



Product Update

UP003802-0703

Errata to Z8E000/Z8E001 Silicon

Introduction

This Product Update lists precautions regarding the T_{OUT} and T_{XVAL} functions of the Z8E000 and Z8E001 microcontrollers.

Related Documentation

Z8E000 Product Specification (DS0036)

Z8E001 Product Specification (DS0011)

T_{OUT} Precaution

The T_{OUT} function uses the PTBOUT register bit 1 directly by XORing it on each occurrence of an interrupt. The PWM reload is not based on the resulting value.

The observed functioning can be described as: following Reset, the T_{OUT} special function is selected and the PWM is started. The timer decrements from the value in the counter. Upon the first time-out, the T_{OUT} pin flips and the Low-side reload value is loaded into the counter. The counter alternates from this point forward, depending on which reload pair it uses. If the PB1 pin is in the Low output state when the T_{OUT} special function is enabled, then the PWM is upside-down from the beginning. If it is High, then the PWM is correct.

If software modifies the PB1 output state, the pin changes states to reflect the software-driven value, even though the pin is in the T_{OUT} special function mode. If the programmer does not intentionally modify the bit and instead uses the Boolean operators on the PTBOUT register, the timer flips if the software Read-Modify-Write operation happens to fall with a timer time-out in the middle. Because the timer and the CPU are running at different divisors of the master clock, this occurrence is not uncommon. The software write-back overrides the hardware change and the T_{OUT} pin does not change state as it should have. Because there is no feedback mechanism, this lack of state change causes the PWM reload selection to be inverted from the PWM output state.

T_{XVAL} Precaution

There is a bug in the chip that causes the hardware write-back of the timers to corrupt the software Write into the count value registers. The timer value registers should not be written by software unless the timer is stopped. Otherwise, the timer will not time-out during the instruction



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