Port Replacement Unit (PRU)
## For 6811 – type microprocessors

Features

- Exact replacement for the Motorola MC68HC24 PRU
- Utilizes the Tekmos 6824 Core
- Replaces ports B and C of 6811 type microprocessors.
- The chip-select function allows multiple TK68HC24s to be used in systems requiring multiple parallel ports.
- 3 – 5.5 Volt Operation.
- 0 – 5 MHz Operation.
- Supports all handshake and I/O modes.
- Available in 40 PDIP (P) and 44 PLCC (FN) versions.

Description

The TK68HC24 is an exact replacement of the Motorola 68HC24.

The TK68HC24 is designed to replace the Port B and Port C functions of 6811 – type microprocessors. These functions are lost when the 6811 type microprocessors are operated in the expanded mode. The TK68HC24 has an address re-mapping feature that allows multiple TK68HC24s to be used within a single system.

Pinout
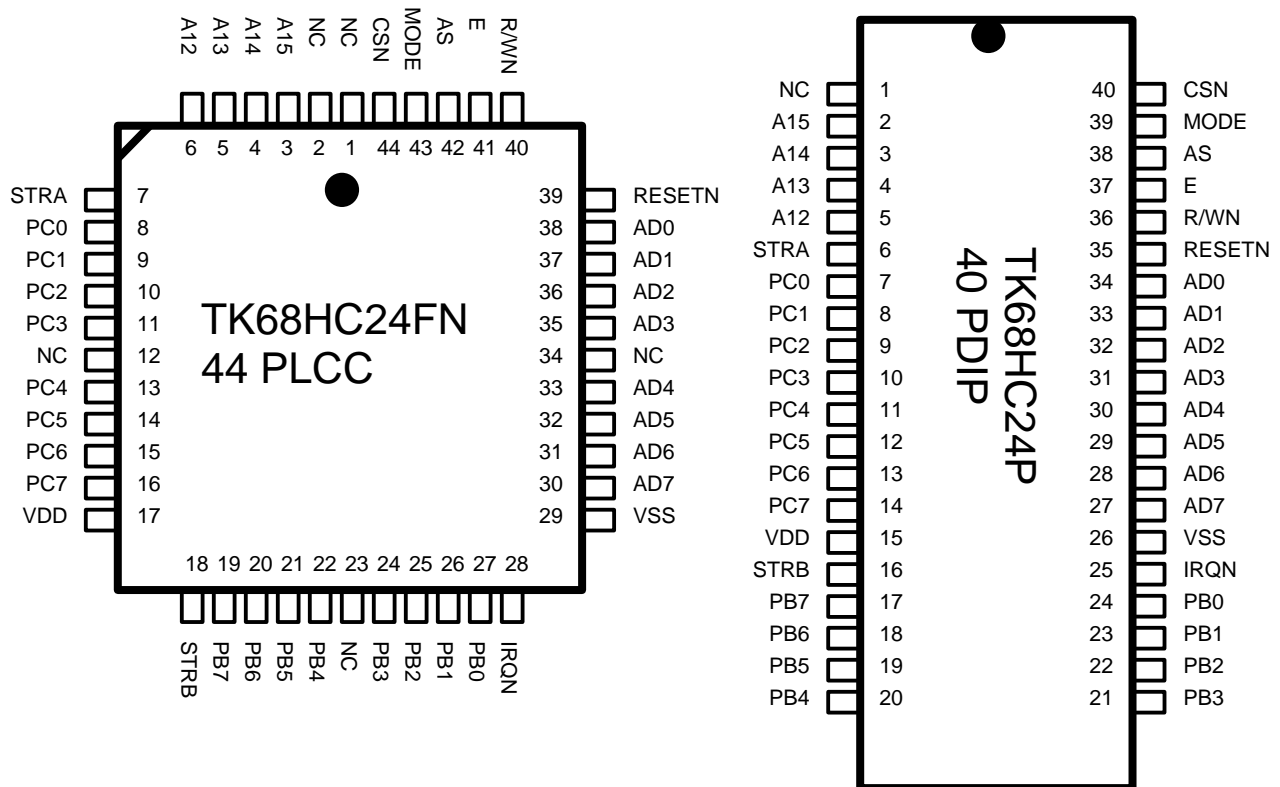
Differences Between the Motorola and Tekmos Version of the TK68HC24

The TK68HC24 is a new design, and is manufactured in a 0.8u CMOS process. The design has been modified to compensate for the faster process in order to retain compatibility with the older parts.

1. All inputs now have Schmitt triggers. Inputs fabricated on the new process will be faster. That makes them more sensitive to noise spikes, and they require faster rise times to avoid input oscillation. The insertion of Schmitt triggers on all inputs and bi-directional signals removes this sensitivity. The new parts still meet all of the original input level specifications.

2. Reset has been modified. In the original circuit, it was possible to trigger a partial chip reset by the presence of a well placed glitch on the reset line. The faster Tekmos implementation might respond to noise on the reset line that would not affect the original parts. The modification requires the presence of reset for at least 1/2 E clock before it is recognized. This is consistent with the specification, which requires users to keep the E clock low for two entire clock cycles.

3. The IOTEST pin has been removed from the documentation. This pin was not present on the old 68HC24s**.**

Register Bit Map

Register	Addr	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
PIOC	xx02	STAF	STAI	CWOM	HNDS	OIN	PLS	EGA	INVB
PORTC	xx03	PC7	PC6	PC5	PC4	PC3	PC2	PC1	PC0
PORTB	xx04	PB7	PB6	PB5	PB4	PB3	PB2	PB1	PB0
PORTCL	xx05	PCL7	PCL6	PCL5	PCL4	PCL3	PCL2	PCL1	PCL0
DDRC	xx07	DDRC7	DDRC6	DDRC5	DDRC4	DDRC3	DDRC2	DDRC1	DDRC0
HPRIO	xx3C	-	SMOD	-	IRV	-	-	-	-
INIT	xx3D	-	-	-	-	REG3	REG2	REG1	REG0

DC Electrical Specifications (Vdd = 5.0 V +/- 10%, Vss = 0 V, Ta = -40°C to +85°C)

Characteristics		Symbol	Min	Max	Unit
Output Voltage (Iload = +/- 10 uA)	All Outputs	Vol	-	0.1	V
	All outputs except IRQN (Note 1)	Voh	Vdd - 0.1	-	
Output Low Voltage (Iload = 1.6 mA)		Vol	-	0.4	V
Output High Voltage (Iload = -0.8 mA, Vdd = 4.5 V)		Voh	Vdd - 0.8	-	V
	All outputs except IRQN (Note 1)				
Input Low Voltage	All inputs	Vil	Vss	0.2 x Vdd	V
Input High Voltage	All inputs	Vih	0.7 x Vdd	Vdd	V
3-State Leakage (Vin = Vss or Vdd)	PC0-PC7, AD0-AD7	Ioz	-	+/- 10	uA
Input Current (Vih = Vdd or Vss)		Iin	-	+/- 1	uA
E, AS, R/WN, CSN, MODE, A12-A15, STRA					
Total Supply Current (Note 2)		Idd	-	5	mA
Input Capacitance		Cin	-	8.0	pF
			-	12.0	
Power Dissipation		Pd	-	25	mW

Note 1. IRQN is an open-drain output. Voh does not apply.
Note 2. Measured with PortC, CSN = 0 V., RESETN, MODE, R/WN = Vdd, reading Port 2 each cycle.

Sales Information

Parts may be ordered directly from Tekmos;
By phone at 512 342-9871 x204, or
By e-mail at Sales@Tekmos.Com, or
By web at www.Tekmos.com
Visa or MasterCard accepted.

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