



SWITCH MODE TRANSFORMERS



The new exigencies in the applications where the size, height and efficiency of power supply have priority make these transformers the most suitable for an optimal working in high frequency applications that goes from 30KHz to 300KHz and powers that can reach around 1000W. These transformers are available in several series as E, EF, EFD, etc... depending on the needs of the design. They are appropriated for Flyback, Forward, Push-pull topologies used in a big variety of applications like Domotics, industrials, lighting...

| SERIES | CORE TYPE | OUTPUT POWER (W) | PAGE |
|--------|-------------------|------------------|------|
| E/EF | E 13/7/4 (EF12.6) | 2.4 | 2 |
| | E 16/8/5 (EF16) | 12 | 3 |
| | E 20/10/6 (EF20) | 20 | 4 |
| | E 25/13/7 (EF25) | 35 | 5 |
| | E 30/15/7 | 59 | 6 |
| | E 32/16/9 (EF32) | 98 | 7 |
| | E 42/21/15 | 500 | 8 |
| EFD | EFD 15 | 2.7 | 9 |
| | EFD 20 | 10 | |
| | EFD 25 | 28 | |
| | EFD 30 | 43 | |
| ETD | ETD 29 | 85 | 10 |
| | ETD 34 | 145 | |
| | ETD 39 | 345 | |
| | ETD 44 | 580 | |
| | ETD 49 | 900 | |

- Theoretical power output of a forward converter working at 100KHz , max. Flux density = 0,18T and wire current density of 3,5A/mm².
- Other factors like skin effect, proximity effect, induction variations are not taken into consideration.
- Some families are also available in SMD technology.



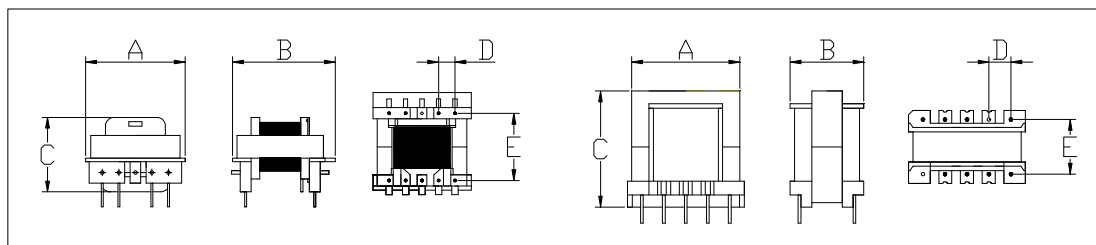
SWITCH MODE TRANSFORMERS



E13/7/4 (EF 12.6) 2.4W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|--------------|------|------|------|------|-------|
| E13Horz. 4+4 | 14.2 | 14.2 | 12.0 | 3.81 | 10.16 |
| E13Vert. 3+3 | 14.2 | 14.2 | 15.8 | 3.81 | 7.62 |
| E13Vert. 5+5 | 14.2 | 12.1 | 13.5 | 2.50 | 8.50 |

MODELS

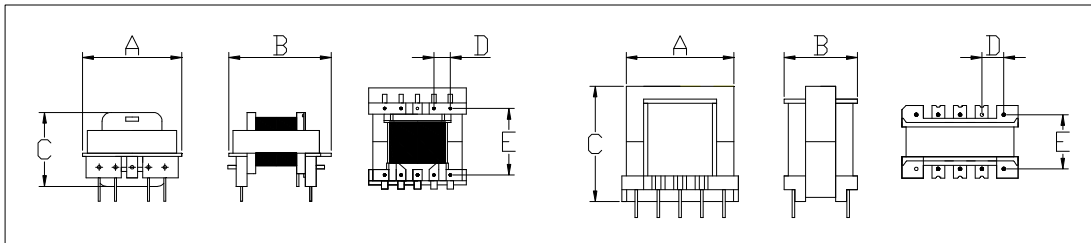
| Part number | Output Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|--------------|---------------------------|--------------------------------------|------------|--------------------|
| HR 181301 | 2W | PRIMARY AUX OUT.1 | 85-265Vac 12V/0.1A 12V/0.16A | LNK362PN | |
| HR 181302 | 2.2W | PRIMARY OUT.1 OUT.2 | 85-265Vac 12V / 0.1A 5V / 0,2A | LNK 364PN | |



E16/7/4 (EF 16) 12W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|--------------|------|------|------|---------|-------|
| E16Horz. 4+4 | 17.8 | 17.0 | 13.7 | 3.81 | 15.24 |
| E16Vert. 4+4 | 17.8 | 11.1 | 18.2 | 3.81 | 8.89 |
| E16Vert. 4+5 | 19.8 | 23.8 | 14.9 | 5.0/3.5 | 17.00 |
| E16Vert. 4+6 | 17.6 | 15.5 | 18.0 | 3.5/2.7 | 12.20 |
| E16Horz. 5+5 | 16.0 | 18.4 | 12.2 | 3.2 | 15.50 |

MODELS

| Part number | Output Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|--------------|----------------------------------|---|---|--------------------|
| HR 181601 | 6W | PRIMARY AUX OUT.1 | 85-265Vac 12V/0.1A 5 V/1.2 A | TDA-16831 VIPer20 TOP242P MC-33369 | |
| HR 181602 | 12W | PRIMARY AUX OUT.1 OUT.2 | 85-265Vac 12V / 0.1A 5V / 2.0A 12V / 0.16A | TNY 267 TOP242 VIPer20 TDA 16831 | |



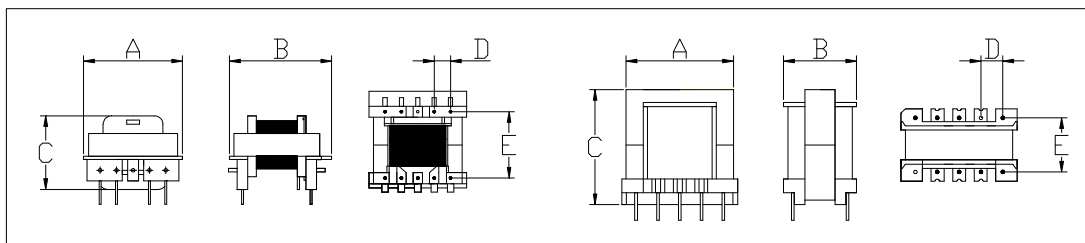
SWITCH MODE TRANSFORMERS



E20/10/6 (EF 20) 20W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|--------------|------|------|------|------|-------|
| E20Horz. 5+5 | 23.0 | 24.0 | 17.5 | 3.81 | 15.24 |
| E20Vert. 5+5 | 22.0 | 13.9 | 21.2 | 3.81 | 10.16 |
| E20Horz. 4+4 | 19.8 | 19.7 | 16.7 | 5.00 | 15.00 |

MODELS

| Part number | Output Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|--------------|---|--|--|--------------------|
| HR 182001 | 18W | Primary AUX OUT.1 OUT.2 | 85-265Vac 12V / 0.1A 5 V / 2.0A 18V / 0.44 A | TNY 255 TNY 264 TNY 266 | |
| HR 182002 | 20W | PRIMARY AUX OUT.1 OUT.2 OUT.3 | 85-265Vac 12V / 0.1A 5V / 1.0A 12V / 0.25A 24V / 0.50A | TNY 267 TOP 242 VIPer20 MC33369 | |



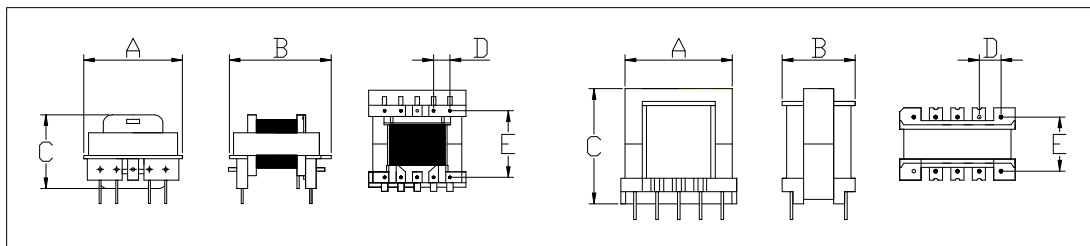
SWITCH MODE TRANSFORMERS



E25/13/7 (EF 25) 35W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|--------------|------|------|------|------|-------|
| E25Horz. 5+5 | 27.5 | 28.0 | 20.0 | 5.08 | 20.32 |
| E25Vert. 5+5 | 27.5 | 17.3 | 26.0 | 5.08 | 12.70 |

MODELS

| Part number | Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|-------|-------------------------|------------------------------------|------------|--------------------|
| HR 182501 | 30W | Primary AUX OUT.1 | 85-265Vac 12V / 24V / 1.25 A | TOP254 | |



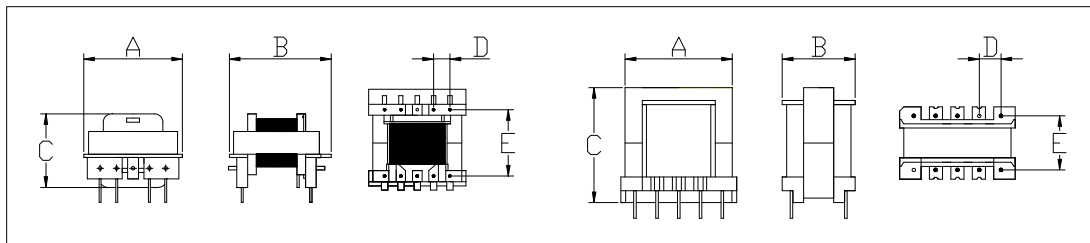
SWITCH MODE TRANSFORMERS



E30/15/7 59W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|--------------|------|------|------|------|-------|
| E30Horz.7+7 | 35.4 | 31.4 | 22.6 | 5.08 | 22.86 |
| E30Vert. 6+6 | 35.4 | 19.2 | 34.8 | 5.08 | 15.24 |
| E30Horz. 5+5 | 30.8 | 30.0 | 19.0 | 5.08 | 25.00 |

MODELS

| Part number | Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|-------|-------------------------|---|------------|--------------------|
| HR 183001 | 40W | Primary AUX OUT.1 | 85-265Vac 15V / 0.1A 15V / 2.66 A | TOP 270VG | |
| HR 183002 | 50W | PRIMARY OUT.1 | 195-265Vac 24V / 2.08A | TOP267E | |



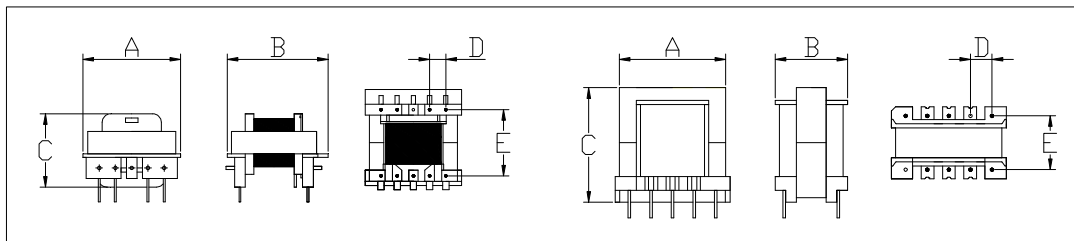
SWITCH MODE TRANSFORMERS



E32/16/9 (EF32) 98W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| YPE | A | B | C | D | E |
|--------------|------|------|------|------|-------|
| E30Horz.7+7 | 35.4 | 31.4 | 22.6 | 5.08 | 22.86 |
| E30Vert. 6+6 | 35.4 | 19.2 | 34.8 | 5.08 | 15.24 |
| E30Horz. 5+5 | 30.8 | 30.0 | 19.0 | 5.08 | 25.00 |

MODELS

| Part number | Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|-------|-------------------------|---|------------|--------------------|
| HR 183201 | 40W | Primary AUX OUT.1 | 85-265Vac 15V / 0.1A 15V / 2.66 A | TOP 270VG | |
| HR 183202 | 50W | PRIMARY OUT.1 | 195-265Vac 24V / 2.08A | TOP267E | |



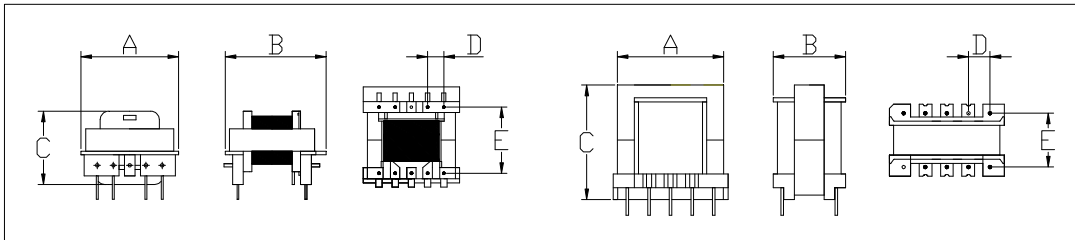
SWITCH MODE TRANSFORMERS



E42/21/15 500W

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



(in mm)

| TYPE | A | B | C | D | E |
|----------------|------|------|------|-----|-------|
| E4215Horz.6+6 | 42.0 | 42.5 | 34.2 | 5.0 | 35.00 |
| E4215Vert. 9+9 | 47.5 | 34.0 | 47.0 | 5.0 | 27.50 |

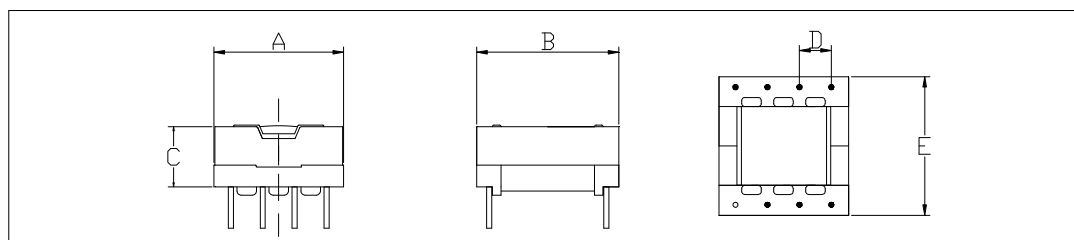
MODELS

| Part number | Power | Winding | Voltages | IC Control | Electrical drawing |
|-------------|-------|----------------------------------|---|------------------------|--------------------|
| HR 184201 | 250W | Primary OUT.1 | 195-265Vac 12V / 20.8A | Discrete components | |
| HR 184202 | 150W | PRIMARY AUX OUT.1 OUT.2 | 85-265Vac 12V / 0.1A 5V / 6A 12V / 10A | TOP 247Y | |



EFD SERIES 2.7 ~ 43W

EFD “Economical Flat Desing” is a low verison of the cores E/EF. They are used when a low profile transformer is needed. They are suitable for power converters and pulse transformers. There is also a SMD version.



(in mm)

| TYPE | A | B | C | D | E | OUTPUT POWER |
|-----------------|------|------|------|------|-------|--------------|
| EFD 15/8/5 4+4 | 15.2 | 16.7 | 8.0 | 3.75 | 13.75 | 2.7 |
| EFD 20/10/7 4+4 | 20.2 | 21.2 | 10.0 | 5.00 | 17.50 | 10 |
| EFD 25/13/9 5+5 | 25.2 | 26.2 | 12.6 | 5.00 | 22.50 | 28 |
| EFD 30/15/9 6+6 | 29.2 | 31.2 | 12.6 | 5.00 | 27.5 | 43 |

- Theoretical power output of a forward converter working at 100KHz , max. flux density = 0,18T and wire current density of 3,5A/mm².
- Other factors like skin effect, proximity effect, induction variations are not taken into consideration.
- Some families are also available in SMD technology.

MODELS

Non-standard transformers availables on request.

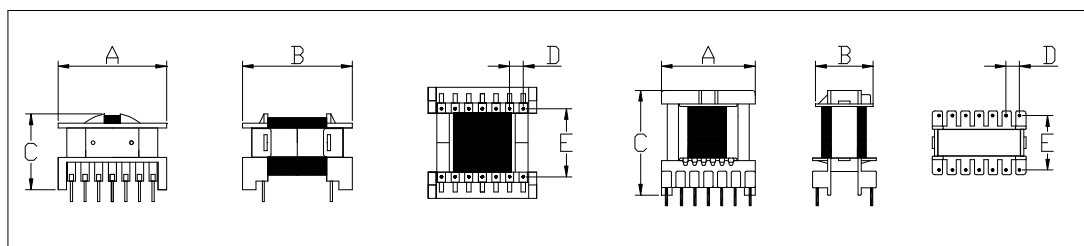
Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |



ETD SERIES 85 ~ 200W

Economical Transformer Design. Especially designed for power applications in a switch mode power supply, with a constant cross section along the magnetic path, it is round centre leg, makes easy the winding specially the thick wires. Available in a wide range of sizes and vertical or horizontal mounting positions.



(in mm)

| TYPE | A | B | C | D | E | OUTPUT POWER |
|--------------------------|------|------|------|------|-------|--------------|
| ETD 29/16/10 Horz. 7+7 | 35.2 | 35.2 | 25.4 | 5.08 | 25.40 | 85 |
| ETD 29/16/10 Vert. 7+7 | 35.2 | 24.0 | 41.0 | 5.08 | 20.32 | |
| ETD 34/17/11 Horz. 7+7 | 39.6 | 42.8 | 32.9 | 5.08 | 25.40 | 145 |
| ETD 34/17/11 Vert. 7+7 | 39.6 | 30.0 | 46.0 | 5.08 | 22.86 | |
| ETD 39/20/13 Horz. 8+8 | 44.6 | 47.8 | 36.1 | 5.08 | 30.48 | 345 |
| ETD 39/20/13 Vert. 8+8 | 44.6 | 33.0 | 50.0 | 5.08 | 25.40 | |
| ETD 44/22/15 Horz. 9+9 | 49.6 | 52.2 | 38.1 | 5.08 | 35.55 | 580 |
| ETD 44/22/15 Vert. 9+9 | 49.6 | 35.0 | 55.0 | 5.08 | 27.94 | |
| ETD 49/25/16 Horz. 10+10 | 54.5 | 57.2 | 40.6 | 5.08 | 40.64 | 900 |
| ETD 49/25/16 Vert. 10+10 | 55.0 | 36.0 | 56.0 | 5.08 | 30.48 | |

- Theoretical power output of a forward converter working at 100KHz , max. flux density = 0,18T and wire current density of 3,5A/mm².
- Other factors like skin effect, proximity effect, induction variations are not taken into consideration.

MODELS

Non-standard transformers availables under request.

Technical characteristics

| | |
|-------------------------------|---|
| Plastic material | Self-extinguishing UL 94 VO compliant |
| Thermal class materials | B 130°C/266°F - F 155°C/311°F (optional) |
| Impregnation | Synthetic resin Varnish thermal class F155°C/311°F |
| Copper wire | Grade 2 isolation type |
| Dielectric strength Pri/Sec | =4 kV |
| Creepage lines and clearances | According regulation IEC EN 60950/EN 61558/EN 60335 |
| Connection pins | Lead free |
| Working ambient temperature | 70°C |