IOM
Input Output Monitor

Highlights
Checking of correct operation of system peripheral outputs as well as of the external hardware based on input signal through monitoring and comparison of the control signal under given conditions or comparison with a reference signal.

Key Features
- Smart & flexible input/output comparison
- Fast alarm generation
- Glitch filtering

Customer Benefits
- Check boundary conditions on digital input/output from different sources in hardware
- Customer can take appropriate action without much delay
- Ability to filter glitches in input with different modes
Validation of a digital control signal by checking the occurrence of rising or falling edge with respect to a threshold in a defined event window

Signal in the above example is monitored to check for maximum time between two rising edges under a given threshold

Signal can also be compared with another signal as reference to monitor deviations with certain given tolerances

Multiple possible inputs of internal peripherals as well as input from port pins can be routed as monitor or reference signal input to IOM
IOM
Fast alarm generation

› Event Combiner Module (ECM) within IOM allows logical combinations of alarms coming from LAM (Logic Analyzer Module) to send a single alarm event to SMU (Safety Management Unit)

› Input to SMU leads to a fast response by the system in case of safety violations in form of an interrupt/trap where the user can configure the required behavior
The dedicated hardware for Filtering and Pre-Conditioning (FPC) of input signals used as monitor or reference signal inputs ensures that multiple filtering modes are available:

- Delayed debounce filter mode
- Immediate debounce filter mode
- Mixed filter mode
- Prescalar mode
IOM offers flexibility to get inputs from multiple sources as monitor or reference as shown above.

Input signals can be provided by timers like GTM & CCU6 or communication peripherals.

IOM outputs are routed to the Safety Management Unit (SMU) to generate the appropriate alarms to the system.
Application example
IGBT gate driver communication

Overview

› Description of issue: Ensure that the delay between Command and Feedback is below a maximum delay.

› Procedure: Use the Feedback signal as the monitor input signal. Compare the two with respect to their distance of the edges.

Advantages

› The violation of the maximum will be detected fully automatic by the IOM and an alarm is generated in case of delay violation.
IMPORTANT NOTICE
The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie”).

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer’s compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer’s products and any use of the product of Infineon Technologies in customer’s applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer’s technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS
Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies’ products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.