Product Manual

Data Sheet

E_UHADD-20W

Wide voltage input,isolated,voltage regulator,double output



UL 62368-1 EN 62368-1 IEC 62368-1 RoHS

Product Series

Product Series	Temperature Range	Isolated Voltage	Package
E_UHADD-20W	-40℃～+105℃	1500VDC	DIP

Features

- Efficiency up to 89%
- Isolated voltage 1500VDC
- Sustainable short circuit
- Input under-voltage protection,output over-voltage protection,output over-current protection
- Black aluminum housing and potting compound meet the UL94 V-0 standards

Applications

- Industrial control systems
- Data communication systems
- Distributed power control systems
- Digital and analog hybrid systems
- BMS systems, instrumentation
- Distribution terminal,etc.
- ……

Product Model

Part Number	Certification	Input Voltage (VDC)		Output		Full Load Efficiency (%,Min/Typ)	Maximum Capacitive Load (μF)(2)
		Nominal (Range)	Max.(1)	Nominal Voltage (VDC)	Current (mA) (Min./ Max.)		
E2412UHADD-20W	UL/EN/IEC	24(9-36)	40	±12	0/±833	87/89	800
E2415UHADD-20W				±15	0/±666	87/89	600
E2424UHADD-20W				±24	0/±417	87/89	100
E4812UHADD-20W		48(18-75)	80	±12	0/±833	87/89	800
E4815UHADD-20W				±15	0/±666	87/89	600
E4824UHADD-20W				±24	0/±417	87/89	100

Note:(1)The input voltage must not exceed the specified range value, otherwise it may cause permanent irreparable damage.

(2) The capacitive load of each output channel is the same.

Limit Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Input Surge Voltage (1s，max)	24VDC input	-0.7	--	50	VDC
	48VDC input	-0.7	--	100	
Lead Soldering Temperature	1.5mm from case,10s	--	--	300	℃
Hot Plug	--	Unavailable			

Input Characteristics

Parameter	Conditions		Min	Typ	Max	Unit
Input Voltage Range	24VDC input		9	24	36	VDC
	48VDC input		18	48	75	
No Load/Full Load Input Current	24VDC input		--	12/940	25/960	mA
	48VDC input		--	6/468	8/479	
Input Under Voltage Protection	24VDC input	Module on	--	8	9	VDC
		Module off	6	7.2	--	
	48VDC input	Module on	--	17	18	
		Module off	--	15	--	
Ctrl	Module on		Ctrl is floating or connected to TTL high level (3.5-12VDC)			
	Module off		Ctrl connected to GND or low level (0-1.5VDC)			
	Input current when turned off		--	0.3	1	mA
Input Filter			π type filter			

Output Characteristics

Parameter	Conditions		Min	Typ	Max	Unit
Line Regulation	Full load,input voltage from low to high	Positive output	--	±0.2	±0.5	%
		Negative output	--	±0.5	±1.0	
Load Regulation(2)	Nominal input voltage, load varies from 10% to 100%	Positive output	--	±0.5	±1	
		Negative output	--	±0.5	±1.5	
Cross Regulation	Dual output,main channel at 50% load, auxiliary channel at 10% to 100% load		--	--	±5	
Output Voltage Accuracy(1)	Load is from 10% to 100%		--	±1	±3	
Temperature Drift Coefficient	100% load		--	--	±0.03	%/℃
Output Ripple (3)	20MHz bandwidth		--	100	200	mVp-p
Output Noise(3)			--	100	200	mVp-p
Transient Recovery Time	Load step change 75%-50%-75%		--	300	500	μs
Transient Response Deviation			--	±3	±5	%
Over-Voltage Protection	Input voltage range		110	--	160	%Vo
Over-Current Protection(4)			110	--	180	%Io
Output Short-Circuit Protection			Sustainable short circuit, self-recovery			

Note:(1) Under 0%-10% load condition, the maximum output voltage accuracy is ±5%.

(2) When tested under 0%-100% load operating conditions, the load regulation specification is ±3%.

(3) The output ripple & noise under 0%-5% load is≤250mV;The ripple and noise are measured using the parallel- line test method.

(4)Over-current protection operates in hiccup mode.

General Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Isolation Voltage	Input-output, time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Isolation Resistance	Input-output,isolation voltage 500VDC	1	--	--	GΩ
Isolation Capacitance	Input-output,100kHz,0.1V	--	2000	--	pF
Switching Frequency	Nominal input voltage, 100% load	--	300	--	kHz
MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Package Size	--	25.40×25.40×11.80			mm
Package Material	--	Metal shell			
Note:This type of product uses light load frequency reduction technology, the switching frequency is the test value when the full load output, when the load is less than 40%, the switching frequency decreases with the load.					

Environmental Characteristics

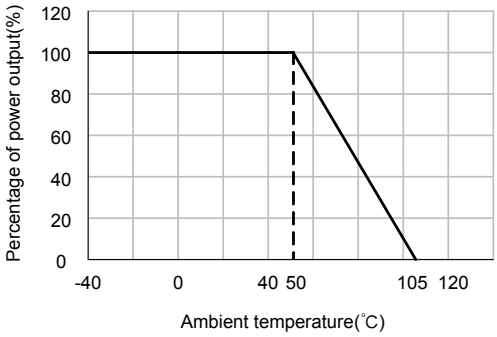
Parameter	Conditions	Min	Typ	Max	Unit
Operating Temperature	See the ambient temperature derating curve for details	-40	--	+105	℃
Storage Temperature	--	-55	--	+125	
Casing Temperature Rise	Ta=25℃	--	40	--	
Storage Humidity	No condensation	--	--	95	%
Cooling Method		Natural air cooling			
Vibration		5-200Hz, 5G, 0.75mm. along X, Y and Z			

EMC Characteristics

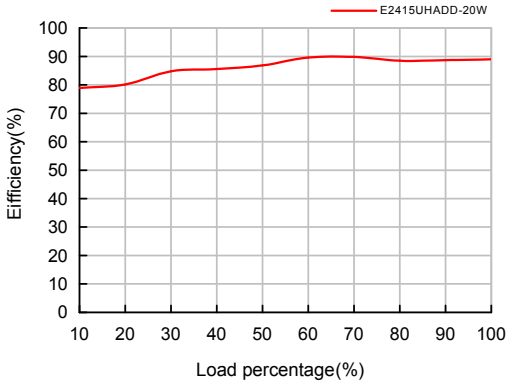
EMI	CE	EN 55032，CLASS B(Figure 2-②)	
	RE	EN 55032，CLASS B(Figure 2-②)	
EMS	ESD	IEC/EN 61000-4-2 Contact±4kV	Perf.Criteria B
	RS	IEC/EN 61000-4-3 10V/m	Perf.Criteria A
	EFT	IEC/EN 61000-4-4 ±2kV(Figure 2-①)	Perf.Criteria B
	Surge	IEC/EN 61000-4-5 ±2kV(Figure 2-①)	Perf.Criteria B
	CS	IEC/EN 61000-4-6 3Vr.m.s	Perf.Criteria A

Note:Unless specified specially, parameters in this manual are measured under the conditions of 25℃, 40%~75% humidity, input nominal voltage and rated output load.

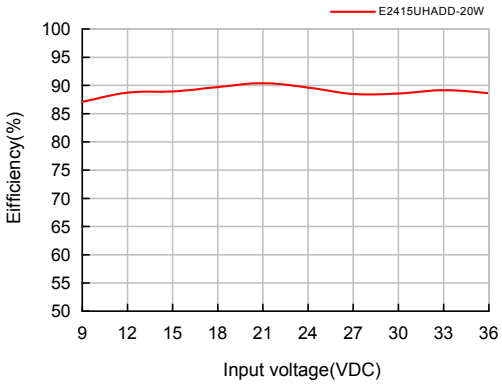
Product Characteristic Graph



Temperature Derating Graph



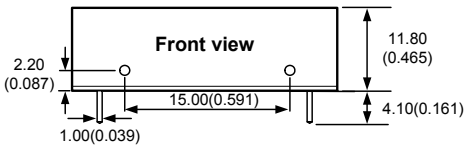
Efficiency VS load(Nominal input voltage)

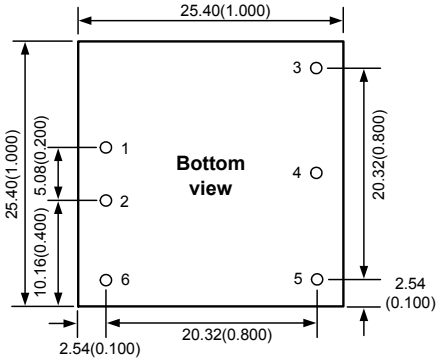


Eifficiency VS input voltage(Full load)

Outline and Footprint Dimensions

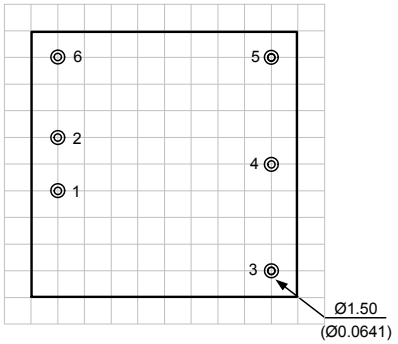
Mechanic Size





Notes:
Unit: mm(inch)
Unlabeled tolerance: ±0.5(±0.010)

PCB Silkscreen Diagram



Note: Grid distance: 2.54×2.54mm

Pin Function Description

Pin	Funtion
1	Vin
2	GND
3	+Vo
4	0V
5	-Vo
6	Ctrl

Pack Instruction

Carton Size: L×W×H=269×254×127mm
144pieces/carton

Circuit Design and Application

1. Recommended circuit

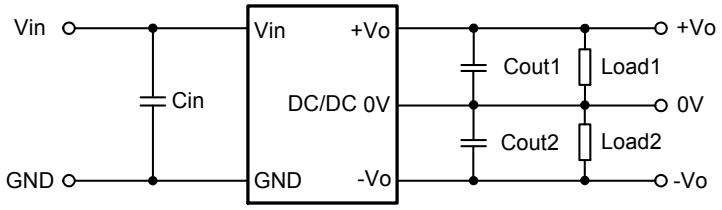


Figure 1 Recommended circuit

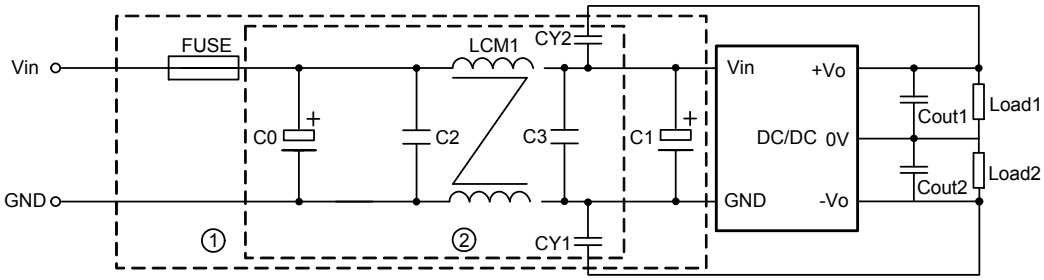


Figure 2 EMC recommended circuit

2. Application circuit parameters

For the selection of filter capacitor, please refer to values in Table 1. If the ESR is less than 1Ω (when the frequency is 100KHz), the ceramic or electrolytic capacitor is recommended to use, and the tantalum capacitor is not recommended to use. The value of input and output filter capacitor can not be too large, otherwise it may cause startup problem.

Table 1 The reference value of the external capacitor

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout1/Cout2 (μF)
24	100	±12、±15、±24	10
48	47	±12、±15、±24	

Typical recommended circuit for EMC

Table 2 Recommended EMC external circuit parameters

Model	Vin：24VDC	Vin：48VDC
FUSE	Select according to the actual input current of the customer	
C0	470uF/50V	330uF/100V
C1	470uF/50V	330uF/100V
C2	4.7uF/50V	4.7uF/100V
C3	10uF/50V	4.7uF/100V
Cout1	Refer to Table 1	
Cout2		
CY1	1nF/2KV	1nF/2KV
CY2	1nF/2KV	1nF/2KV
LCM1	470uH	470uH

3. Load requirements

In order to ensure efficient and reliable operation of the module, it is recommended that the output load should be between 5% and 100% of the rated power.

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