

331A3-24x28-SD

30 Watt, isolated, single output buck-boost converter with internal decoupling diode

All parameters defined on $T_a=25^{\circ}\text{C}$, $I_{oNom} = 1.2 \text{ ADC}$ and $U_{iNom} = 24\text{VDC}$

ABSOLUTE MAXIMUM RATINGS

parameter	unit	typ
Input peak voltage	VDC	38.00
Feedback protection against overvoltage on the output	VDC	32

THERMAL CHARACTERISTICS

parameter	min to max	typ
Ambient temperature range	$-40^{\circ}\text{C} / +85^{\circ}\text{C}$	
Storage temperature (device not in operation)	$-10^{\circ}\text{C} / +65^{\circ}\text{C}$	
Relative maximum humidity under storage		75% RH
Storage under worst conditions [in days]		25

COMMUNICATION INTERFACE

parameter	unit	fulfilled	conditions	min to max
Option shut down (left open for operation)		✓		
Shutdown voltage for transformer	VDC		I_{oNom}	-0.2 to 2.8
Option Switch high (left open for normal operation)		✓		
Switch high control voltage for transformer	VDC		I_{oNom}	-0.2 to 0.2
Output voltage in switch high mode	VDC		I_{oNom}	28.0

SPECIALS

parameter	unit	fulfilled	conditions	typ
Switching frequency	kHz			225
Efficiency at light loads	%		$0.25 I_{oNom}$	91.00
Efficiency at medium loads	%		$0.5 I_{oNom}$	91.00
Efficiency at full loads	%		I_{oNom}	91.00
MTTF	h		SN29500 @ 70	1 500 000
For active loads or parallel connection		✓		
Drives high capacitive loads		✓		
CC/CV battery load characteristic		✓		
Insulation strength primary to secondary	VDC			500
Insulation strength primary to case	VDC			500

COMPLIANCE

parameter	fulfilled	notes
61000-6-4 (EMC - Emission standard for industrial environment)	✓	
55022<A	✓	

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INPUT

parameter	unit	conditions	min	typ	max
Input voltage range	VDC	IoNom	9	24	36
No load input current	mA	UiNom		25	
Max. input current	A	UiNom		4	
Input start up voltage	VDC	UiNom		8.9	
Undervoltage lockout	VDC	UiNom		8.6	
Input quiescent current in shutdown mode	mA	UiNom		0.70	
Input current overshoot during soft start ramp up	%	IoNom		15	
Generated AC-ripple on the supply (BW=20MHz)	mVp-p	UiNom/loNom		20	
Generated HF-noise on the supply (BW=20MHz)	mVp-p	UiNom/loNom		20	

OUTPUT

parameter	unit	conditions	min	typ	max
Output voltage	VDC	IoNom		24.0	
No Load output voltage increase	%	UiNom		4	
Minimum required load to obtain the specified output voltage	%	UiNom		2	
Generated AC-ripple on the output (BW=20MHz)	mVp-p	UiNom/loNom		20	
Generated HF-noise on the output (BW=20MHz)	mVp-p	UiNom/loNom		70	
Output voltage accuracy	%	IoNom		+/-2.00%	
Output voltage overshoot at initial switch-on	%	IoNom		overdamped	
Rated output power	W			30	

CONTROL

parameter	unit	conditions	min	typ	max
Static line regulation	%	IoNom/UiMin...UiMax		0.10	
Static load regulation	%	IoMin...IoMax/UiNom		0.8	
Dynamic load change adjusting time	ms	LoadChange 10...90		0.20	
Dynamic load change deviation to nominal output voltage	V	LoadChange 10...90		1.00	
Maximum admissible capacitive load	uF	IoNom		infinite	
Initial switch on time	ms	IoNom		16	
Softstart ramp up time	ms	IoNom		12	

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MECHANICAL

parameter	unit	
Overall dimensions	mm	51x51x10
Weight	g	60

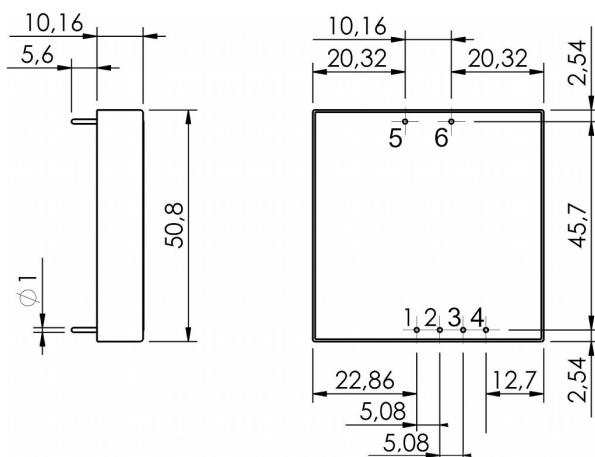
Pin No.	Function	Electrical Determination
1	Vi+	Input voltage positive
2	Vi-	Input voltage negative
3	SH	Switch high
4	SD	Shut down
5	Vo+	Output voltage positive
6	Vo-	Output voltage negative

Mechanical dimensions and Pin configuration

All dimensions in mm

Connector type: THT

Case: 2"x2"



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