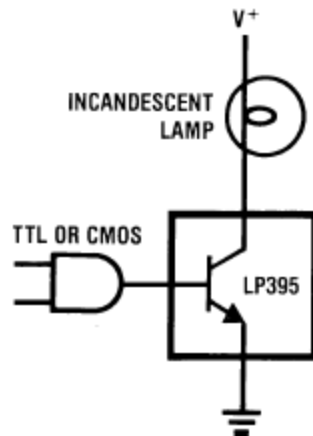
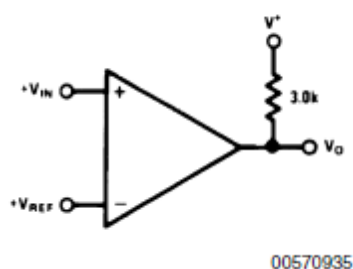


Figure 2. Fully Protected Lamp Driver

### 7. Podwójny napięciowy komparator

- Wide supply
  - Voltage range: 2.0V to 36V
  - Single or dual supplies:  $\pm 1.0$ V to  $\pm 18$ V
- Very low supply current drain (0.4 mA) — independent of supply voltage
- Low input biasing current: 25 nA
- Low input offset current:  $\pm 5$  nA
- Maximum offset voltage:  $\pm 3$  mV
- Input common-mode voltage range includes ground
- Differential input voltage range equal to the power supply voltage
- Low output saturation voltage,; 250 mV at 4 mA
- Output voltage compatible with TTL, DTL, ECL, MOS and CMOS logic systems
- Available in the 8-Bump (12 mil) micro SMD package



Dwa niezależne komparatory z offsetem rzędu 2 mV dla układu, przeznaczone do pracy z pojedynczym zasilaniem. Aplikacje takich komparatorów to min. konwerter analogowo cyfrowy,

generator sygnału pulsowego, prostokątnego, VCO generator sterowany napięciem szerokiego zasięgu oraz wysokonapięciowe bramki logiczne. Kompatybilne z technologiami CMOS i TTL.

Input Voltage -0.3V to +36V

Input Current ( $V_{IN} < -0.3V$ ) 50 mA

#### **8. Tranzystor średniej mocy ZTX652**

Wzmacniacz do 100 V

- 100 Volt VCEO
- 2 Amp continuous current
- Low saturation voltage
- $P_{tot}=1$  Watt

#### **9. Tranzystor średniej mocy ZTX751**

Wzmacniacz do 60 V

- $BV_{CEO} > -60V$
- $I_C = -2A$  High Continuous Collector Current
- $I_{CM} = -6A$  Peak Pulse Current
- $T_J$  up to  $+200^{\circ}C$  for High Temperature Operation
- Low Saturation Voltage  $< -0.3V @ -1A$
- $PD = 1W$  Power dissipation

### ***Power soft top control module – Moduł kontroli zasilania miękkiego dachu – Mikrokontroler***

The top control unit located under the right side of the baggage shelf or right occasional seat controls the following functions:

- Opening and closing the top (including lowering side windows and roll bar) after actuation of the top switch
- Locking and unlocking the coupe roof after actuating the top switch. Automatic switch-over to coupe roof/top operation after attaching or removing the coupe roof
- Monitoring of safety-relevant information (speedometer function, speed signals, roll bar control unit, function of operating switches, locked state for top locks)
- Convenience operation (moving up/down) for roll bar after actuating roll bar switch. Lowering/raising side windows after actuating window lift switch
- Momentary contact function for automatically lowering the side windows after corresponding actuation of window lift switch Convenience closing of side windows via lock on driver's door
- Convenience operation for side windows (operation with door open, in spite of ignition being switched off).
- Diagnostic system with pulse display for malfunction recognition