## Flyback converters for Switch Mode Power Supplies

## HAHN



## HAHN flyback converters with the following characteristics:

- Construction to DIN EN 61 558, DIN EN 60950
- Operational frequency $10-500 \mathrm{kHz}$
- Increased creeping distance 12 mm possible


## Insulating material classification

- E/ $120^{\circ} \mathrm{C}$
- B/130 ${ }^{\circ} \mathrm{C}$ (optional)
- $\mathrm{F} / 155^{\circ} \mathrm{C}$ (optional)
- UL 9-V0 (optional)
- 100 \% unleaded


## 100 \% piece inspections

- Inductivity
- Turns ratio
- Winding direction
- Voltage resistance ( $50 \mathrm{~Hz} / 1 \mathrm{~s}$ )

Switch Mode Power Supplies with HAHN flyback converters can be employed for lower and middle range capacities with the structural size quantities EF 12.6 to EF 30.0. Through the use of high-quality of core materials it is possible to reach working frequencies up to the MHZ-area.

Considerable know-how and specialist experience in transformer technology for open, encapsulated, impregnated or vacuum encapsulated converters are guarantees for HAHN quality and optimum customer benefit.

Current developments in electronic components involve ever shorter research and development time periods and every greater manufacturing reliability.

HAHN has the opportunity of optimally developing flyback converters for well known manufacturers of regulator controllers, e. g. Power Integration, Infinion, Philips or ON Semiconductor as customer-specific components. These were all rapid-, eco-nomic- and high quality problem solutions from HAHN.

| Frame size | Output Power* | Packaging unit |
| :--- | :---: | :---: |
| EF 12.6/4 | up to 5 W | 300 pieces |
| EF 16/5 | up to 9 W | 176 pieces |
| EF 20/6 | up to 20 W | 176 pieces |
| EF 25/7 | up to 45 W | 60 pieces |
| EF 30/7 | up to 70 W | 48 pieces |

* dependent on input voltage range and switch governor type


## Flyback converters for Switch Mode Power Supplies

## Output Power: 5-7 W

| - $1 / 10$ 吅 | DIN EN 61558 | VDE | on request |
| :---: | :---: | :---: | :---: |
|  | DIN EN 60 335-1 | VDE | on request |
| Tis | UL 5085-3 | UL | on request |
| 7 | UL 5085-1 | UL | on request |
| S | C22.2 | CSA | on request |



- according to REACH regulation
- according to RoHs regulation


## Technical Specifications

- Construction to DIN EN 61 558, DIN EN 60950
- Creeping distance 8 mm min.
- 100 \% unleaded
- UL listed materials
- Insulating material classification B $\left(130^{\circ} \mathrm{C}\right)$
- Two outputs for connection in parallel or in series ${ }^{(*)}$


## Connecting pins



100 \% piece inspection

- Inductance
- Turns ratio
- Winding direction
- Voltage resistance ( $50 \mathrm{~Hz} / 1 \mathrm{~s}$ )

Connection scheme (only connected pins are present)


[^0]
## Flyback converters for Switch Mode Power Supplies

Output Power: 5-7 W

| $\mathbf{5 W}$ |
| :--- |
|  |
| TinySwitch-II® |
| Product family |
| TNY 264 |


| Order No. | Primary voltage V | Connecting pins prim. | Secondary voltage IV | Current sec. 1 mA | Connecting pins sec. I | Secondary voltage IIV | Current sec. II mA | Connecting pins sec. II |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V 50100* | 85-265 | 5-8 | 3 | 830 | 1-4 | 3 | 830 | 2-3 |
| V 50101* | 85-265 | 5-8 | 9 | 280 | 1-4 | 9 | 280 | 2-3 |
| V 50102* | 85-265 | 5-8 | 12 | 210 | 1-4 | 12 | 210 | 2-3 |
| V 50103* | 85-265 | 5-8 | 15 | 170 | 1-4 | 15 | 170 | 2-3 |

* Two outputs for connection in parallel or in series

| $\mathbf{5 W}$ |
| :--- |
|  |
| TinySwitch-II® |
| Product family |
| TNY 266 |


| Order No. | Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage IV | Current <br> sec. I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage <br> IIV | Current <br> sec. II <br> mA | Connecting <br> pins sec. II |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V50104 | $85-265$ | $5-8$ | 12 | 390 | $1-2$ | 3.3 | 100 | $3-4$ |
| V50105 | $85-265$ | $5-8$ | 24 | 195 | $1-2$ | 3.3 | 100 | $3-4$ |
| V50106 | $85-265$ | $5-8$ | 12 | 375 | $1-2$ | 5 | 100 | $3-4$ |
| V50107 | $85-265$ | $5-8$ | 24 | 187 | $1-2$ | 5 | 100 | $3-4$ |


| 7 W |
| :--- |
| TinySwitch-III® |
| Product family |
| TNY 276 |


| Order No.Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage IV | Current <br> sec. I <br> mA |  | Connecting <br> pins sec. I | Secondary <br> voltage <br> IIV | Current <br> sec. II <br> mA | Connecting <br> pins sec. II |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V50110* $85-265$ | $5-8$ | 3 | 1170 | $1-4$ | 3 | 1170 | $2-3$ |  |
| V50111* $85-265$ | $5-8$ | 9 | 390 | $1-4$ | 9 | 390 | $2-3$ |  |
| V50112* $85-265$ | $5-8$ | 12 | 290 | $1-4$ | 12 | 290 | $2-3$ |  |
| V50113* $85-265$ | $5-8$ | 15 | 230 | $1-4$ | 15 | 230 | $2-3$ |  |

* Two outputs for connection in parallel or in series


## 7 W <br> TinySwitch-III® Product family TNY 276

| Order No. | Primary <br> voltage V | Connecting <br> pins prim. <br> O | Seconda- <br> ry voltage <br> IV | Current <br> sec.I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage <br> IIV | Current <br> sec. II <br> mA | Connecting <br> pins sec. II |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V50114 | $85-265$ | $5-8$ | 12 | 555 | $1-2$ | 3.3 | 100 | $3-4$ |
| V50115 | $85-265$ | $5-8$ | 24 | 277 | $1-2$ | 3.3 | 100 | $3-4$ |
| V50116 | $85-265$ | $5-8$ | 12 | 540 | $1-2$ | 5 | 100 | $3-4$ |
| V50117 | $85-265$ | $5-8$ | 24 | 270 | $1-2$ | 5 | 100 | $3-4$ |

## Flyback converters for Switch Mode Power Supplies

Output Power: 8-16 W

| - 10 | DIN EN 61558 | VDE | on request |
| :---: | :---: | :---: | :---: |
| $\qquad$ VDE-Mark for Glow-Wire-Test | DIN EN 60 335-1 | VDE | on request |
| -18 | UL 5085-3 | UL | on request |
| 71 | UL 5085-1 | UL | on request |
| (1) | C22.2 | CSA | on request |



- according to REACH regulation
- according to RoHs regulation


## Technical Specifications

- Construction to DIN EN 61 558, DIN EN 60950
- Creeping distance 4 mm min.
- 100 \% unleaded
- UL listed materials
- Insulating material classification E ( $120^{\circ} \mathrm{C}$ )
- Two outputs for connection in parallel or in series ${ }^{(*)}$

100 \% piece inspection

- Inductance
- Turns ratio
- Winding direction
- Voltage resistance ( $50 \mathrm{~Hz} / 1 \mathrm{~s}$ )


## Connecting pins



View looking onto pins



Dimensions without tolerances $\pm 0.3 \mathrm{~mm}$, rights to make alterations and improvements hereby reserved

Connection scheme (only connected pins are present)


[^1]
## Flyback converters for Switch Mode Power Supplies

Output Power: 8-16 W

| $\mathbf{8} \mathbf{W}$ |
| :--- |
|  |
| TinySwitch-II® |
| Product Family |
| TNY 267 |


| Order No.Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage IV | Current <br> sec. I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage IIV | Current <br> sec. II <br> mA | Connecting <br> pins sec. II |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V50200* $85-265$ | $1-5$ | 3 | 1330 | $6-10$ | 3 | 1330 | $7-9$ |
| V50201* $85-265$ | $1-5$ | 9 | 440 | $6-10$ | 9 | 440 | $7-9$ |
| V50202* $85-265$ | $1-5$ | 12 | 330 | $6-10$ | 12 | 330 | $7-9$ |
| V50203* 85-265 | $1-5$ | 15 | 270 | $6-10$ | 15 | 270 | $7-9$ |

* Two outputs for connection in parallel or in series


## 8 W <br> TinySwitch-II® Product Family TNY 267

| Order No. | Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage IV <br>  |  |  | Current <br> sec. I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage IIV |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Current <br> sec. II <br> mA | Connecting <br> pins sec. II |  |  |  |  |  |  |  |
| V50204 | $85-265$ | $1-5$ | 12 | 640 | $6-7$ | 3.3 | 100 | $9-10$ |
| V50205 | $85-265$ | $1-5$ | 24 | 320 | $6-7$ | 3.3 | 100 | $9-10$ |
| 55206 | $85-265$ | $1-5$ | 12 | 625 | $6-7$ | 5 | 100 | $9-10$ |
| V50207 | $85-265$ | $1-5$ | 24 | 312 | $6-7$ | 5 | 100 | $9-10$ |


\section*{| 16 W |
| :--- |
|  |
| TinySwitch-III® |
| Product Family |
| TNY 279 |}


| Order No.Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage IV | Current <br> sec. I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage IIV | Current <br> sec.II <br> mA | Connecting <br> pins sec. II |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V 50210* $85-265$ | $1-5$ | 3 | 2670 | $6-10$ | 3 | 2670 | $7-9$ |
| V50211* $85-265$ | $1-5$ | 9 | 890 | $6-10$ | 9 | 890 | $7-9$ |
| V50212* $85-265$ | $1-5$ | 12 | 670 | $6-10$ | 12 | 670 | $7-9$ |
| V50213* $85-265$ | $1-5$ | 15 | 530 | $6-10$ | 15 | 530 | $7-9$ |

* Two outputs for connection in parallel or in series


## 16 W

TinySwitch-III® Product Family TNY 278


| Order No. | Primary <br> voltage V | Connecting <br> pins prim. | Secondary <br> voltage I V | Current <br> sec.I <br> mA | Connecting <br> pins sec. I | Secondary <br> voltage <br> IIV | Current <br> sec. II <br> mA | Connecting <br> pins sec. II |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| V50214 | $85-265$ | $1-5$ | 12 | 1300 | $6-7$ | 3.3 | 100 | $9-10$ |
| V50215 | $85-265$ | $1-5$ | 24 | 650 | $6-7$ | 3.3 | 100 | $9-10$ |
| V50216 | $85-265$ | $1-5$ | 12 | 1290 | $6-7$ | 5 | 100 | $9-10$ |
| V50217 | $85-265$ | $1-5$ | 24 | 645 | $6-7$ | 5 | 100 | $9-10$ |

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[^0]:    double voltage - bridge: $4+2$, double current - bridge: $1+2 / 4+3$

[^1]:    double voltage - bridge: $10+7$, double current - bridge: $6+7 / 10+9$

