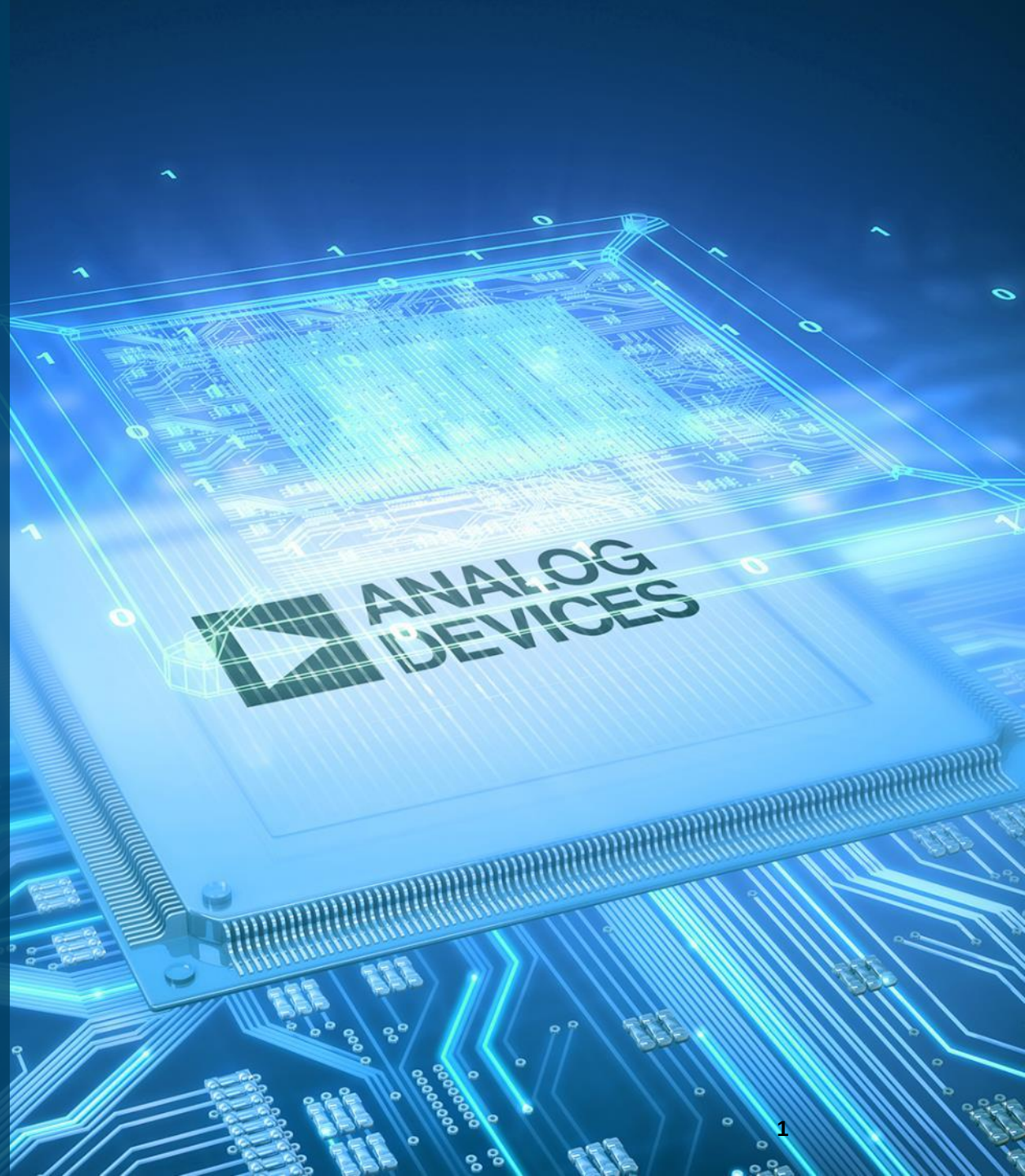
ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

ADW22400 Cap Shim

3/5/2020

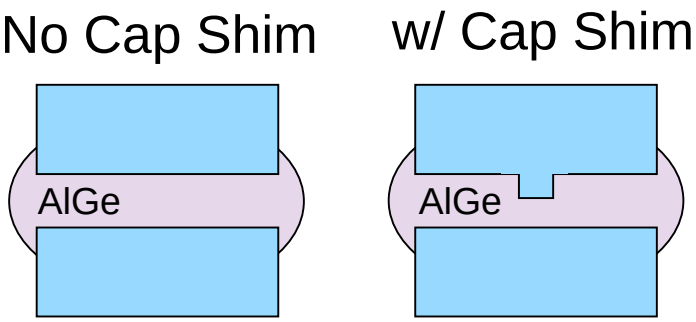


Executive Summary:

- ADW22400 is prone to stiction
- Observed stiction is related to robustness of the AlGe cap seal
- A cap shim has been qualified to improve the robustness of the seal process
- The cap shim process has been qualified to AEC Q-100 standard
- The cap shim process is now the ADI standard AlGe capping process
- There is no change to the part finished Goods (FG) I.D.
- There are no changes to the part package or pin-out.
- There are no changes to the data sheet.
- Material on the new process will be detectable through a change to the test code register.
- ADI will also provide a DC cut-over to customer at time of introduction.

AlGe Seal with Cap Shim

- ADW22400 AlGe bonded Z-axis sensor experiences stiction after:
  - High moisture stress (85C/85%, Autoclave, THB, UTHB)
  - ATE
- ADW22400 implemented Cap Shim on the AlGe seal
  - Cap Shim incorporates a Si “bump” patterned on the bottom of the cap seal ring
  - AW22400 with Cap Shim passed high moisture stresses (AEC-Q100) with no stiction failures



Electrical Detectability of Change

Memory Register Function	Register Address	Access	Name	D7	D6	D5	D4	D3	D2	D1	D0
ADI Device ID	0x29	R	Device ID0	Variant[2:0]					CREV_ID[4:0]		
	0x2A	R	Device ID1	XL_X	XL_Y	XL_Z	Yaw	Roll	Pitch	Variant[4:3]	

ADW22400 PRODUCTION (current)

Reg Addr	Reg Name	REGISTER CONTENTS			CREV_ID		VARIANT			
		dec	*hex*	*binary*	*binary*	***dec***	*binary [4:3]*	*binary [2:0]*	*binary [4:0]*	***dec***
x29	DEVICE_ID0	98	62	01100010	00010	**2**		011	00011	**3**
x2A	DEVICE_ID1	32	20	00100000			00			

ADW22400 PCN w/ CAP SHIM CHANGE

Reg Addr	Reg Name	REGISTER CONTENTS			CREV_ID		VARIANT			
		dec	*hex*	*binary*	*binary*	***dec***	*binary [4:3]*	*binary [2:0]*	*binary [4:0]*	***dec***
x29	DEVICE_ID0	99	63	01100011	00011	**3**		011	00011	**3**
x2A	DEVICE_ID1	32	20	00100000			00			

Summary

- ADI has successfully completed AEC Q-100 qualification of a cap shim on ADW22400, to eliminate a known stiction risk
- Electrical identification of the process change is provided through the test code register
- ADI will provide date code (DC) information for the change also
- There is no change to the parts data sheet, package or pin-out