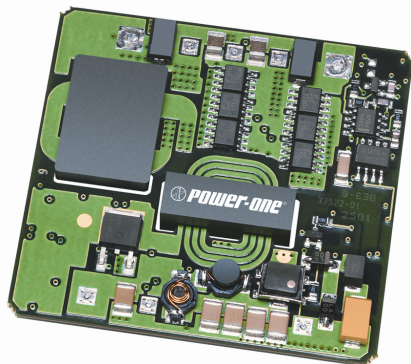




Applications

- Distributed power architectures
- Telecommunications equipment
- LAN/WAN
- Data processing

Description

The HLS Series of high density, single-output dc-dc converters, convert standard telecom and datacom voltages into isolated low-voltage outputs. High efficiencies and a unique copper-core printed circuit board design create superior thermal characteristics that enhance product reliability and eliminate the need for a heat sink.

Features

- Low profile, (-11mm) single-board design
- Input-to-output isolation: 1500VDC, basic insulation
- High efficiency - to 91% at full load
- Start-up into high capacitive load
- Low conducted and radiated EMI
- Output overcurrent protection
- Output overvoltage protection
- Overtemperature protection
- Remote sense
- Set point accuracy $\pm 1\%$
- Remote on/off (primary referenced), positive or negative logic
- Output voltage trim adjust, positive or negative
- UL1950 recognized, CSA 22.2 No. 950-95 certified, TUV IEC950

Model Selection

Model	Input Voltage VDC	Input Current, Max ADC	Output Voltage VDC	Output rated current I_{rated} ADC	Output Ripple/Noise, mV p-p	Typical Efficiency @ I_{rated} %
HLS30ZG	36-75	4.8	5.0	30	100	91
HLS30ZE	36-75	3.3	3.3	30	100	89
HLS30ZD	36-75	2.5	2.5	30	100	88
HLS40ZB	36-75	3.0	1.8	40	100	88
HLS40ZA	36-75	2.5	1.5	40	100	87

This product is intended for integration into end-use equipment. All the required procedures for CE marking of end-use equipment should be followed.

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings may cause performance degradation, adversely effect long-term reliability, and cause permanent damage to the converter.

Parameter	Conditions/Description	Min	Max	Units
Input voltage	Continuous		75	VDC
	Transient, 100ms		100	VDC
Operating Temperature	Ambient	-40	100	°C
Storage Temperature		-40	125	°C
ON/OFF Control Voltage	Referenced to -Vin		50	VDC

Environmental, Mechanical & Reliability Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Maximum PCB Operating Temp.				100	°C
Operating Humidity	Relative humidity, non-condensing			95	%
Storage Humidity	Relative humidity, non-condensing			95	%
Shock	Halfsine wave, 6ms, 3 axes	50			g
Sinusoidal Vibration	GR-63-Core, Section 5.4.2	1			
Weight			1.4/40		Oz/g
Water Washing	Standard process		Yes		
MTBF (HLS30)	Per Bellcore TR-NWT-000332		1,780		kHrs
(HLS40)	Per Bellcore TR-NWT-000332		1,500		kHrs

Isolation Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Insulation Safety Rating		Basic			
Isolation Voltage	Input/Output	1500			VDC
Isolation Resistance	Input/Output	10			MΩ
Isolation Capacitance	Input/Output			1800	pF

Input Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage	Continuous	36	48	75	VDC
Turn-On Input Voltage	Ramping Up	32	-	35	VDC
Turn-Off Input Voltage	Ramping Down	31	-	33	VDC
Turn-On Time	To Output Regulation Band 100% Resistive Load		5	10	ms
Input Reflected Ripple Current	Full Load, 12μH source inductance			80	mA p-p
Inrush Transient	Vin=Vin.max		0.1		A ² s

Output Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
Output Voltage Setpoint Accuracy	Vin=Vin.nom, Full Load	-1		1	%Vout
Output Current *	HLS30	3		30	ADC
	HLS40	4		40	ADC
Line Regulation	Vin.min to Vin.max, Iout.max				
	HLS30			0.25	%Vout
	HLS40			0.5	%Vout
Load Regulation	Vin=Vnom, Iout.min to Iout.max				
	HLS30			0.2	%Vout
	HLS40			0.5	%Vout
Output Temperature Regulation	(Tboard temp) = -40°C to +100°C	-		0.03	%/°C
Remote Sense Headroom	Note: ***			10	%Vout
Dynamic Regulation Peak Deviation Settling Time	50-75% load step change to 1% error band			8 500	%Vout μs
Admissible Load Capacitance	Iout.max, Nom Vin			30,000	μF
Output Current Limit Threshold **	Vout ≤ 0.97Vout.nom	110		140	%Iout
Switching Frequency	HLS30ZD		210		kHz
	HLS30ZG & HLS30ZE		300		kHz
	HLS40ZA & HLS40ZB		250		kHz
Overvoltage Protection, Non Latching (hiccup type)	Over all input voltage and load conditions	115		140	%Vout
Trim Range	Iout.max, Vin=Vnom	90		110	%Vout

* At Iout < Iout.min, the output may contain low frequency component that exceeds ripple specifications.

** Overcurrent protection is non-latching (hiccup type) with auto recovery.

*** Vout can be increased up to 10% via the sense leads or up to 10% via the trim function, however total output voltage trim from all sources should not exceed 10% of Vout

Feature Specifications

All specifications apply over specified input voltage, output load, and temperature range, unless otherwise noted.

Parameter	Conditions/Description	Min	Nom	Max	Units
On/Off					
Negative Logic (-N suffix)	(On/Off signal is low – converter is ON)				
On/Off (pin #3) (Primary side ref. to -Vin)	Converter ON Sink current	-1.0		1.8 1	VDC mADC
	Converter OFF Open circuit voltage	3.5	2	50	VDC VDC
Positive Logic (-P suffix)	(On/Off signal is low – converter is OFF)				
On/Off (pin #3) (Primary side ref. to -Vin)	Converter ON Open Circuit Voltage	3.5	3	50	VDC VDC
	Converter OFF Sink Current	-1.0		1.8 1	VDC mADC
Over Temperature Protection					
Type	Non-latching, auto-recovery				
Threshold	Average PCB temperature	100		120	°C
Auto recovery			90		°C