CHANGE NOTIFICATION

Linear Technology Corporation
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March 28, 2011

PCN#: 032811

Dear Sir/Madam:

Subject: Notification of Change to LTC3446 Datasheet

Please be advised that Linear Technology Corporation has made minor changes to the LTC3446 product datasheet as shown in the attached marked up datasheet pages. The maximum storage temperature has been increased from 125°C to 150°C and the package thermal resistance has been corrected to θ_{JA} = 43°C/W. Also, a new specification called "Vin to LVout Headroom for Regulation" has been added to the electrical characteristics table. Finally, the "PGOOD Output Resistance" limit has been updated to better center the parametric distribution within the specification range. There was no change made to the die or package. The product shipped after April 28, 2011 will be tested to the new limits.

Should you have any further questions, please feel free to contact me at 408-432-1900 ext. 2519, or by e-mail at NGirn@Linear.com. If I do not hear from you by April 28, 2011, we will consider this change to be approved by your company.

Sincerely,

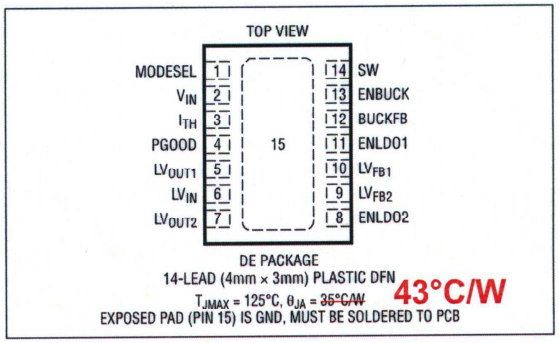
Naib Girn
Quality Assurance Manager

ABSOLUTE MAXIMUM RATINGS

(Note 1)

V_{IN}, LV_{IN} to GND ..... –0.3V to 6V
MODESEL, ENBUCK, ENLDO1,
ENLDO2 to GND ..... –0.3V to 6V
BUCKFB to GND ..... –0.3V to 6V
LV_{FB1}, LV_{FB2} to GND ..... –0.3V to 6V
I_{TH} to GND ..... –0.3V to the Lesser of (V_{IN} + 0.3V) or 3V
SW to GND.....–0.3V to the Lesser of (V_{IN} + 0.3V) or 6V
LV_{OUT1}, LV_{OUT2}
to GND ..... –0.3V to the Lesser of (LV_{IN} + 0.3V) or 6V
PGOOD to GND ..... –0.3V to 6V
LV_{OUT1}, LV_{OUT2} Short-Circuit
to GND Duration..... Indefinite
Operating Temperature Range (Note 2)
LTC3446EDE ..... –40°C to 85°C
LTC3446IDE ..... –40°C to 125°C
Junction Temperature (Note 1) ..... 125°C → 150°C
Storage Temperature Range..... –65°C to ~~125°C~~

PIN CONFIGURATION



DE PACKAGE
14-LEAD (4mm × 3mm) PLASTIC DFN
T_{JMAX} = 125°C, θ_{JA} = ~~35°C/W~~ 43°C/W
EXPOSED PAD (PIN 15) IS GND, MUST BE SOLDERED TO PCB

ORDER INFORMATION

LEAD FREE FINISH	TAPE AND REEL	PART MARKING*	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LTC3446EDE#PBF	LTC3446EDE#TRPBF	3446	14-Lead (4mm × 3mm) Plastic DFN	–40°C to 85°C
LTC3446IDE#PBF	LTC3446IDE#TRPBF	3446	14-Lead (4mm × 3mm) Plastic DFN	–40°C to 125°C

Consult LTC Marketing for parts specified with wider operating temperature ranges. *The temperature grade is identified by a label on the shipping container.

Consult LTC Marketing for information on non-standard lead based finish parts.

For more information on lead free part marking, go to: http://www.linear.com/leadfree/
For more information on tape and reel specifications, go to: http://www.linear.com/tapeandreel/

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at T_A = 25°C. V_{IN} = 3.6V unless otherwise specified. (Note 2)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{IN}	Input Voltage Range	(Note 3)	●	2.7		5.5	V
V_{UVLO}	V_{IN} Undervoltage Lockout Threshold V_{IN} Undervoltage Lockout Hysteresis	V_{IN} Rising	●		2.37 10	2.5 30	V mV
I_Q	V_{IN} Quiescent Current (Note 4)						
	Buck Enabled Only, Not Sleeping	V_{BUCKFB} = 0V, I_{SW} = 0mA			310	500	µA
	Buck Enabled Only, Sleeping	V_{BUCKFB} = 1V, I_{SW} = 0mA			50	75	µA
	One LDO Enabled Only	V_{LVIN} = 1.5V, 10µA LDO Output Load			75	100	µA
	All Three Outputs Enabled, Buck Not Sleeping	V_{BUCKFB} = 0V, I_{SW} = 0mA, V_{LVIN} = 1.5V, 10µA Output Load on Each LDO			400	600	µA
	All Three Outputs Enabled, Buck Sleeping	V_{BUCKFB} = 1V, I_{SW} = 0mA, V_{LVIN} = 1.5V, 10µA Load on Each LDO			140	210	µA
	Shutdown	V_{ENBUCK} = 0V, V_{ENLDO1} = 0V, V_{ENLDO2} = 0V				1	µA

ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at T_A = 25°C. V_{IN} = 3.6V unless otherwise specified. (Note 2)

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
$V_{PG(THRESH)}$	PGOOD Threshold (Note 8)		●		8	10	%
R_{PGOOD}	PGOOD Output Resistance	PGOOD Low, Sinking 1mA	●		87	120 180	Ω
I_{PGOOD}	PGOOD Hi-Z Leakage Current	V_{PGOOD} = 6V	●			1	µA
Synchronous Buck Converter							
I_{BUCKFB}	Feedback Current	(Note 5)	●			±30	nA
V_{BUCKFB}	Regulated Feedback Voltage	(Note 5)	●	0.788	0.800	0.812	V
ΔV_{BUCKFB}	Feedback Voltage Line Regulation	V_{IN} = 2.7V to 5.5V (Note 5)	●		0.3	0.5	mV/V
I_{MAXP}	Maximum Peak Inductor Current	V_{BUCKFB} = 0V, Duty Cycle < 35%		1.2	1.55	2.0	A
I_{MAXN}	NMOS Overcurrent Limit				1.8		A
	Feedback Voltage Load Regulation (with Respect to V_{ITH})	V_{ITH} = 0.5V to 1V, $V_{MODESEL}$ = V_{IN} (Note 5)			0.5		mV/V
f_{OSC}	Oscillator Frequency		●	1.8	2.25	2.7	MHz
R_{PFET}	$R_{DS(ON)}$ of P-Channel FET	I_{SW} = 500mA			0.13		Ω
R_{NFET}	$R_{DS(ON)}$ of N-Channel FET	I_{SW} = –500mA			0.14		Ω
I_{LSW}	SW Leakage	V_{ENBUCK} = 0V, V_{SW} = 0V or 5.5V, V_{IN} = 5.5V				±1	µA
V_{ENBUCK}	Buck Enable Pin Threshold		●	0.3	0.65	1	V
I_{ENBUCK}	Buck Enable Pin Leakage Current	V_{ENBUCK} = 5.5V, All Other Pins Grounded	●			1	µA
$V_{MODESEL}$	Mode Select Pin Threshold		●	0.3	0.65	1	V
$I_{MODESEL}$	Mode Select Pin Leakage Current	$V_{MODESEL}$ = 5.5V, All Other Pins Grounded	●			1	µA
g_m	Error Amplifier Transconductance	V_{ITH} = 0.6V		450	700	950	µA/V
Each VLDO: V_{IN} = 3.6V, V_{LVIN} = 1.5V, V_{LVOUT} = 1.2V, Unless Otherwise Specified							
V_{LVIN}	LV_{IN} Pin Operating Voltage	(Note 6)	●	0.9		5.5	V
I_{LVIN}	LV_{IN} Pin Operating Current	I_{OUT} = 10µA	●		3	20	µA
	LV_{IN} Shutdown Current	V_{ENLDO} = 0V			1.5	2	µA
V_{LVFB}	Feedback Pin Regulation Voltage (Note 7)	1mA ≤ I_{OUT} ≤ 300mA, 1.5V ≤ V_{LVIN} ≤ 5.5V	 ●	0.395 0.392	0.400 0.400	0.405 0.408	V V
I_{LVFB}	Feedback Pin Input Current	V_{LVFB} at Regulation	●		2	±10	nA
$I_{LVOUT(MAX)}$	Continuous Output Current		●	300			mA
	Short-Circuit Output Current				760		mA
V_{ENLDOx}	LDO Enable Pin Threshold		●	0.3	0.65	1	V
I_{ENLDOx}	LDO Enable Pin Leakage Current	V_{ENLDOx} = 5.5V, All Other Pins Grounded	●			1	µA
	Output Voltage Load Regulation (Referred to the LV_{FB} Pin)	ΔI_{OUT} = 1mA to 300mA			–1		mV/A
	L_{VFB} Line Regulation (with Respect to the L_{VIN} Pin)	V_{LVIN} = 1.5V to 5.5V, V_{IN} = 3.6V, V_{LVOUT} = 1.2V, I_{OUT} = 1mA			7.5		µV/V
	L_{VFB} Line Regulation (with Respect to the V_{IN} Pin)	V_{LVIN} = 1.5V, V_{IN} = 2.7V to 5.5V, V_{LVOUT} = 1.2V, I_{OUT} = 1mA			0.44		mV/V
V_{DO}	LV_{IN} – LV_{OUT} Dropout Voltage	V_{IN} = 2.8V, V_{LVIN} = 1.5V, V_{LVFB} = 0.37V, I_{OUT} = 300mA (Note 9)			68	175	mV

SYMBOL	PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
	V_{IN} to LV_{OUT} Headroom Required for Regulation (Note 3)	I_{LVOUT}=300mA	•			1.4	V