



The HS4 series are miniature, isolated 2W DC/DC converters in a SIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise.



FEATURES:

- RoHS compliant
- UL 94V-0 package material
- Input voltage: 3.3V, 5V, 12V, 15V, 24V, 48V
- Efficiency up to 83%
- Industry standard pinout
- Output voltage: 3.3V, 5V, 9V, 12V, 15V, 24V
- Operating temperature: -40°C to +105°C
- 3KVDC isolation
- Internal SMD construction
- Optional: Continuous short circuit protection

H-Model	Nominal Input Voltage (V)	Output Voltage (V)	Output Current (Max./Min) (mA)	Load Regulation (Max.) (%)	Efficiency (%)	Package Style
HS4-0305S20Z30	3,3	5	400/40	7,4	73	SIP7
HS4-0503S20Z30	5	3,3	606/60.6	8	75	SIP7
HS4-0505S20Z30	5	5	400/40	7,4	77	SIP7
HS4-0509S20Z30	5	9	222/22.2	6,1	81	SIP7
HS4-0512S20Z30	5	12	167/16.7	5,1	82	SIP7
HS4-0515S20Z30	5	15	133/13.3	4,5	82	SIP7
HS4-0524S20Z30	5	24	83/8.3	4,5	82	SIP7
HS4-1203S20Z30	12	3,3	606/60.6	8	75	SIP7
HS4-1205S20Z30	12	5	400/40	4,8	77	SIP7
HS4-1209S20Z30	12	9	222/22.2	3,2	82	SIP7
HS4-1212S20Z30	12	12	167/16.7	2,9	83	SIP7
HS4-1215S20Z30	12	15	133/13.3	2,5	83	SIP7
HS4-1224S20Z30	12	24	83/8.3	4,5	82	SIP7
HS4-1505S20Z30	15	5	400/40	7,4	75	SIP7
HS4-1515S20Z30	15	15	133/13.3	2,5	75	SIP7
HS4-2403S20Z30	24	3,3	400/40	7,4	71	SIP7
HS4-2405S20Z30	24	5	400/40	6,5	77	SIP7
HS4-2409S20Z30	24	9	222/22.2	3,2	77	SIP7
HS4-2412S20Z30	24	12	167/16.7	2,9	79	SIP7
HS4-2415S20Z30	24	15	133/13.3	2,5	79	SIP7
HS4-2424S20Z30	24	24	83/8.3	4,5	82	SIP7
HS4-4805S20Z30	48	5	400/40	6,5	77	SIP7
HS4-4812S20Z30	48	12	167/16.7	2,9	79	SIP7

The models listed above is just for standard type. If you need the special specification product, please contact our specialists: sales@haufe-power.de **Package Unit: 25**

Add suffix "P" for continuous short circuit protection e.g. „HS4-0305S20Z30P“.

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INPUT CHARACTERISTICS (Min./Typ./Max.):

Voltage range 3.3V input types (V):	2.9 / 3.3 / 3.7
Voltage range 5V input types (V):	4.5 / 5 / 5.6
Voltage range 12V input types (V) :	11 / 12 / 13.2
Voltage range 15V input types (V):	13.4 / 15 / 16.4
Voltage range 24V input types (V):	21.6 / 24 / 26.4
Voltage range 48V input types (V):	43 / 48 / 53
Reflected ripple current (mA p-p):	- / 8 / 15

ISOLATION CHARACTERISTICS:

Isolation test voltage (VDC):	3000 / - / -(Tested for 1 second)
Resistance (Viso = 1000 VDC) (GΩ):	1 / - / -

ABSOLUTE MAXIMUM RATINGS:

Lead temperature 1.5mm from case for 10 seconds:	300°C
Internal power dissipation :	700mW
Input voltage Vin:	03=5.5V / 05=7V / 12=15V / 15=18V / 24=28V / 48=54V

OUTPUT CHARACTERISTICS (Min. / Typ. / Max.):

Rated Power TA= -40°C to 85°C (W):	- / - / 2
Voltage Set Point Accuracy (%):	See tolerance envelope
Line regulation High VIN to low VIN (%):	- / 1.0 / 1.2

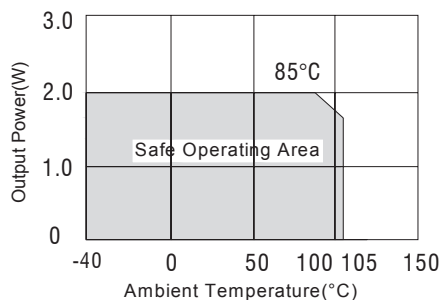
GENERAL CHARACTERISTICS (Min. / Typ. / Max.)

Switching frequency (all input types) (kHz):	- / 65 / -
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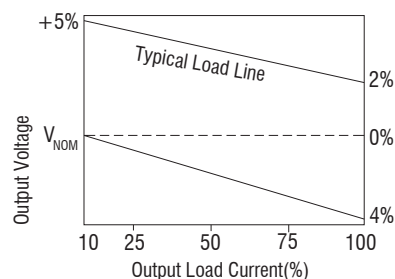
TEMPERATUR CHARACTERISTICS (Min. / Typ. / Max.)

Derating if the temperature is $\geq 85^\circ\text{C}$ (°C):	-40 / - / +105
Storage temperature (°C):	-50 / - / +150
Case temperature above ambient. 5V output (°C):	- / - / 32
Case temperature above ambient. 12V output (°C):	- / - / 27
Case temperature above ambient. All other output (°C):	- / - / 25
Cooling:	Free air convection

TEMPERATURE DERATING GRAPHS

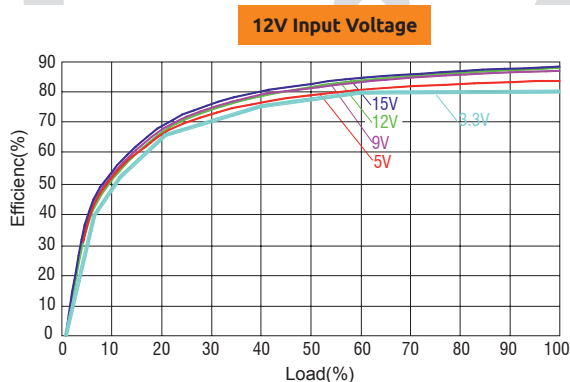
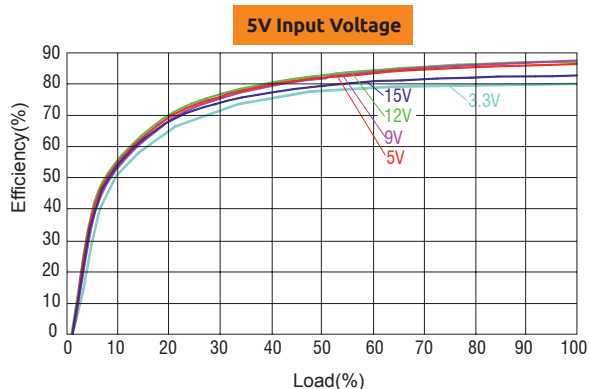


TOLERANCE ENVELOPES



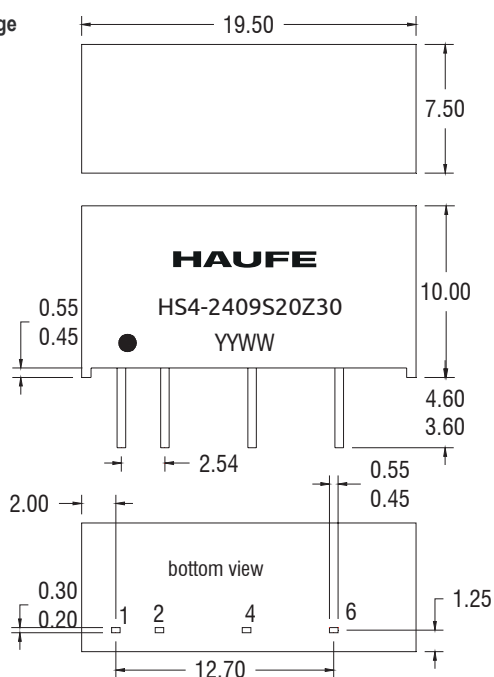


EFFICIENCY VS LOAD



MECHANICAL DIMENSION

SIP Package



All dimensions in mm ± 0.25 mm . All pins on a 2.54mm pitch and within ± 0.25 mm of true position. Weight: 2.8g

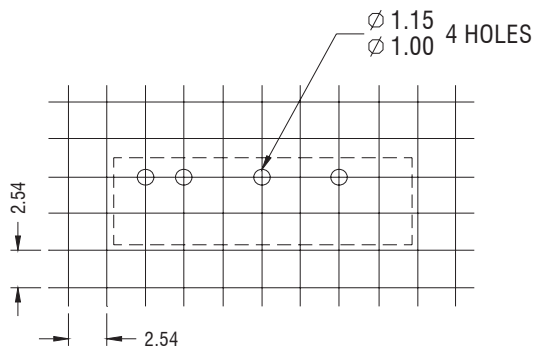
PIN CONNECTIONS

7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
6	+Vout

SOLDERING INFORMATION

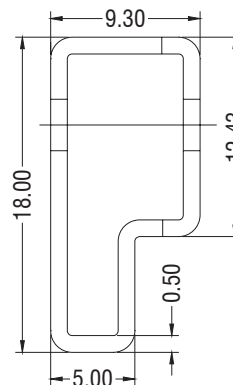
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. These series are backward compatible with Sn/Pb soldering systems.

RECOMMENDED FOOTPRINT DETAILS



Unless otherwise stated all dimensions in mm ± 0.5 mm.

TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length : 520mm ± 2 mm. Tube Quantity : 25PCS