CHANGE NOTIFICATION

LINEAR TECHNOLOGY

Linear Technology Corporation
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April 17, 2014

Dear Sir/Madam: PCN# 041714

Subject: <u>Notification of Change to LTM4644 Datasheet</u>

Please be advised that Linear Technology Corporation has made a minor change to the LTM4644 data sheet to improve manufacturability. Specifications for the V_{RUN} Pin threshold have been changed as shown in the attached redlined electrical characteristics table. There were no changes to the die, and all other functional and parametric specifications are unchanged. Product shipped after June 18, 2014 will be tested to the new limits.

Should you have any further questions, please feel free to contact me at 408-432-1900 ext. 2077, or by email at <u>JASON.HU@LINEAR.COM</u>. If I do not hear from you by June 18, 2014, we will consider this change to be approved by your company.

Sincerely,

Jason Hu
Quality Assurance Engineer

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at T_A = 25°C (Note 2). V_{IN} = 12V, per the typical application.

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
Switching Regulator Section: per Channel							
V_{IN}, SV_{IN}	Input DC Voltage	$SV_{IN} = V_{IN}$	●	4		14	V
$V_{OUT(RANGE)}$	Output Voltage Range		●	0.6		5.5	V
$V_{OUT(DC)}$	Output Voltage, Total Variation with Line and Load	C_{IN} = 22µF, C_{OUT} = 100µF Ceramic, R_{FB} = 40.2k, MODE = $INTV_{CC}$, V_{IN} = 4V to 14V, I_{OUT} = 0A to 4A (Note 4)	●	1.477	1.50	1.523	V [1.2]
V_{RUN}	RUN Pin On Threshold	V_{RUN} Rising		1.2 [1.1]	1.25 [1.2]	1.3	V
$I_{Q(SVIN)}$	Input Supply Bias Current	V_{IN} = 12V, V_{OUT} = 1.5V, MODE = $INTV_{CC}$ V_{IN} = 12V, V_{OUT} = 1.5V, MODE = GND Shutdown, RUN = 0, V_{IN} = 12V			6 2 11		mA mA µA
$I_{S(VIN)}$	Input Supply Current	V_{IN} = 12V, V_{OUT} = 1.5V, I_{OUT} = 4A			0.62		A
$I_{OUT(DC)}$	Output Continuous Current Range	V_{IN} = 12V, V_{OUT} = 1.5V (Note 4)		0		4	A
ΔV_{OUT} (Line)/V_{OUT}	Line Regulation Accuracy	V_{OUT} = 1.5V, V_{IN} = 4V to 14V, I_{OUT} = 0A	●		0.04	0.15	%/V
ΔV_{OUT} (Load)/V_{OUT}	Load Regulation Accuracy	V_{OUT} = 1.5V, I_{OUT} = 0A to 4A	●		0.5	1	%
$V_{OUT(AC)}$	Output Ripple Voltage	I_{OUT} = 0A, C_{OUT} = 100µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V			5		mV
$\Delta V_{OUT(START)}$	Turn-On Overshoot	I_{OUT} = 0A, C_{OUT} = 100µF Ceramic, V_{IN} = 12V, V_{OUT} = 1.5V			30		mV
t_{START}	Turn-On Time	C_{OUT} = 100µF Ceramic, No Load, TRACK/SS = 0.01µF, V_{IN} = 12V, V_{OUT} = 1.5V			2.5		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			160		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			40		µs
I_{OUTPK}	Output Current Limit	V_{IN} = 12V, V_{OUT} = 1.5V		5	7		A
V_{FB}	Voltage at FB Pin	I_{OUT} = 0A, V_{OUT} = 1.5V, 0°C to 125°C I_{OUT} = 0A, V_{OUT} = 1.5V, –40°C to 125°C	●	0.594 0.592	0.60 0.60	0.606 0.608	V V
I_{FB}	Current at FB Pin	(Note 3)				±30	nA
R_{FBHI}	Resistor Between V_{OUT} and FB Pins			60.05	60.40	60.75	kΩ
$I_{TRACK/SS}$	Track Pin Soft-Start Pull-Up Current	TRACK/SS = 0V			2.5	4	µA
$V_{IN(UVLO)}$	V_{IN} Undervoltage Lockout	V_{IN} Falling V_{IN} Hysteresis		2.4	2.6 350	2.8	V mV
$t_{ON(MIN)}$	Minimum On-Time	(Note 3)			40		ns
$t_{OFF(MIN)}$	Minimum Off-Time	(Note 3)			70		ns

V_{PGOOD}	PGOOD Trip Level	V_{FB} With Respect to Set Output
		  V_{FB} Ramping Negative
		  V_{FB} Ramping Positive
				
				–13
				7
					
					–10
					10
						
						–7
						13
							
							%
							%

I_{PGOOD}	PGOOD Leakage					2	µA
V_{PGL}	PGOOD Voltage Low	I_{PGOOD} = 1mA			0.02	0.1	V
V_{INTVCC}	Internal V_{CC} Voltage	SV_{IN} = 4V to 14V		3.2	3.3	3.4	V
V_{INTVCC} Load Reg	$INTV_{CC}$ Load Regulation	I_{CC} = 0mA to 20mA			0.5		%
f_{OSC}	Oscillator Frequency				1		MHz
CLKIN	CLKIN Threshold				0.7		V