



Product/Process Change Notice - PCN 22_0089 Rev. -

Analog Devices, Inc. One Analog Way, Wilmington, MA 01887

This notice is to inform you of a change that will be made to certain ADI products (see Appendix A) that you may have purchased in the last 2 years. **Any inquiries or requests with this PCN (additional data or samples) must be sent to ADI within 30 days of publication date.** ADI contact information is listed below.

PCN Title: LTM2987 Datasheet Limit Change

Publication Date: 27-Apr-2022

Effectivity Date: 30-Jul-2022 *(the earliest date that a customer could expect to receive changed material)*

Revision Description:

Initial Release

Description Of Change:

Please be advised that Analog Devices has made minor changes to the LTM2987 product datasheet to facilitate improvement in manufacturing capability. The changes are shown on the attached pages of the marked-up datasheet.

Electrical Characteristics table changes (pages 3 and 5 of datasheet):

1. Offset Error at condition: Current Sense Mode, Odd Numbered Channels Only maximum spec limit changed from +/-35uV to +/-100uV.
2. Output Sinking Current at condition: Weak Pull-Down Enabled minimum spec limit changed from 33uA to 28uA. Typical value changed from 50uA to 43uA.
3. Output Sinking Current at condition: Strong Pulldown Enabled temperature condition changed from Tri-temperature to Room temperature only. Also, remove the minimum and maximum specification.

Reason For Change:

To facilitate improvement in manufacturing capability.

Impact of the change (positive or negative) on fit, form, function & reliability:

This datasheet change does not impact the fit, form, function, or reliability of the LTM2987.

Product Identification *(this section will describe how to identify the changed material)*

Product shipped after effectivity date will be tested to the new limits.

Can be identified with date code and lot traceability identification.

Summary of Supporting Information:

Changes will be reflected on the new product datasheet. See changes on Electrical Characteristics table on page 3 and 5.

Supporting Documents

Attachment 1: Type: Datasheet Specification Comparison

ADI_PCN_22_0089_Rev_-_LTM2987_Datasheet Marked-up_Pages.pdf

For questions on this PCN, please send an email to the regional contacts below or contact your local ADI sales representatives.

Americas:
PCN_Americas@analog.com

Europe:
PCN_Europe@analog.com

Japan:
PCN_Japan@analog.com

Rest of Asia:
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Appendix A - Affected ADI Models				
Added Parts On This Revision - Product Family / Model Number (2)				
LTM2987 / LTM2987CY#PBF	LTM2987 / LTM2987IY#PBF			

Appendix B - Revision History			
Rev	Publish Date	Effectivity Date	Rev Description
Rev. -	27-Apr-2022	30-Jul-2022	Initial Release

Analog Devices, Inc.

DocId:8870 Parent DocId:None Layout Rev:8

ELECTRICAL CHARACTERISTICS The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_J = 25^\circ\text{C}$. $V_{PWR} = V_{IN_SNS} = 12\text{V}$, V_{DD33} , REFP and REFM pins floating, unless otherwise indicated. (Notes 2, 3)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Power Supply Characteristics							
V _{PWR}	V _{PWR} Supply Input Operating Range		●	4.5		15	V
I _{PWR}	V _{PWR} Supply Current	4.5V ≤ V _{PWR} ≤ 15V, V _{DD33} Floating	●		10	13	mA
I _{VDD33}	V _{DD33} Supply Current	3.13V ≤ V _{DD33} ≤ 3.47V, V _{PWR} = V _{DD33}	●		10	13	mA
V _{UVLO_VDD33}	V _{DD33} Undervoltage Lockout	V _{DD33} Ramping Up, V _{PWR} = V _{DD33}	●	2.35	2.55	2.8	V
	V _{DD33} Undervoltage Lockout Hysteresis				120		mV
V _{DD33}	Supply Input Operating Range	V _{PWR} = V _{DD33}	●	3.13		3.47	V
	Regulator Output Voltage	4.5V ≤ V _{PWR} ≤ 15V	●	3.13	3.26	3.47	V
	Regulator Output Short-Circuit Current	V _{PWR} = 4.5V, V _{DD33} = 0V	●	75	90	140	mA
V _{DD25}	Regulator Output Voltage	3.13V ≤ V _{DD33} ≤ 3.47V	●	2.35	2.5	2.6	V
	Regulator Output Short-Circuit Current	V _{PWR} = V _{DD33} = 3.47V, V _{DD25} = 0V	●	30	55	80	mA
t _{INIT}	Initialization Time	Time from V _{IN} Applied Until the TON_DELAY Timer Starts			30		ms
Voltage Reference Characteristics							
V _{REF}	Output Voltage	(Note 4)			1.232		V
	Temperature Coefficient				3		ppm/°C
	Hysteresis	(Note 5)			100		ppm
ADC Characteristics							
V _{IN_ADC}	Voltage Sense Input Range	Differential Voltage: V _{IN_ADC} = (V _{SENSEPN} − V _{SENSEMN})	●	0		6	V
		Single-Ended Voltage: V _{SENSEMN}	●	−0.1		0.1	V
	Current Sense Input Range (Odd Numbered Channels Only)	Single-Ended Voltage: V _{SENSEPN} , V _{SENSEMN}	●	−0.1		6	V
		Differential Voltage: V _{IN_ADC}	●	−170		170	mV
N _{ADC}	Voltage Sense Resolution (Uses L16 Format)	0V ≤ V _{IN_ADC} ≤ 6V Mfr_config_adc_hires = 0			122		μV/LSB
	Current Sense Resolution (Odd Numbered Channels Only)	0mV ≤ V _{IN_ADC} < 16mV (Note 6) 16mV ≤ V _{IN_ADC} < 32mV 32mV ≤ V _{IN_ADC} < 63.9mV 63.9mV ≤ V _{IN_ADC} < 127.9mV 127.9mV ≤ V _{IN_ADC} Mfr_config_adc_hires = 1			15.625 31.25 62.5 125 250		μV/LSB μV/LSB μV/LSB μV/LSB μV/LSB
TUE_ADC_VOLT_SNS	Total Unadjusted Error (Note 4)	Voltage Sense Mode V _{IN_ADC} ≥ 1V	●			±0.25	% of Reading
		Voltage Sense Mode 0 ≤ V _{IN_ADC} ≤ 1V	●			±2.5	mV
TUE_ADC_CURR_SNS	Total Unadjusted Error (Note 4)	Current Sense Mode, Odd Numbered Channels Only, 20mV ≤ V _{IN_ADC} ≤ 170mV	●			±0.7	% of Reading
		Current Sense Mode, Odd Numbered Channels Only, V _{IN_ADC} ≤ 20mV	●			±140	μV
V _{OS_ADC}	Offset Error	Current Sense Mode, Odd Numbered Channels Only	●			±35	μV
t _{CONV_ADC}	Conversion Time	Voltage Sense Mode (Note 7)			6.15		ms
		Current Sense Mode (Note 7)			24.6		ms
		Temperature Input (Note 7)			24.6		ms

ELECTRICAL CHARACTERISTICS The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at $T_J = 25^\circ\text{C}$. $V_{PWR} = V_{IN_SNS} = 12\text{V}$, V_{DD33} , REFP and REFM pins floating, unless otherwise indicated. (Notes 2, 3)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN_SNS} Input Characteristics						
V_{IN_SNS}	V_{IN_SNS} Input Voltage Range		● 0		15	V
R_{VIN_SNS}	V_{IN_SNS} Input Resistance		● 70	90	110	k Ω
TUE_{VIN_SNS}	VIN_ON, VIN_OFF Threshold Total Unadjusted Error	$3\text{V} \leq V_{IN_SNS} \leq 8\text{V}$	●		± 2.0	% of Reading
		$V_{IN_SNS} > 8\text{V}$	●		± 1.0	% of Reading
	READ_VIN Total Unadjusted Error	$3\text{V} \leq V_{IN_SNS} \leq 8\text{V}$	●		± 1.5	% of Reading
		$V_{IN_SNS} > 8\text{V}$	●		± 1.0	% of Reading

Temperature Sensor Characteristics

TUE_{TS}	Total Unadjusted Error			± 1		$^\circ\text{C}$
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V_{OUT_ENn} Enable Output (V_{OUT_EN} [3:0]) Characteristics

V_{VOUT_ENn}	Output High Voltage (Note 9)	$I_{VOUT_ENn} = -5\mu\text{A}$, $V_{DD33} = 3.3\text{V}$	●	10	12.5	14.7	V
I_{VOUT_ENn}	Output Sourcing Current	V_{VOUT_ENn} Pull-Up Enabled, $V_{VOUT_ENn} = 1\text{V}$	●	-5	-6	-8	μA
	Output Sinking Current	Strong Pull-Down Enabled, $V_{VOUT_ENn} = 0.4\text{V}$	●	3	5	8	mA
		Weak Pull-Down Enabled, $V_{VOUT_ENn} = 0.4\text{V}$	●	33	50	60	μA
	Output Leakage Current	Internal Pull-Up Disabled, $0\text{V} \leq V_{VOUT_ENn} \leq 15\text{V}$	●			± 1	μA

V_{OUT_ENn} Enable Output (V_{OUT_EN} [7:4]) Characteristics

I_{VOUT_ENn}	Output Sinking Current	Strong Pull-Down Enabled, $V_{OUT_ENn} = 0.1\text{V}$	✗	✗	6	✗	mA
	Output Leakage Current	$0\text{V} \leq V_{VOUT_ENn} \leq 6\text{V}$	●			± 1	μA

V_{IN_EN} Enable Output (V_{IN_EN}) Characteristics

V_{VIN_EN}	Output High Voltage	$I_{VIN_EN} = -5\mu\text{A}$, $V_{DD33} = 3.3\text{V}$	●	10	12.5	14.7	V
I_{VIN_EN}	Output Sourcing Current	V_{IN_EN} Pull-Up Enabled, $V_{VIN_EN} = 1\text{V}$	●	-5	-6	-8	μA
	Output Sinking Current	$V_{VIN_EN} = 0.4\text{V}$	●	3	5	8	mA
	Leakage Current	Internal Pull-Up Disabled, $0\text{V} \leq V_{VIN_EN} \leq 15\text{V}$	●			± 1	μA

EEPROM Characteristics

Endurance	(Notes 10, 11)	$0^\circ\text{C} < T_J < 85^\circ\text{C}$ During EEPROM Write Operations	●	10,000			Cycles
Retention	(Notes 10, 11)	$T_J < 105^\circ\text{C}$	●	20			Years
t_{MASS_WRITE}	Mass Write Operation Time (Note 12)	STORE_USER_ALL, $0^\circ\text{C} < T_J < 85^\circ\text{C}$ During EEPROM Write Operations	●		440	4100	ms

General Purpose Pull-Up Resistors

R_{PU}	Pull-Up Resistance			10			k Ω
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Digital Inputs SCL, SDA, CONTROL0, CONTROL1, WDI/RESETB, FAULTB00, FAULTB01, FAULTB10, FAULTB11, WP

V_{IH}	High Level Input Voltage		●	2.1			V
V_{IL}	Low Level Input Voltage		●			1.5	V
V_{HYST}	Input Hysteresis				20		mV