

Absolute Maximum Ratings

Exceeding the Absolute Maximum Ratings may damage the device.

Parameter	Rating
Supply Voltage (V_{IN})	40V
LX to GND	-0.7V to $V_{IN} + 0.3V$
EN, SS, FB and COMP to GND	-0.3V to +6V
BST to GND	-0.3V to $V_{LX} + 6V$
Junction Temperature (T_J)	+150°C
Storage Temperature (T_S)	-65°C to +150°C
ESD Rating ⁽¹⁾	2kV

Note:

1. Devices are inherently ESD sensitive, handling precautions are required. Human body model rating: 1.5k Ω in series with 100pF.

Recommended Operating Conditions

The device is not guaranteed to operate beyond the Recommended Operating Conditions.

Parameter	Rating
Supply Voltage (V_{IN})	3.0V to 36V
Output Voltage (V_{OUT})	0.8V to $V_{IN} * 0.85V$
Ambient Temperature (T_A)	-40°C to +85°C
Package Thermal Resistance EPAD SO-8 (Θ_{JA})	50°C/W

Electrical Characteristics

$T_A = 25^\circ\text{C}$, $V_{IN} = 12V$, $V_{EN} = 3V$, $V_{OUT} = 3.3V$, unless otherwise specified. Specifications in **BOLD** indicate a temperature range of -40°C to +85°C. These specifications are guaranteed by design.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{IN}	Supply Voltage		3		36	V
V_{UVLO}	Input Under-Voltage Lockout Threshold	V_{IN} rising V_{IN} falling	2.3		2.9	V V
I_{IN}	Supply Current (Quiescent)	$I_{OUT} = 0$, $V_{FB} = 1V$, $V_{EN} > 1.2V$		1	1.5	mA
I_{OFF}	Shutdown Supply Current	$V_{EN} = 0V$			10	μA
V_{FB}	Feedback Voltage	$T_A = 25^\circ\text{C}$	788	800	812	mV
V_{FB_LOAD}	Load Regulation	0.4A < Load < 3.6A		0.5		%
V_{FB_LINE}	Line Regulation	Load = 2A		0.03		%/V
I_{FB}	Feedback Voltage Input Current	$V_{FB} = 800\text{mV}$		0.5	1	μA
ENABLE						
V_{EN_OFF} V_{EN_ON}	EN Input Threshold	Off threshold On threshold	1.2		0.4	V V
V_{EN_HYS}	EN Input Hysteresis			200		mV
CURRENT LIMIT						
	Peak Current Limit	1284	5	6		A
SOFT START (SS)						
I_{SS}	Soft Start Source Current		2	2.5	3	μA
MODULATOR						
f_O	Frequency	$R_F = 270\text{k}\Omega$ $R_F = 46.6\text{k}\Omega$	160 0.8	200 1	240 1.2	kHz MHz
D_{MAX}	Maximum Duty Cycle	$f_O = 1\text{MHz}$		87		%
T_{ON_MIN}	Minimum On Time			150		ns
GVEA	Error Amplifier Voltage Gain			500		V/V
GEA	Error Amplifier Transconductance			170		$\mu\text{A}/\text{V}$
GCS	Current Sense Circuit Transconductance			4.5		A/V

