

ELECTRICAL CHARACTERISTICS

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

PARAMETER	CONDITIONS		MIN	TYP	MAX	UNITS
V_{IN} Operating Voltage Range		●	3		40	V
V_{IN} Quiescent Current at Shutdown	$V_{EN/UVLO} = 0.2\text{V}$			0.9	2	μA
		●		2	5	μA
	$V_{EN/UVLO} = 1.5\text{V}$			2	5	μA
		●		3.6	9.5	μA
V_{IN} Quiescent Current	Sleep Mode, Not Switching			5.5	10	μA
		●		8.5	15	μA
	Active Mode, Not Switching			780	1100	μA
		●		840	1200	μA

FBX Regulation

FBX Regulation Voltage	$\text{FBX} > 0\text{V}$	●	1.568	1.6	1.632	V
	$\text{FBX} < 0\text{V}$	●	-0.820	-0.80	-0.780	V
FBX Line Regulation	$\text{FBX} > 0\text{V}$, $3\text{V} < V_{IN} < 40\text{V}$			0.005	0.015	%/V
	$\text{FBX} < 0\text{V}$, $3\text{V} < V_{IN} < 40\text{V}$			0.005	0.015	%/V
FBX Pin Current	$\text{FBX} = 1.6\text{V}$, -0.8V	●	-10		10	nA

Oscillator

Switching Frequency (f_{OSC})	$V_{IN} = 24\text{V}$	●	1.85	2.0	2.15	MHz
Minimum On-Time	$V_{IN} = 24\text{V}$			65	105	ns
Minimum Off-Time	$V_{IN} = 24\text{V}$			47	65	ns

Switch

Maximum Switch Current Limit Threshold		●	1.0	1.2	1.4	A
Switch $R_{\text{DS(ON)}}$	$I_{\text{SW}} = 0.5\text{A}$			330		m Ω
Switch Leakage Current	$V_{\text{SW}} = 60\text{V}$			0.1	1	μA

EN/UVLO Logic

EN/UVLO Pin Threshold (Rising)	Start Switching	●	1.620	1.68	1.745	V
EN/UVLO Pin Threshold (Falling)	Stop Switching	●	1.556	1.60	1.644	V
EN/UVLO Pin Current	$V_{\text{EN/UVLO}} = 1.6\text{V}$	●	-40		40	nA

Soft-Start

Soft-Start Time	$V_{IN} = 24\text{V}$			1		ms
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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: INTV_{CC} cannot be externally driven. No additional components or loading is allowed on this pin.

Note 3: The LT8330E is guaranteed to meet performance specifications from 0°C to 125°C junction temperature. Specifications over the -40°C to 125°C operating junction temperature range are assured by design, characterization and correlation with statistical process controls. The

LT8330I is guaranteed over the full -40°C to 125°C operating junction temperature range. The LT8330H is guaranteed over the full -40°C to 150°C operating junction temperature range. High junction temperatures degrade operating lifetimes. Operating lifetime is derated at junction temperatures greater than 125°C .

Note 4: The IC includes overtemperature protection that is intended to protect the device during overload conditions. Junction temperature will exceed 150°C when overtemperature protection is active. Continuous operation above the specified maximum operating junction temperature will reduce lifetime.