Z8614
KEYBOARD CONTROLLER (KBC™)
NMOS Z8® 8-BIT MCU

DESCRIPTION

The Z8614 Keyboard Controller (KBC™) introduces a new level of sophistication to single-chip architecture. The Z8614 is a member of the Z8 single-chip microcontroller family with 4 Kbytes of ROM.

The Z8614 KBC is housed in 40-lead DIP and 44-lead PLCC packages, and is manufactured in NMOS technology. Zilog's microcontroller offers fast execution, efficient use of memory, sophisticated interrupt, input/output bit manipulation capabilities, and easy hardware/software system expansion along with low cost and low power consumption.

The KBC architecture is characterized by a flexible I/O scheme, an efficient register, I/O, and a number of ancillary features that are useful in keyboard applications.

The device applications demand powerful I/O capabilities. The KBC fulfills this with 32 pins dedicated to input and output. These lines are grouped into four ports, each port consists of eight lines, and are configurable under software control to provide timing, status signals, and serial or parallel I/O ports.

The Z8614 offers low EMI emission achieved by means of several modifications in the output drivers and clock circuitry of the device.

There are two basic address spaces available to support this wide range of configurations: Program Memory and 124 General-Purpose Registers.

The KBC offers two on-chip counter/timers with a large number of user selectable modes. This unburdens the program from coping with real-time problems such as counting/timing.
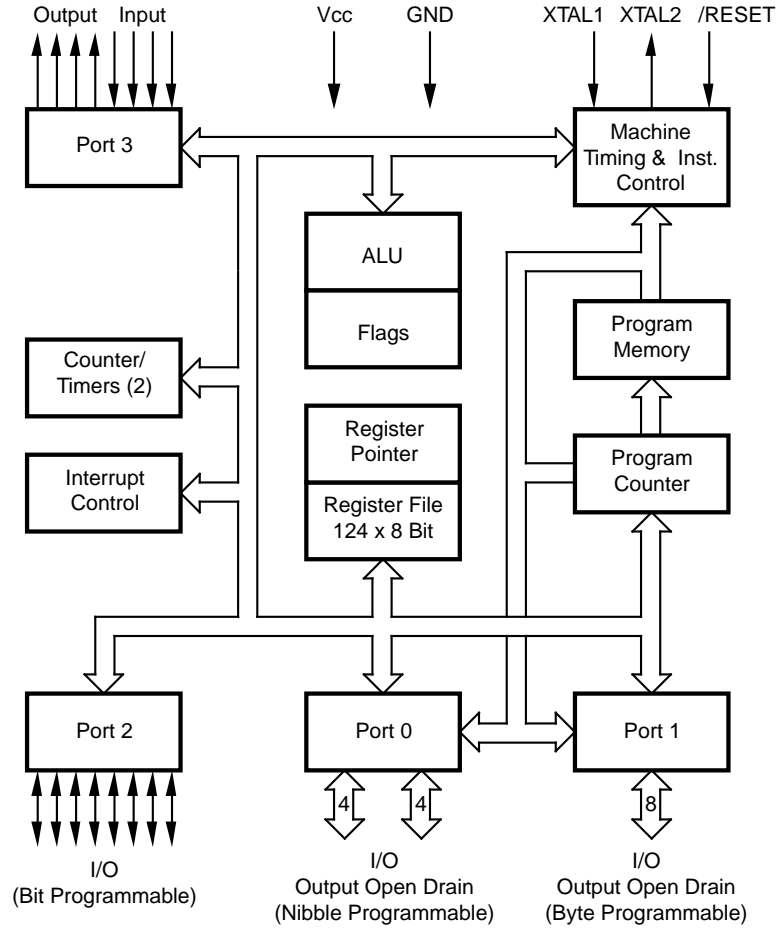
Notes:
All Signals with a preceding front slash, "/", are active Low, e.g., B//W (WORD is active Low); /B/W (BYTE is active Low, only).
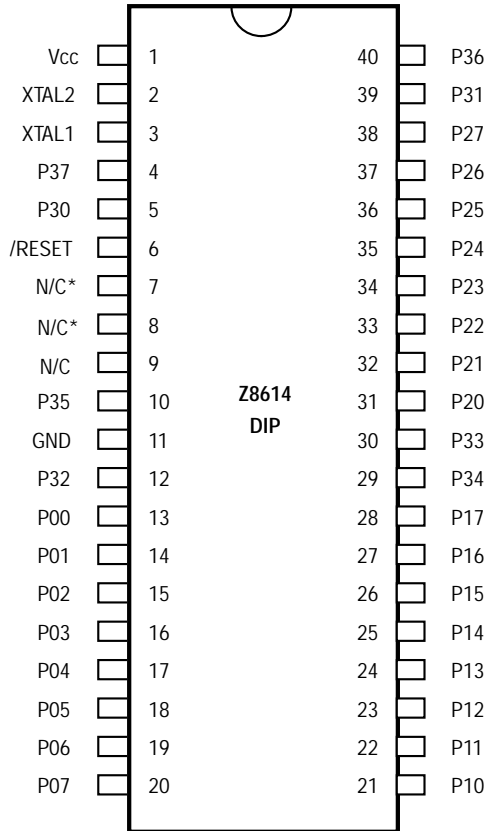
Power connections follow conventional descriptions below:

Connection	Circuit	Device
Power	V_{CC}	V_{DD}
Ground	GND	V_{SS}

GENERAL DESCRIPTION (Continued)

Functional Block Diagram

ZiLOG

40-Lead DIP Pin Configuration

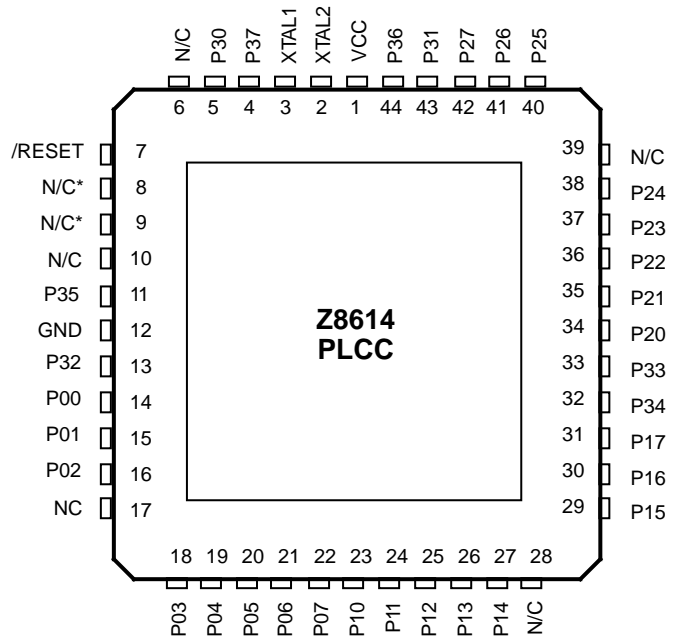| Pin	Signal		Pin	Signal
1	Vcc		40	P36
2	XTAL2		39	P31
3	XTAL1		38	P27
4	P37		37	P26
5	P30		36	P25
6	/RESET		35	P24
7	N/C*		34	P23
8	N/C*		33	P22
9	N/C		32	P21
10	P35		31	P20
11	GND		30	P33
12	P32		29	P34
13	P00		28	P17
14	P01		27	P16
15	P02		26	P15
16	P03		25	P14
17	P04		24	P13
18	P05		23	P12
19	P06		22	P11
20	P07		21	P10

Z8614 DIP

Note: Pins 7 and 8 actually are connected to the chip, although used only for testing. These pins must be used as floaters by the customer.

44-Lead PLCC Pin Configuration

Z8614 PLCC

Top pins (6 5 4 3 2 1 44 43 42 41 40): N/C, P30, P37, XTAL1, XTAL2, VCC, P36, P31, P27, P26, P25

Left pins:
7	/RESET
8	N/C*
9	N/C*
10	N/C
11	P35
12	GND
13	P32
14	P00
15	P01
16	P02
17	NC

Right pins:
39	N/C
38	P24
37	P23
36	P22
35	P21
34	P20
33	P33
32	P34
31	P17
30	P16
29	P15

Bottom pins (18 19 20 21 22 23 24 25 26 27 28): P03, P04, P05, P06, P07, P10, P11, P12, P13, P14, N/C

Note: Pins 8 and 9 actually are connected to the chip, although used only for testing. These pins must be used as floaters by the customer.

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DC CHARACTERISTICS

V_{CC} = 4.75 V to 5.25V @ 0°C to +70°C

Symbol	Parameter	Min	Max	Typ*	Unit	Condition
V_{CH}	Clock Input High Voltage	3.8	V_{CC}		V	Driven by External Clock Generator
V_{CL}	Clock Input Low Voltage	–0.3	0.8		V	Driven by External Clock Generator
V_{IH}	Input High Voltage	2.0	V_{CC}		V	
V_{IL}	Input Low Voltage	–0.3	0.8		V	
V_{RH}	Reset Input High Voltage	3.8	V_{CC}		V	
V_{RL}	Reset Input Low Voltage	–0.3	0.8		V	
V_{OH}	Output High Voltage	2.0			V	I_{OH}= –250 µA (Port 2 only)
	Output High Voltage	2.4			V	I_{OH}= –250 µA (Port 3 only)
V_{OL}	Output Low Voltage		0.8		V	I_{OL}= +4.0 mA (see Note 1 below)
I_{IL}	Input Leakage	–10	10		µA	V_{IN} = 0V, 5.25V
I_{OL}	Output Leakage	–10	10		µA	V_{IN} = 0V, 5.25V
I_{IR}	Reset Input Current		–50		µA	V_{IN} = 0V, 5.25V
I_{CC}	V_{CC}Supply Current		150	135	mA	

Note:

* Typical @ 25°C

1. A combined total of six I/O pins from Ports 2 and 3 may be used to sink 10 mA at 0.8 V_{OL} (max three pins per port). These may be used for LEDs or as general purpose outputs requiring high sink current.

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