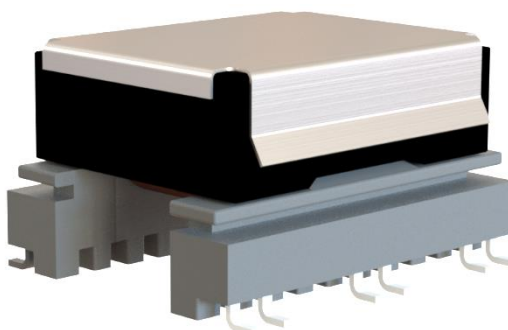




| | | | | | | |
|--------------------------|----------------|---|--------------------|--------------|---------------|--|
| Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | | |
| Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 1 / 8 | |

Technical Specification




FLYBACK TRANSFORMER 17.5 μ H 2:1:1: 1:1:1

| | | |
|---------------------------|-----------------------------|--------------------------|
| Made by (R&D Engineer) | Checked by (R&D Manager) | Approved by (Quality) |
| Date: 03/01/2024 | Date: | Date: |
| Signature: Madhu N | Signature: | Signature: |

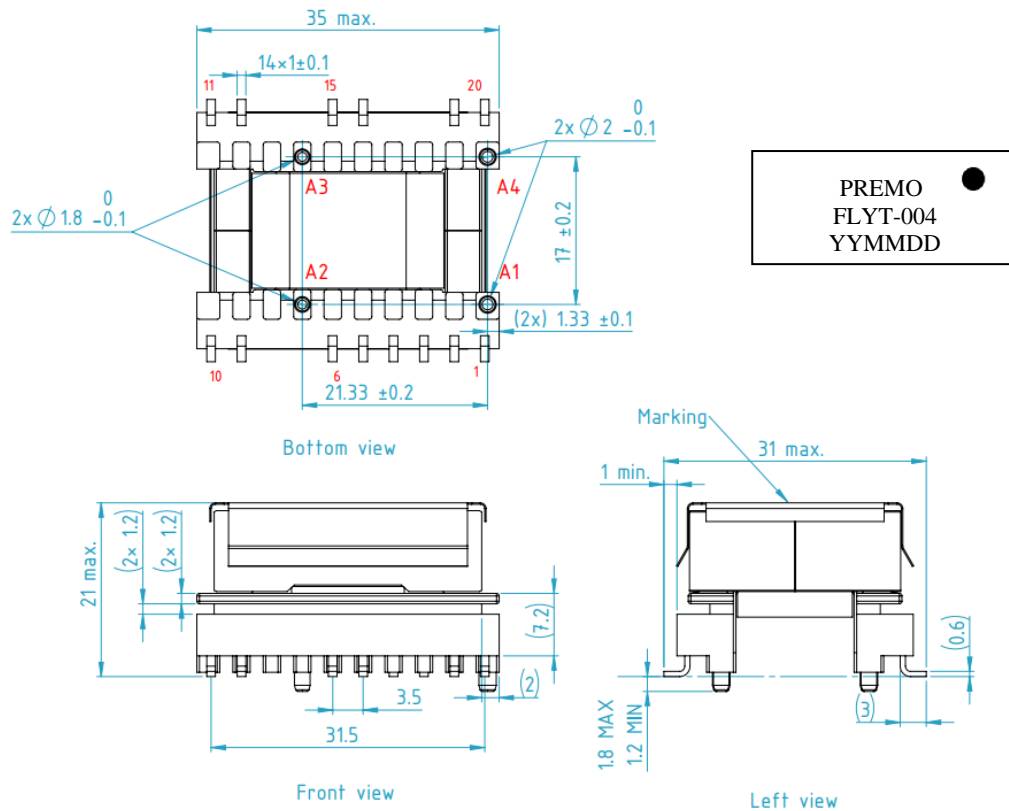
DIMENSIONS: mm

TECHNICAL SPECIFICATION



| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|--------------|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 2/ 8 |

1- Dimensions and Pins Configuration



Notes:

- General tolerances according to ISO-2768-mk if not defined
- Connections to be made on the PCB between pins (#1 and #3); (#2 and #4)
- Pin #1 is identified by a dot.
- Using A1, A3 plastic pins for locating the part in PCB to avoid snipping during soldering process.
- A2, A4 plastic pins are considered as the mechanical supporting pins for PREMO automatic process.


Weight:

- Approx. 33 grams.

DIMENSIONS: mm

TECHNICAL SPECIFICATION



| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|---------------|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 3 / 8 |

2- Electrical parameters

2.1 – Technical specifications

| | |
|---|--|
| TOPOLOGY | Quasi-resonant Mode Fly-back |
| INPUT (B1) | |
| Voltage Range/Current | +6V to +19V/ 2.3Arms |
| OUTPUT 4(B3) | |
| Voltage/Current | +15V / 1.5Arms |
| OUTPUT 1(B4) | |
| Voltage/Current | +15V / 0.3Arms |
| OUTPUT 2(B5) | |
| Voltage/Current | +15V / 0.3Arms |
| OUTPUT 3(B6) | |
| Voltage/Current | +15V / 0.3Arms |
| REGULATION (B2) | |
| Voltage/Current | +15V / 0.05Arms |
| SWITCHING FREQUENCY | 50kHz – 300kHz |
| DUTY CYCLE | 85% MAX |
| TOTAL OUTPUT POWER | Approx. 10 W (nominal) |
| AMBIENT TEMPERATURE | -40°C to +85°C |
| OPERATING TEMPERATURE | -40°C to +125°C (including self-heating of the part) |
| STORAGE TEMPERATURE | -40°C to +105°C |
| MOUNTING | SMD |
| ESTIMATED TOTAL LOSSES (@100kHz, Pout=12.2W, Vin=6V, 105°C) | |
| Copper losses (DC) | 410 mW |
| Core losses | 100 mW |
| Total losses | 510 mW |

- Total losses do not include hysteresis, Eddy, Harmonics, and gap losses (estimated coefficient of 2)


2.2 – Parameters tested

| | |
|--|--|
| URNS RATIO | |
| B1(B1a//B1b) : B2 : B3 : B4 : B5 : B6 | 2 : 1 : 1 : 1 : 1 : 1 |
| PRIMARY INDUCTANCE: | |
| L _{1,3-2,4} : pins (1,3) shorted and (2,4) shorted* | 15.4 μ H MIN < 17.5 μ H TYP < 19.6 μ H MAX |
| PRIMARY INDUCTANCE @4.8A* | |
| L _{1,3-2,4} : pins (1,3) shorted and (2,4) shorted | 12.3 μ H MIN |
| LEAKAGE INDUCTANCE | |

DIMENSIONS: mm

TECHNICAL SPECIFICATION




| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|--------------|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 4/ 8 |

| | |
|--|--|
| PRI B1(1,3-2,4) (pins (1,3) shorted and (2,4) shorted, all remaining windings shorted) | 300 nH MAX |
| SECONDARY: B3/4/5/6 (primary shorted, regulation shorted and all secondary windings shorted except Bx(3/4/5/6)which is measuring | 200 nH MAX |
| REGULATION: B2(measure at 5-6, all remaining windings shorted) | 200 nH MAX |
| COUPLING CAPACITANCE | |
| PRI-SEC1: Between B1, B2 shorted and B4 shorted | 35pF MAX |
| PRI-SEC2: Between B1, B2 shorted and B5 shorted | 35pF MAX |
| PRI-SEC3: Between B1, B2 shorted and B6 shorted | 35pF MAX |
| PRI-SEC4: Between B1, B2 shorted and B3 shorted | 35pF MAX |
| DC RESISTANCE @25\pm5°C | |
| B1, Pins (1,3) shorted and (2,4) shorted | 33 m Ω Typ < 38 m Ω Max. |
| B2, Pins 5 to 6 | 28 m Ω Typ < 55 m Ω Max. |
| B3, Pins 9 to 10 | 23 m Ω Typ < 27 m Ω Max. |
| B4, Pins 11 to 12 | 31 m Ω Typ < 60 m Ω Max. |
| B5, Pins 15 to 16 | 30 m Ω Typ < 60 m Ω Max. |
| B6, Pins 19 to 20 | 33 m Ω Typ < 62 m Ω Max. |
| INSULATION RESISTANCE | |
| Between PRI (1,2,3,4 shorted) and REG (5,6 shorted) | 10 M Ω MIN @500Vdc |
| Between PRI/REG 1,3,3,4,5,6 shorted) and SEC1,2,3,4 (9,10,11,12,15,16,19,20 shorted) | 100 M Ω MIN @500Vdc |
| Between SEC1 (11,12 shorted) /SEC2 (15,16 shorted) /SEC3 (19,20 shorted) /SEC4 (9,10 shorted) | 10 M Ω MIN @500Vdc |
| DIELECTRIC STRENGTH ⁽¹⁾* | |
| Between B1 and B2 | 1kV (50/60Hz; 3 mA; 2 sec) |
| Between B1, B2 and B3, B4, B5, B6 | 3kV (50/60Hz; 3 mA; 2 sec) |
| Between B4 and B5 | 2kV (50/60Hz; 3 mA; 2 sec) |
| Between B5 and B6 | 2kV (50/60Hz; 3 mA; 2 sec) |
| Between B4 and B6 | 2kV (50/60Hz; 3 mA; 2 sec) |
| Between B3 and B4, B5, B6 | 2kV (50/60Hz; 3 mA; 2 sec) |
| Between all winding(B1->B6) and CORE | 1.5KV (50/60Hz; 3 mA; 2 sec) |

Notes:

- Inductance at 0A and at load measured at 100 kHz and 0.1Vac, RT 25 \pm 5°C.
- Leakage Inductance/Coupling capacitance measured at 100 kHz and 0.1Vac, RT 25 \pm 5°C.
- ⁽¹⁾ Dielectric Strength: 1 min for qualification / 2sec for mass production.
- * Critical Characteristics.

| | | |
|----------------|-------------------------|---|
| DIMENSIONS: mm | TECHNICAL SPECIFICATION |  |
|----------------|-------------------------|---|

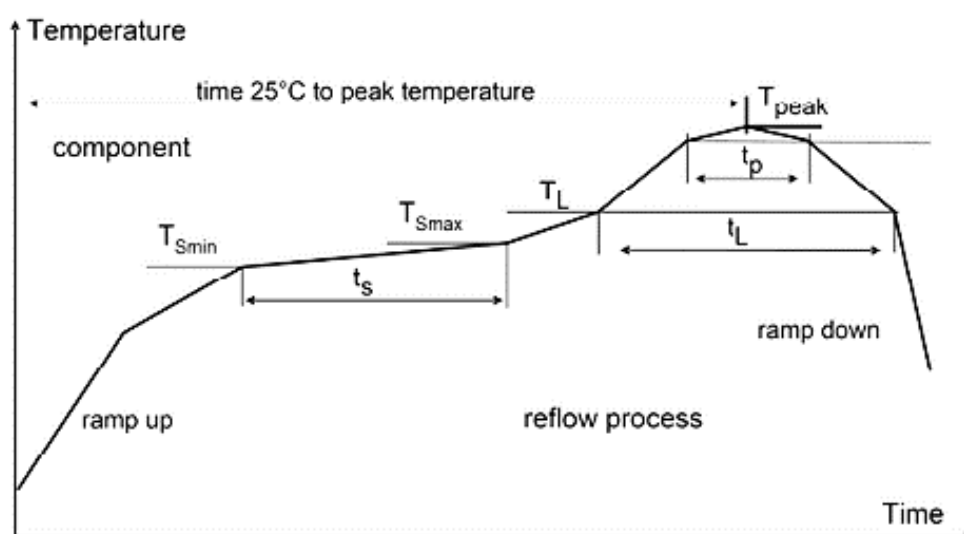


| | | | | | | |
|--------------|----------|----------------|---|------------|---------|-------|
| Customer | - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | |
| Project Ref. | FLYT-004 | Prototype Ref. | Ordering Code | Date | Edition | Page |
| | | | FLYT-004 | 03/01/2024 | 1 | 5 / 8 |

3- Soldering and recommended Pad Layout

3.1- Recommended Soldering Profile

According to IPC/JEDEC-J-STD-020 a reflow profile that PREMO recommends for its inductive components is described in figure 1.



| ramp up to 150 °C | T _{Smin} | t _s | T _{S max} | T _L | t _L | T _{peak} * | t _p ** | time 25°C to peak | ramp down |
|-------------------|-------------------|----------------|--------------------|----------------|----------------|---------------------|-------------------|-------------------|-----------|
| ≥3°C/s | 190 ±5 °C | ≥110 s | 200±5°C | 217±5°C | ≥90s | 245±5°C | ≥30s | ≥300s | ≥6°C/s |

Minimum requirements for Pb-free soldering

*peak temperature is measured on the center top of the component package


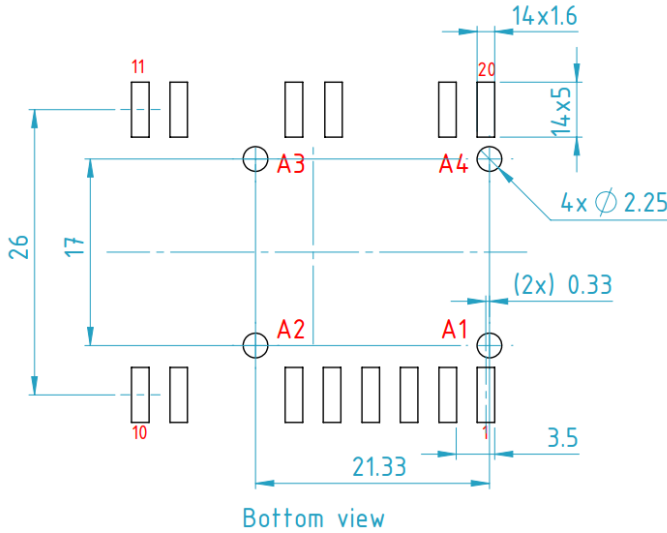
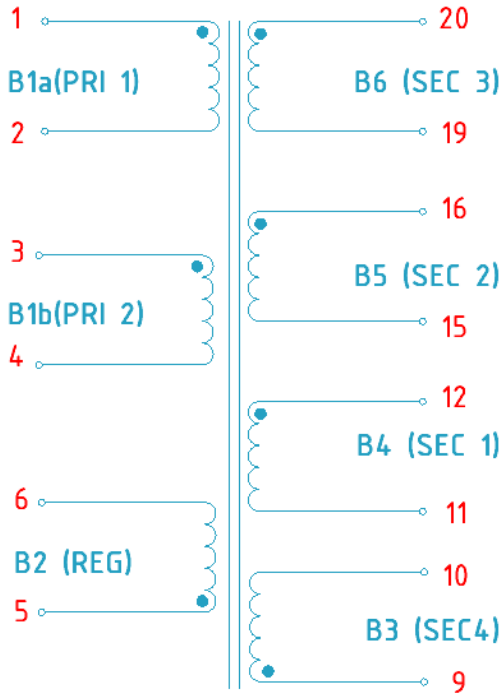

**t_p measured @ T_{peak}-5°C


The reflow profile stated is a non-binding recommendation with just main parameters and time periods. For detailed specification and remarks regarding reflow soldering requirements, please refer to Premo document: *PREMO_reflow_recommendations* specification file in its latest version update.

DIMENSIONS: mm

TECHNICAL SPECIFICATION



| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|---|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 6/ 8 |
| <h3>3.2- Recommended Pad Layout</h3>  <p>Bottom view</p> <p>Pin #1 and #3 must be shorted in PCB. Pin #2 and #4 must be shorted in PCB.</p> | | | | | | |
| <h3>4- Electrical Diagram</h3>  | | | | | | |
| DIMENSIONS: mm | | | TECHNICAL SPECIFICATION | | |  |

| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|--------------|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 7/ 8 |

5- Raw Materials

| | | |
|----------|--|---|
| CORE | Format | EFD30 Custom |
| | Material | Low-loss high-temperature stability Mn-Zn ferrite – Curie temperature > 215°C |
| BOBBIN | Format | EFD30 custom |
| | Material | Phenolic (PM9630) class F/155°C UL Cu pins, Sn plated |
| WIRES | B1, B2, B3, B4, B5, B6 | TRIPLE INSULATION WIRE/ Thermal class F/155°C |
| TAPE | Adhesive polyimide tape Thermal class H/180°C – UL | |
| ADHESIVE | Epoxy glue | |
| COVER | Metal Clamp | |

6- Marking

Marking is made by laser on the top of the component, with the minimum information as below:

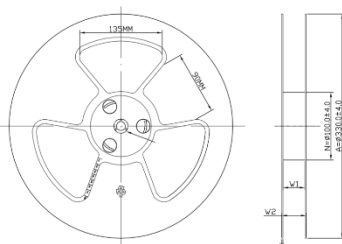
| | |
|----------|---|
| PREMO | ● |
| FLYT-004 | |
| YYMMDD | |

YY : YEAR
MM : MONTH
DD : DAY

7- Packaging

7.1 – Reel

L×W×H: 330×330×60. 50pcs/reel.



7.2 – Box

Reels placed in 355×355×63 SMD boxes.


4 SMD boxes placed in a 400×380×345 carton box.

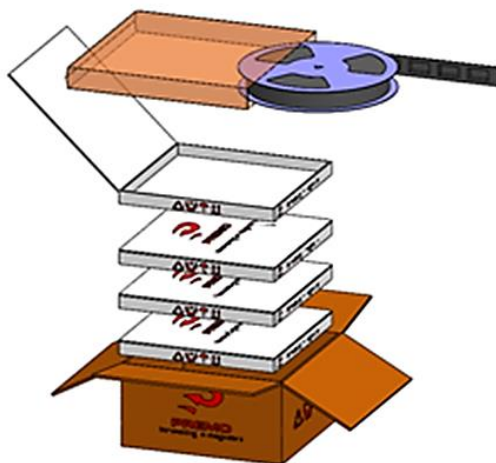
200 parts per carton box, weight less than 12 Kg

DIMENSIONS: mm

TECHNICAL SPECIFICATION

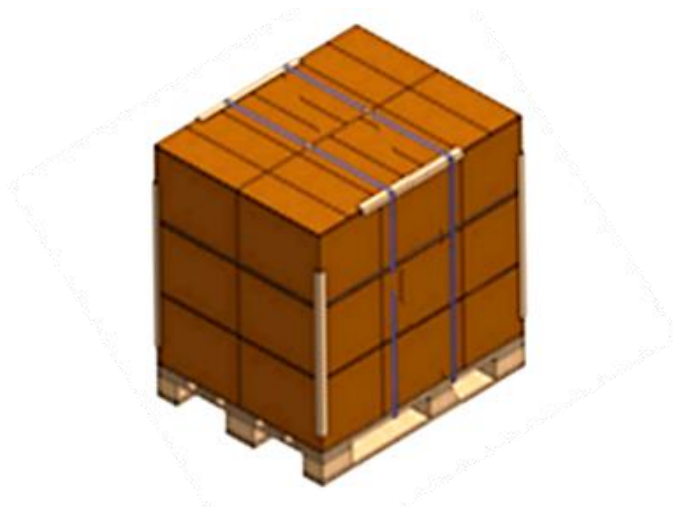


| | | | | | | |
|---|--------------------------|----------------|---|--------------------|--------------|--------------|
|  | Customer - | Customer Ref. | Description FLYBACK TRANSFORMER 17.5 μ H 2:1:1:1:1 | | | |
| | Project Ref. FLYT-004 | Prototype Ref. | Ordering Code FLYT-004 | Date 03/01/2024 | Edition 1 | Page 8/ 8 |



7.3 – Pallet

3600 parts in a European pallet
Max Pallet dimension (LxWxH): 1200×800×1200



8- Edition Control

| Edition | Changed by | Date | Change description |
|---------|------------|------------|----------------------|
| 1 | Madhu N | 03/01/2024 | Preliminary Edition. |

DIMENSIONS: mm

TECHNICAL SPECIFICATION

