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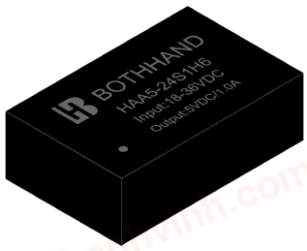
HAA5H6 Series

5W, Isolated DC-DC Converters

Pulse
a YAGEO company



Features

- DIP24 Package
- Wide 2:1 Input Voltage Range
- Input / Output Isolation: 4000VAC
- Isolation Test Voltage 6000VDC
- Operating Temperature: -40°C to +100°C
- Output Short Circuit Protection
- Over Voltage Protection: Clamp Mode
- Non-Conductive Black Plastic Case
- Lead Free Design, RoHS Compliant
- Designed according to IEC/EN/UL 62368-1

Applications

These converters are well suitable for battery operated equipment, measurement equipment, telecom, wireless network, Industry control system, everywhere where isolated, tightly regulated voltages and compact size are required.

Models and Ratings

Model Number	Input Voltage Range (VDC)	Output Voltage (VDC)	Output Current (mA)		Input Current (mA) typ.		Efficiency typ. (%)	Capacitive Load max. (µF)
			Min. Load	Full Load	No Load	Full Load		
HAA5-12S0H6	9 - 18 12V nominal	3.3	0	1200	18	446	78	3000
HAA5-12S1H6		5	0	1000	22	541	81	2000
HAA5-12S2H6		12	0	500	35	630	83	470
HAA5-12S3H6		15	23	400	32	625	84	350
HAA5-12D2H6		±12	0	±250	36	630	83	220 / 220
HAA5-12D3H6		±15	0	±200	37	630	83	220 / 220
HAA5-24S0H6	18 - 36 24V nominal	3.3	0	1200	10	217	80	3000
HAA5-24S1H6		5	0	1000	13	265	82	2000
HAA5-24S2H6		12	23	500	13	309	85	470
HAA5-24S3H6		15	0	400	14	309	85	350
HAA5-24D2H6		±12	0	±250	19	313	84	220 / 220
HAA5-24D3H6		±15	0	±200	21	309	85	220 / 220
HAA5-48S1H6	36 - 75 48V nominal	5	0	1000	8	135	81	2000
HAA5-48S2H6		12	0	500	9	158	83	470
HAA5-48S3H6		15	40	400	10	156	84	350
HAA5-48D2H6		±12	0	±250	11	158	83	220 / 220
HAA5-48D3H6		±15	0	±200	12	158	83	220 / 220

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Input Specifications		
Input voltage range		See Models and Ratings table
Input filter		Pi Type
Input surge voltage (100ms max.)	12Vin model	25 VDC max.
	24Vin model	50 VDC max.
	48Vin model	100 VDC max.
Input reflected ripple current	Nominal Vin and full load	76 mAp-p typ.
Output Specifications		
Voltage accuracy	Nominal Vin and full load	±1% max.
Minimum load		See Models and Ratings table
Line regulation		±0.5% max.
Load regulation	25% load to full load	
	Single output models	±1% max.
	Dual output models	±0.5% max.
Cross regulation		±3% max.
Ripple and noise	20MHz bandwidth	
	3.3Vout and 5Vout models	150 mVp-p max.
	12Vout and 15Vout models	70 mVp-p max.
	±5Vout, ±12Vout and ±15Vout models	250 mVp-p max.
Over voltage protection (Zener diode clamping)	3.3V Output	3.9V
	5V Output	6.2V
	12 Output	15V
	15 Output	18V
Capacitive load		See Models and Ratings table
Overload protection	Nominal Vin	120% min. of full load
Short circuit protection		Continuous, automatic recovery
Transient recovery time	50% load step change	1300 µs typ.
Transient response deviation	di/dt = 0.8 A/µs	±5% max.
Temperature coefficient		±0.02% / °C max.
General Specifications		
Efficiency	Nominal Vin and full load	See Models and Ratings table
Switching frequency	PWM	150 kHz typ.
Start-up time	Nominal Vin and constant resistive load	580 ms typ.
Isolation voltage (rated)	Input to output, 60 s	4000 VAC min.
Isolation Test Voltage	Input to output, 1 s	6000 VDC min.
Isolation resistance	500 VDC	1000 MΩ min.

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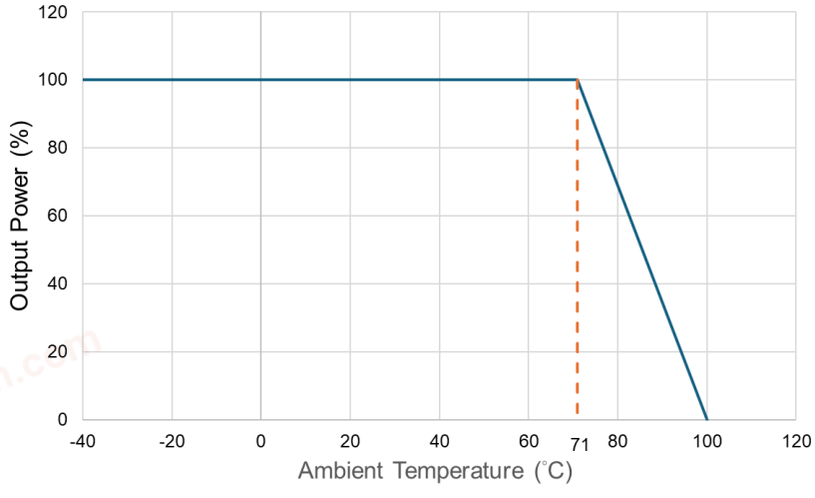
Isolation capacitance		12 pF typ.
Reliability, calculated MTBF	MIL-HDBK-217F, Ground Benign	700 × 10^3 h
Operating ambient temperature	With derating	-40°C to +100°C
Maximum case temperature		+100°C max.
Storage temperature range		-55°C to +125°C
Relative humidity		95% RH max.
Cooling		Natural convection
Physical Specifications		
Case material		Non-conductive black plastic (UL 94 V-0)
Pin material		Copper alloy
Pin Foundation Plating		Nickel
Pin Surface Plating		Tin
Potting material		Silicone (UL 94 V-0)
Dimensions		1.25 × 0.80 × 0.50 Inch 31.7 × 20.3 × 12.65 mm
Weight		16 g typ.

Characteristic Curves

Power Derating Curve



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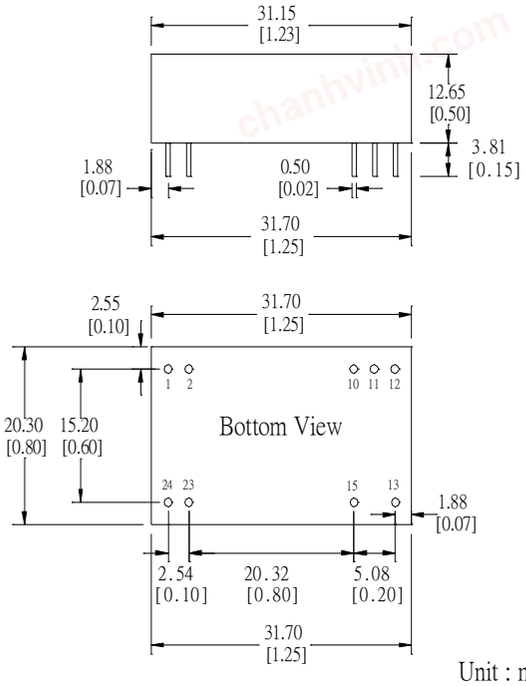
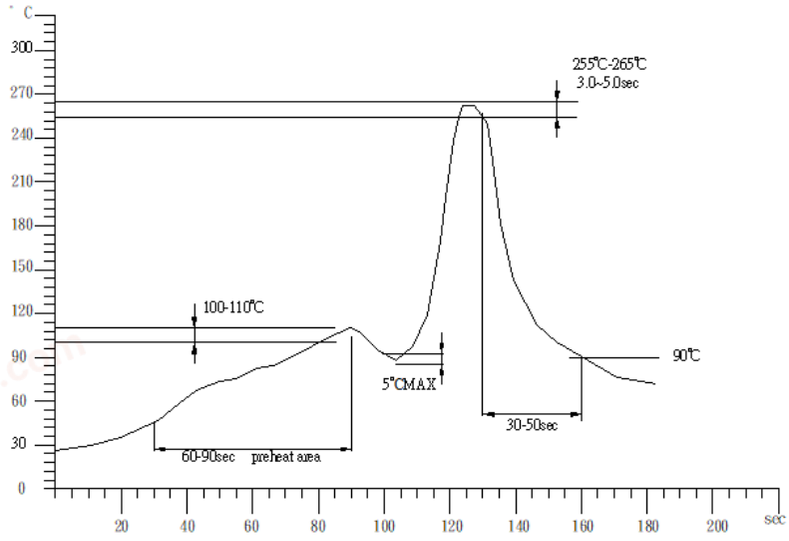
Mechanical



Unit : mm[inch]
Tolerance : XX.X ±0.5[±0.02]
XX.XX ±0.25[±0.01]

Pinout		
PIN	Single	Dual
1, 2	+Vin	+Vin
10	NC	Common
11	NC	Common
12	-Vout	NC
13	+Vout	-Vout
15	NC	+Vout
23, 24	-Vin	-Vin
*NC: No connection		

Wave Soldering Temperature Curve



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Carton Package



TUBE = 10PCS
INNER CARTON = 30 TUBE = 30*10 = 300PCS
EXPORT CARTON = 4 INNER CARTON = 4*300 = 1200PCS

For More Information:

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