ANALOG DEVICES

AHEAD OF WHAT'S POSSIBLE™

LTM4668A/LTM4668 Data Sheet Revision

Data Sheet Specification Comparison LTM4668A

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the specified internal operating temperature range, otherwise specifications are at T_A = 25°C. V_{IN} = 12V, per the typical application.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Switching Regulator Section: (Per Channel)							
V_{IN}	Input DC Voltage		●	2.7		17	V
$V_{OUT(RANGE)}$	Output Voltage Range	V_{IN} = 2.7V to 17V (Step-Down Only)	●	0.6		5.5	V
$V_{OUT(DC)}$	Output Voltage, Total Variation with Line and Load	C_{IN} = 10µF, C_{OUT} = 47µF Ceramic R_{FB} = 13.3k, MODE = $INTV_{CC}$/2 V_{IN} = 5V to 17V, I_{OUT} = 0A to 1.2A	●	3.25	3.30	3.35	V
V_{RUN}	RUN Pin On Threshold	V_{RUN} Rising Change to 0.35V		0.55	0.7	0.9	V
$I_{Q(VIN)}$	Input Supply Bias Current	V_{IN} = 12V, V_{OUT} = 3.3V, MODE = $INTV_{CC}$/2 (CCM) V_{IN} = 12V, V_{OUT} = 3.3V, MODE = $INTV_{CC}$ (Burst) V_{IN} = 12V, V_{OUT} = 3.3V, MODE = GND (PS) Shutdown, RUN = 0, V_{IN} = 12V			75 0.5 200 1		mA mA µA µA
$I_{S(VIN)}$	Input Supply Current	V_{IN} = 12V, V_{OUT} = 3.3V, I_{OUT} = 1.2A			390		mA
$I_{OUT(DC)}$	Output Continuous Current Range	V_{IN} = 12V, V_{OUT} = 3.3V (Note 4)		0		1.2	A
$\frac{\Delta V_{OUT}\ (Line)}{V_{OUT}}$	Line Regulation Accuracy	V_{OUT} = 3.3V, V_{IN} = 5V to 17V, I_{OUT} = 0A	●		0.01	0.1	%/V
$\frac{\Delta V_{OUT}\ (Load)}{V_{OUT}}$	Load Regulation Accuracy	V_{OUT} = 3.3V, I_{OUT} = 0A to 1.2A	●		0.1	0.75	%
$V_{OUT(AC)}$	Output Ripple Voltage	I_{OUT} = 0A, C_{OUT} = 47µF Ceramic V_{IN} = 12V, V_{OUT} = 3.3V			8		mV
$\Delta V_{OUT(START)}$	Turn-On Overshoot	I_{OUT} = 0A, C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 3.3V			30		mV
t_{START}	Turn-On Time	C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 3.3V, No Load			0.8		ms
ΔV_{OUTLS}	Peak Deviation for Dynamic Load	Load: 0% to 50% to 0% of Full Load C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 3.3V			70		mV
t_{SETTLE}	Settling Time for Dynamic Load Step	Load: 0% to 50% to 0% of Full Load C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 3.3V			30		µs
I_{OUTPK}	Output Current Limit	V_{IN} = 12V, V_{OUT} = 3.3V			2		A
V_{FB}	Voltage at V_{FB} Pin	I_{OUT} = 0A, V_{OUT} = 3.3V	●	0.591	0.60	0.609	V
I_{FB}	Current at V_{FB} Pin	(Note 3)				±10	nA
R_{FBHI}	Resistor Between V_{OUT} and V_{FB} Pins			60.05	60.40	60.75	kΩ
$t_{ON(MIN)}$	Minimum On-Time	(Note 5)			60		ns

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ELECTRICAL CHARACTERISTICS

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SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{PGOOD}	PGOOD Trip Level	V_{FB} With Respect to Set Output V_{FB} Ramping Negative V_{FB} Ramping Positive	Change to -12% -11		–7.5 7.5	Change to 12% 11	% %
R_{PGOOD}	PGOOD Resistance				275		Ω
V_{INTVCC}	Internal V_{CC} Voltage	V_{IN} = 6V to 17V		4.7	5	5.3	V
UVLO	Undervoltage Lockout	V_{IN} Ramping Up		2.3	2.5	2.7	V
UVLO(HYS)	UVLO Hysteresis				250		mV
f_{OSC}	Oscillator Frequency				2.25		MHz
SYNC	SYNC Capture Range			1500		3000	kHz

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

Note 2: The LTM4668A is tested under pulsed load conditions such that $T_J \approx T_A$. The LTM4668AE is guaranteed to meet performance specifications over the 0°C to 125°C internal operating temperature range. Specifications over the full –40°C to 125°C internal operating temperature range are assured by design, characterization and correlation with statistical process controls. The LTM4668AI is guaranteed to meet specifications over the full –40°C to 125°C internal operating temperature range. Note that the maximum ambient temperature consistent with these specifications is determined by specific operating conditions in conjunction with board layout, the rated package thermal resistance and other environmental factors.

Note 3: 100% tested at wafer level

Note 4: See output current derating curves for different V_{IN}, V_{OUT} and T_A.

Note 5: Guaranteed by design.

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Data Sheet Specification Comparison LTM4668

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the specified internal operating temperature range, otherwise specifications are at T_A = 25°C. V_{IN} = 12V, per the typical application.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
$I_{OUT(DC)}$	Output Continuous Current Range	V_{IN} = 12V, V_{OUT} = 1.5V (Note 4)		0		1.2	A
$\frac{\Delta V_{OUT}\ (Line)}{V_{OUT}}$	Line Regulation Accuracy	V_{OUT} = 1.5V, V_{IN} = 2.7V to 17V, I_{OUT} = 0A	●		0.01	0.1	%/V
$\frac{\Delta V_{OUT}\ (Load)}{V_{OUT}}$	Load Regulation Accuracy	V_{OUT} = 1.5V, I_{OUT} = 0A to 1.2A	●		0.1	0.75	%
$V_{OUT(AC)}$	Output Ripple Voltage	I_{OUT} = 0A, C_{OUT} = 47µF Ceramic V_{IN} = 12V, V_{OUT} = 1.5V			7		mV
$\Delta V_{OUT(START)}$	Turn-On Overshoot	I_{OUT} = 0A, C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V			30		mV
t_{START}	Turn-On Time	C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V, No Load			0.8		ms
ΔV_{OUTLS}	Peak Deviation for Dynamic Load	Load: 0% to 50% to 0% of Full Load C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V			50		mV
t_{SETTLE}	Settling Time for Dynamic Load Step	Load: 0% to 50% to 0% of Full Load C_{OUT} = 47µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V			50		µs
I_{OUTPK}	Output Current Limit	V_{IN} = 12V, V_{OUT} = 1.5V			2		A
V_{FB}	Voltage at V_{FB} Pin	I_{OUT} = 0A, V_{OUT} = 1.5V	●	0.591	0.60	0.609	V
I_{FB}	Current at V_{FB} Pin	(Note 3)				±10	nA
R_{FBHI}	Resistor Between V_{OUT} and V_{FB} Pins			60.05	60.40	60.75	kΩ
$t_{ON(MIN)}$	Minimum On-Time	(Note 5)			60		ns
V_{PGOOD}	PGOOD Trip Level	V_{FB} With Respect to Set Output V_{FB} Ramping Negative V_{FB} Ramping Positive		Change to -12% ~~-11~~	 –8 8	 Change to 12% ~~11~~	 % %
R_{PGOOD}	PGOOD Resistance				275		Ω
V_{INTVCC}	Internal V_{CC} Voltage	V_{IN} = 6V to 17V		4.7	5	5.3	V
UVLO	Undervoltage Lockout	V_{IN} Ramping Up		2.3	2.5	2.7	V
UVLO(HYS)	UVLO Hysteresis				250		mV
f_{OSC}	Oscillator Frequency				1		MHz
SYNC	SYNC Capture Range			500		1500	kHz

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