

## CHANGE NOTIFICATION



Linear Technology Corporation  
1630 McCarthy Blvd., Milpitas, CA 95035-7417  
(408) 432-1900

September 06, 2013

Dear Sir/Madam:

PCN# 090613

**Subject: Notification of Change to LT3791, LT3791-1 Datasheet**

Please be advised that Linear Technology Corporation has made a minor change to the LT3791 and LT3791-1 product family datasheets to better center the parametric distribution within the specification range. The changes are shown on the attached pages of the marked up datasheets. There was no change made to the die. The product shipped after November 7<sup>th</sup>, 2013 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 e-mail at [JASON.HU@linear.com](mailto:JASON.HU@linear.com). If I do not hear from you by November 6<sup>th</sup>, 2013, we will consider this change approved by your company.

Sincerely,

Jason Hu  
Quality Assurance Engineer

## ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating junction temperature range, otherwise specifications are at  $T_A = 25^\circ\text{C}$  (Note 2).  $V_{IN} = 12\text{V}$ ,  $V_{EN/UVLO} = 12\text{V}$  unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Open LED Falling Threshold ( $V_{FB}$ )	●	1.078	1.1	1.122	V
Open LED Falling Threshold ( $V_{(ISP-ISM)}$ )	$V_{FB} = 1.2\text{V}$	5	10	15	mV
Short LED Falling Threshold ( $V_{FB}$ )		380	400	450	mV
OPENLED Pin Output Impedance			1.1	2.0	k $\Omega$
SHORTLED Pin Output Impedance			1.1	2.0	k $\Omega$
SS Latch-Off Threshold			1.75		V
SS Reset Threshold			0.2		V
<b>Oscillator</b>					
Switching Frequency	$R_T = 147\text{k}$	190	200	210	kHz
	$R_T = 59.0\text{k}$	380	400	420	kHz
	$R_T = 29.1\text{k}$	665	700	735	kHz
SYNC Frequency		200		700	kHz
SYNC Pin Resistance to GND			90		k $\Omega$
SYNC Threshold Voltage		0.3		1.5	V
<b>Internal <math>V_{CC}</math> Regulator</b>					
INTV <sub>CC</sub> Regulation Voltage		4.8	5	5.2	V
Dropout ( $V_{IN} - \text{INTV}_{CC}$ )	$I_{\text{INTV}_{CC}} = -10\text{mA}$ , $V_{IN} = 5\text{V}$		240	350	mV
INTV <sub>CC</sub> Undervoltage Lockout		3.1	3.5	3.9	V
INTV <sub>CC</sub> Current Limit	$V_{\text{INTV}_{CC}} = 4\text{V}$		67		mA
<b>PWM</b>					
PWM Threshold Voltage		0.3		1.5	V
PWM Pin Resistance to GND			90		k $\Omega$
PWMOUT Pull-Up Resistance			10	20	$\Omega$
PWMOUT Pull-Down Resistance			5	10	$\Omega$
<b>NMOS Drivers</b>					
TG1, TG2 Gate Driver On-Resistance Gate Pull-Up Gate Pull-Down	$V_{BST} - V_{SW} = 5\text{V}$		2.6		$\Omega$
			1.7		$\Omega$
BG1, BG2 Gate Driver On-Resistance Gate Pull-Up Gate Pull-Down	$V_{\text{INTV}_{CC}} = 5\text{V}$		3		$\Omega$
			1.2		$\Omega$
TG Off to BG On Delay	$C_L = 3300\text{pF}$		60		ns
BG Off to TG On Delay	$C_L = 3300\text{pF}$		60	240 300	ns
TG1, TG2, $t_{\text{OFF(MIN)}}$	$R_T = 59.0\text{k}$		<del>220</del>	<del>260</del>	ns

**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 LT3791E is guaranteed to meet performance from  $0^\circ\text{C}$  to  $125^\circ\text{C}$  junction temperature. Specification over the  $-40^\circ\text{C}$  to  $125^\circ\text{C}$  operating junction temperature range are assured by design, characterization and correlation with statistical process controls. The LT3791I is guaranteed to meet performance specifications over the  $-40^\circ\text{C}$  to  $125^\circ\text{C}$  operating junction temperature range. The LT3791H is guaranteed to meet performance specifications over the  $-40^\circ\text{C}$  to  $150^\circ\text{C}$

operating junction temperature range. The LT3791MP is guaranteed to meet performance specifications over the  $-55^\circ\text{C}$  to  $150^\circ\text{C}$  operating junction temperature range. High junction temperatures degrade operating lifetimes. Operating lifetime is derated for junction temperatures greater than  $125^\circ\text{C}$ .

**Note 3:** The LT3791 includes overtemperature protection that is intended to protect the device during momentary overload conditions. Junction temperature will exceed the maximum operating junction temperature when overtemperature protection is active. Continuous operation above the specified absolute maximum operating junction temperature may impair device reliability.

## ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating junction temperature range, otherwise specifications are at  $T_A = 25^\circ\text{C}$  (Note 2).  $V_{IN} = 12\text{V}$ ,  $V_{EN/UVLO} = 12\text{V}$  unless otherwise noted.

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
C/T0 Rising Threshold ( $V_{FB}$ )	$V_{(ISP-ISN)} = 0\text{V}$	●	1.127	1.15	1.173	V
C/T0 Falling Threshold ( $V_{FB}$ )		●	1.078	1.1	1.122	V
C/T0 Falling Threshold ( $V_{(ISP-ISN)}$ )	$V_{FB} = 1.2\text{V}$		5	10	15	mV
SHORT Falling Threshold ( $V_{FB}$ )			380	400	450	mV
C/T0 Pin Output Impedance				1.1	2.0	k $\Omega$
SHORT Pin Output Impedance				1.1	2.0	k $\Omega$
SS Latch-Off Threshold				1.75		V
SS Reset Threshold				0.2		V
<b>Oscillator</b>						
Switching Frequency	$R_T = 147\text{k}$ $R_T = 59.0\text{k}$ $R_T = 29.1\text{k}$		190 380 665	200 400 700	210 420 735	kHz kHz kHz
SYNC Frequency			200		700	kHz
SYNC Pin Resistance to GND				90		k $\Omega$
SYNC Threshold Voltage			0.3		1.5	V
<b>Internal <math>V_{CC}</math> Regulator</b>						
INTV <sub>CC</sub> Regulation Voltage			4.8	5	5.2	V
Dropout ( $V_{IN} - \text{INTV}_{CC}$ )	$I_{\text{INTV}_{CC}} = -10\text{mA}$ , $V_{IN} = 5\text{V}$			240	350	mV
INTV <sub>CC</sub> Undervoltage Lockout			3.1	3.5	3.9	V
INTV <sub>CC</sub> Current Limit	$V_{\text{INTV}_{CC}} = 4\text{V}$			67		mA
<b>PWM</b>						
PWM Threshold Voltage			0.3		1.5	V
PWM Pin Resistance to GND				90		k $\Omega$
PWMOUT Pull-Up Resistance				10	20	$\Omega$
PWMOUT Pull-Down Resistance				5	10	$\Omega$
<b>NMOS Drivers</b>						
TG1, TG2 Gate Driver On-Resistance Gate Pull-Up Gate Pull-Down	$V_{\text{BST}} - V_{\text{SW}} = 5\text{V}$			2.6 1.7		$\Omega$ $\Omega$
BG1, BG2 Gate Driver On-Resistance Gate Pull-Up Gate Pull-Down	$V_{\text{INTV}_{CC}} = 5\text{V}$			3 1.2		$\Omega$ $\Omega$
TG Off to BG On Delay	$C_L = 3300\text{pF}$			60		ns
BG Off to TG On Delay	$C_L = 3300\text{pF}$			60	240 300	ns
TG1, TG2, $t_{\text{OFF(MIN)}}$	$R_T = 59.0\text{k}$			220	260	ns

**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 LT3791E-1 is guaranteed to meet performance from  $0^\circ\text{C}$  to  $125^\circ\text{C}$  junction temperature. Specification over the  $-40^\circ\text{C}$  to  $125^\circ\text{C}$  operating junction temperature range are assured by design, characterization and correlation with statistical process controls. The LT3791I-1 is guaranteed to meet performance specifications over the  $-40^\circ\text{C}$  to  $125^\circ\text{C}$  operating junction temperature range. The LT3791H-1 is guaranteed to meet performance specifications over the  $-40^\circ\text{C}$  to  $150^\circ\text{C}$

operating junction temperature range. The LT3791MP-1 is guaranteed to meet performance specifications over the  $-55^\circ\text{C}$  to  $150^\circ\text{C}$  operating junction temperature range. High junction temperatures degrade operating lifetimes. Operating lifetime is derated for junction temperatures greater than  $125^\circ\text{C}$ .

**Note 3:** The LT3791-1 includes overtemperature protection that is intended to protect the device during momentary overload conditions. Junction temperature will exceed the maximum operating junction temperature when overtemperature protection is active. Continuous operation above the specified absolute maximum operating junction temperature may impair device reliability.