JT 5112 - MIOS (Mixed-signal IO Scan) MODULE

IO System with digital, analog and frequency measurement

Key features

IO system for existing controllers
• 64 I/O channels in total

• 56 digital
    -- 16 with frequency counter;
    -- 1 with programmable clock generator;
    -- 1 with pulse width measurement

• 8 digital or analog, programmable per channel

• Custom programmable FPGA

The JT 5112 MIOS module is a multi-function JTAG controlled I/O system instrument. It features 64 mixed signal I/O channels plus custom programmable functions. This compact unit was designed for easy integration into fixtures or bench use, making it ideal for production testing or as an everyday board debug tool.

The I/O channels allow measurement of both digital and analog signals. With the MIOS connectors and/or test points of a Unit Under Test (UUT) can be measured and driven as part of a JTAG/Boundary-scan test. By utilising the mixed signal I/O channels of a JT 5112 users enjoy increased test coverage for both the digital and the analog parts of a UUT.

From the total of 64 I/O channels, up to eight can be selected as analog channels that can measure or source voltages up to 30 Volts (unipolar) or ± 15 Volts (bipolar). The remaining 56 channels are digital only. Of these digital channels 16 also have a frequency counter, 1 can be used as a programmable clock generator and 1 more can be used for pulse width measurements. For higher channel counts multiple MIOS modules can be 'daisy-chained' via the TAP-IN, TAP-OUT connectors.

In addition to their use as boundary-scan I/O signals,

the I/O channels can also be controlled via application specific digital functions that can be programmed in the reconfigurable FPGA (Altera Cyclone type) of the JT 5112. Examples of such functions include CAN bus (excl Phy), E-net (excl Phy), SPI, DDR memory interfaces etc.

The unit is fully supported by JTAG Technologies application development tools (ProVision and JTAG Live) and run-time software options such as PIP/LV (drivers for NI LabView), PIP/TS (drivers for TestStand), etc.

Voltage levels

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TAPs:	Standard 3.3V (programmable 1.05 to 3.6 V; 5 V tolerant)
Digital I/O:	1.05 to 3.6 V; 5 V tolerant
Analog I/O:	0 to 30 V or −15 to +15 V

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ELECTRICAL				
Power		**Analog I/O**		
External	9-15 V, 0,8 A	Voltage range	0 V to 30 V or –15 V to +15 V @ 5 mA max	
TAP		Resolution	16 bit (0.5 mV)	
TCK	1 KHz to 15 MHz	Relative fault	± 0,7% full scale	
Voltage range	1.05 V to 3.6 V (5 V tolerant)	Input impedance	1 Mohm parallel with 100 pF	
Threshold	@ 50% of selected voltage	Output impedance	100 Ohm.	
Digital I/O		Sample rate	15kS/s	
Voltage range	1.05 V to 3.6 V	Slew rate	0.5V/µs	
Output current	max ±8 mA @ 3.3 V	**Over Voltage Protection for Digital I/O**		
Other		Isolation threshold	VCC + 0.6 V	
Frequency counter	0 to 200 MHz	Isolation voltage protection	- 0.5 V to +15 V	
Clock generator	0 to 62.5 MHz; step 0.0582 Hz	Overshoot rejection	Overshoots less than 400 ns will not result in OVP isolation	
Pulse width measurement	4-8192 ns; accuracy 4 ns, resolution 1ns	Pull-up resistor	20 – 50 Kohm	
ENVIRONMENTAL MIL-T-28800E Class5 Style E				
Temperature		**Dimensions**		
Rated range of use	0 °C to 60 °C (boxed); 0 °C to 70 °C (unboxed)	Weight	161 grams	
Storage and transport	-5 °C to 60 °C (boxed); -40 °C to 70 °C (unboxed)	Size (L x W x H)	155 x 88 x 41 mm	
Relative Humidity				
Operating	15% to 90% non-condensing			
Storage and transport	5% to 95% non-condensing			

Increasing test coverage
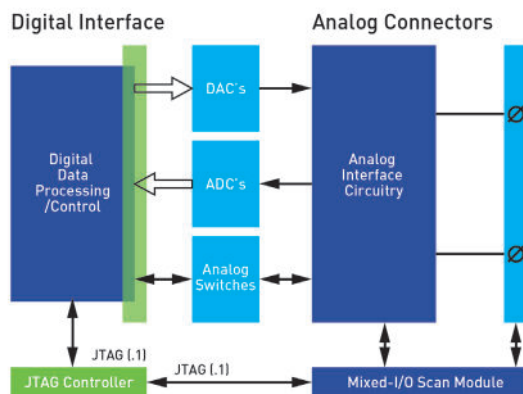
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