



Z8602

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

GENERAL DESCRIPTION

The Z8602 Keyboard Controller (KBC™) introduces a new level of sophistication to single-chip architecture. The Z8602 is a member of the Z8 single-chip microcontroller family with 2 Kbytes of ROM.

The Z8602 KBC is housed in a 40-lead DIP, and is manufactured in NMOS technology. Zilog's microcontroller offers fast execution, more efficient use of memory, more 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 many industrial and advanced scientific 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 8 lines, and are configurable under software control to provide timing, status signals, and serial or parallel I/O ports.

The Z8602 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.

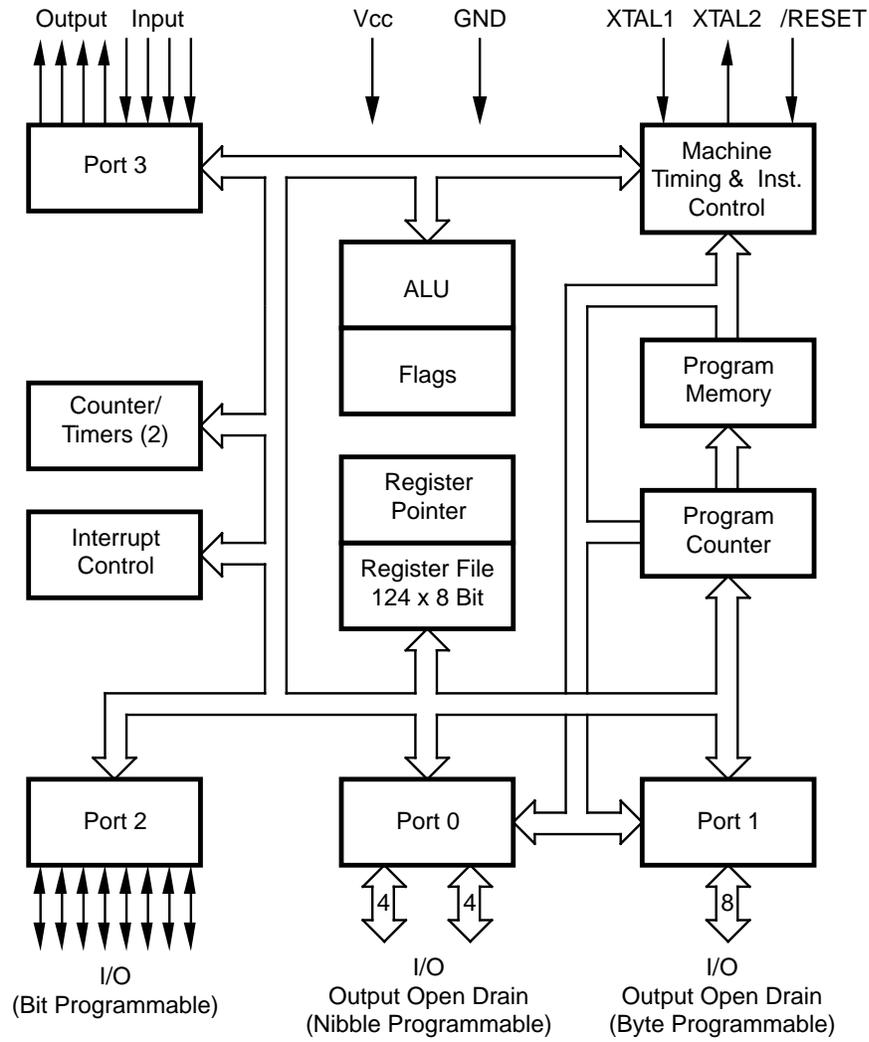
Notes:

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).

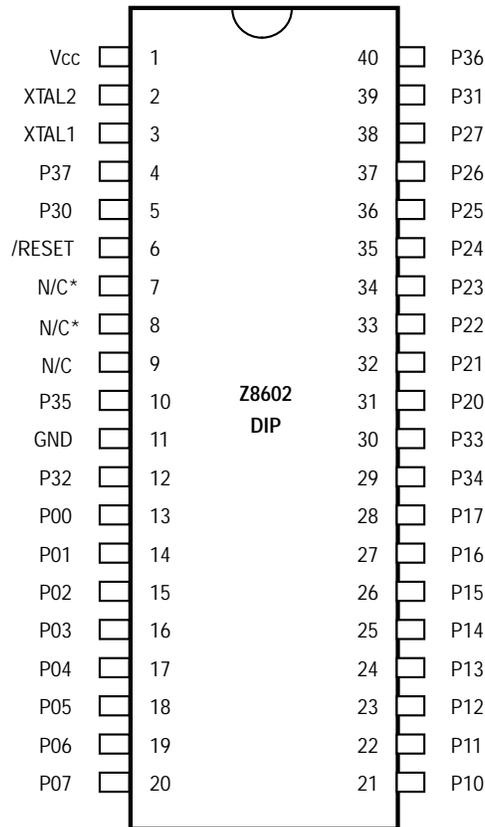
Power connections follow conventional descriptions below:

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

GENERAL DESCRIPTION (Continued)



Functional Block Diagram

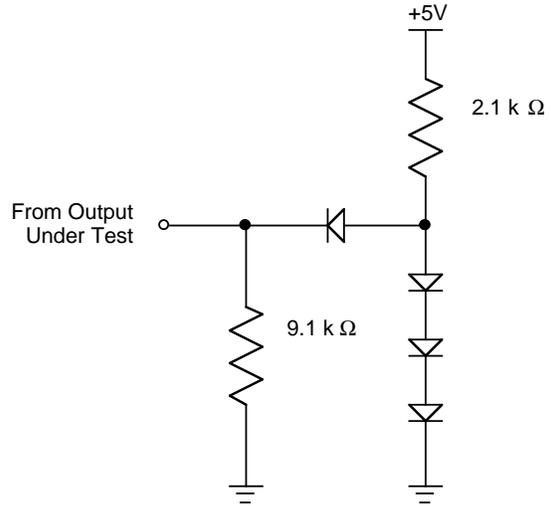


Note: Pins 7 and 8 actually are connected to the chip, although used only for testing. These pins must be used as floaters by the customer.

40-Lead DIP Pin Configuration

STANDARD TEST CONDITIONS

Standard Test Conditions. The characteristics listed here apply for standard test conditions as noted. All voltages are referenced to GND. Positive current flows into the referenced pin (Test Load Configuration).



Test Load Configuration

ABSOLUTE MAXIMUM RATINGS

| Symbol | Description | Min | Max | Units |
|-----------|---------------------|------|-------|-------|
| V_{CC} | Supply Voltage(*) | -0.3 | +7.0 | V |
| T_{STG} | Storage Temp | -65° | +150° | C |
| T_A | Oper. Ambient Temp. | † | † | |

Notes:

(*) Voltage on all pins with respect to GND.

† See ordering information

Stress greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; operation of the device at any condition above those indicated in the operational sections of these specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC CHARACTERISTICS

 $V_{CC} = 4.75\text{ V to }5.25\text{ V @ }0^{\circ}\text{C to }+70^{\circ}\text{C}$

| 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 | $I_{OH} = -250\ \mu\text{A}$ (Port 2 only) |
| | Output High Voltage | 2.4 | | | V | $I_{OH} = -250\ \mu\text{A}$ (Port 3 only) |
| V_{OL} | Output Low Voltage | | 0.8 | | V | $I_{OL} = +4.0\ \text{mA}$ (See Note 1 below.) |
| I_{IL} | Input Leakage | -10 | 10 | | μA | $V_{IN} = 0\text{V}, 5.25\text{V}$ |
| I_{OL} | Output Leakage | -10 | 10 | | μA | $V_{IN} = 0\text{V}, 5.25\text{V}$ |
| I_{IR} | Reset Input Current | | -50 | | μA | $V_{IN} = 0\text{V}, 5.25\text{V}$ |
| I_{CC} | V_{CC} Supply Current | | 150 | 135 | mA | |

Notes:

† Typical @ 25°C

1 A combined total of four I/O pins from Ports 0, 1, and 2 may be used to sink 10 ma at 0.8 Volts (maximum two pins per port). These may be used for LEDs or as general purpose outputs requiring high sink current.

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