



SMT flyback transformers

EFD series

Series/Type: **B82802A**
Date: October 2012

Construction

- EFD type ferrite core
- 10 gull wing terminals

Features

- Low profile SMT package with high through-put power capability
- Industry standard footprints
- Compliant with JEDEC J-STD-020D
- MSL level 1
- RoHS compatible
- Custom variations available (on request)

Applications

- General purpose isolated DC/DC converters (up to 55W)
- Power over Ethernet (PoE/12W and PoE +/30W) Powered Devices(PD) and Power Sourcing Equipment (PSD)

Marking

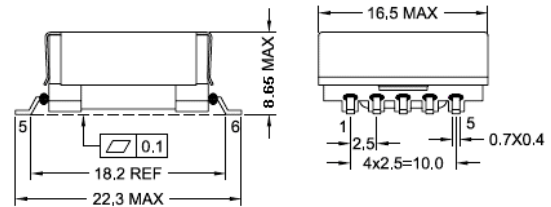
- Manufacturer, middle block of ordering code , date code, pin1 marker

Delivery mode and packing unit

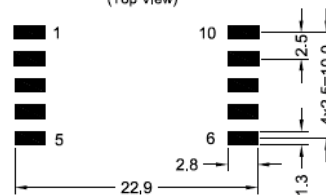
- 44/56-mm blister tape , 330-mm Ø reel
- Packing unit : 300 pcs./ reel (EFD15)
- Packing unit : 160 pcs./ reel (EFD20)
- Packing unit : 80 pcs./ reel (EFD25)

Dimensional drawing

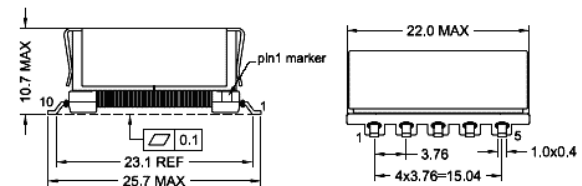
■ EFD15



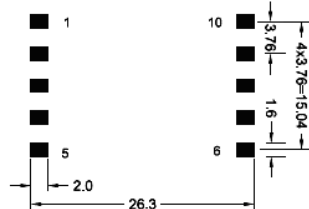
Recommended PCB Layout (Top View)



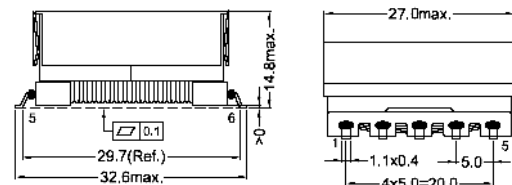
■ EFD20



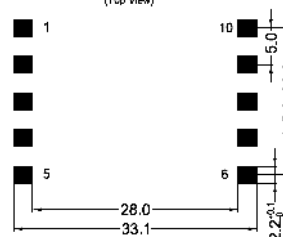
Recommended PCB Layout (Top View)



■ EFD25



Recommended PCB layout (Top View)



Schematic :

■ Figure 1

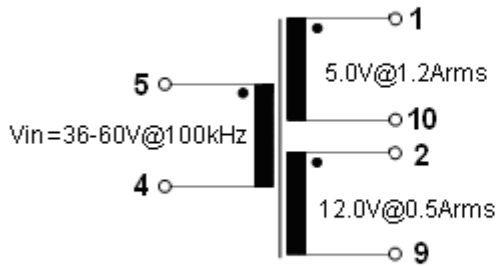
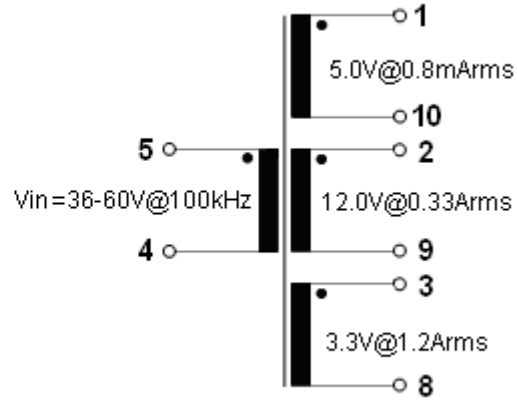


Figure 2



■ Figure 3

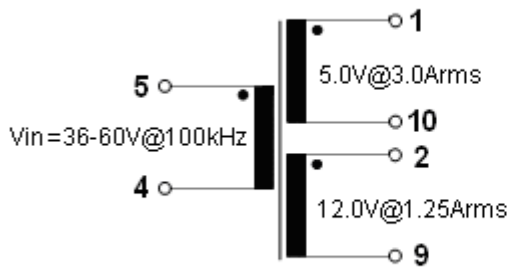
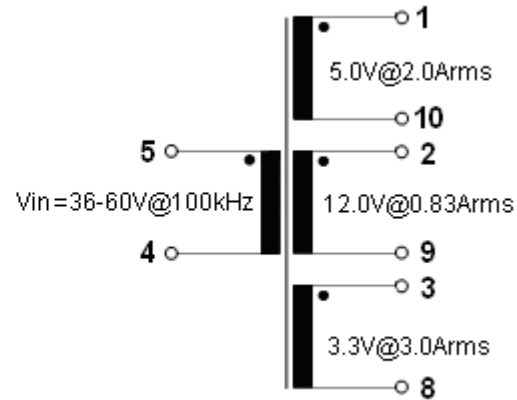


Figure 4



■ Figure 5

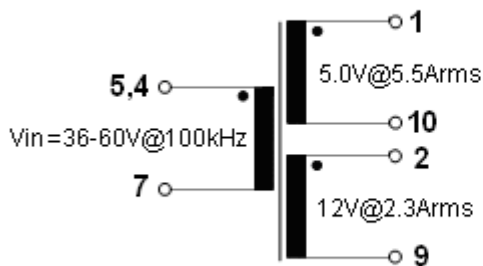
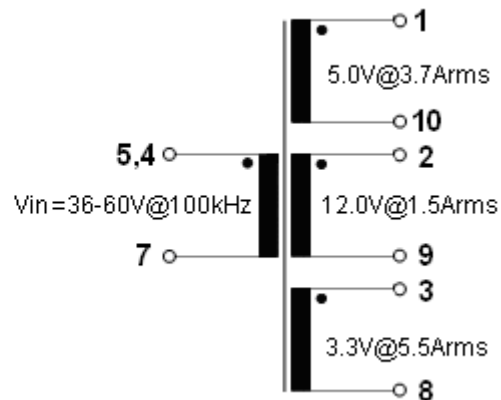


Figure 6



Technical data and measuring conditions

| | |
|-----------------------------|--|
| Input voltage V_{in} | 36 V DC ... 60 V DC |
| Test voltage V_{test} | 1500 V AC |
| Main inductance L | 100 kHz, 100 mV, +25 °C |
| Inductance tolerance | ±10% at +25 °C |
| DC current I_{DC} | With I_{DC} bias L_{drop} approx. 20% |
| Operating frequency f | 100 kHz |
| DC resistance R_{max} | Measured at +25 °C, maximum values (specified per winding) |
| Solderability | ≥99.9 Sn or Sn96.5Ag3.0Cu0.5: +(245± 5) °C, (3±0.3) s Wetting of soldering area: ≥95% (to IEC 60068-2-58) |
| Operating temperature range | -40°C ... +125°C |

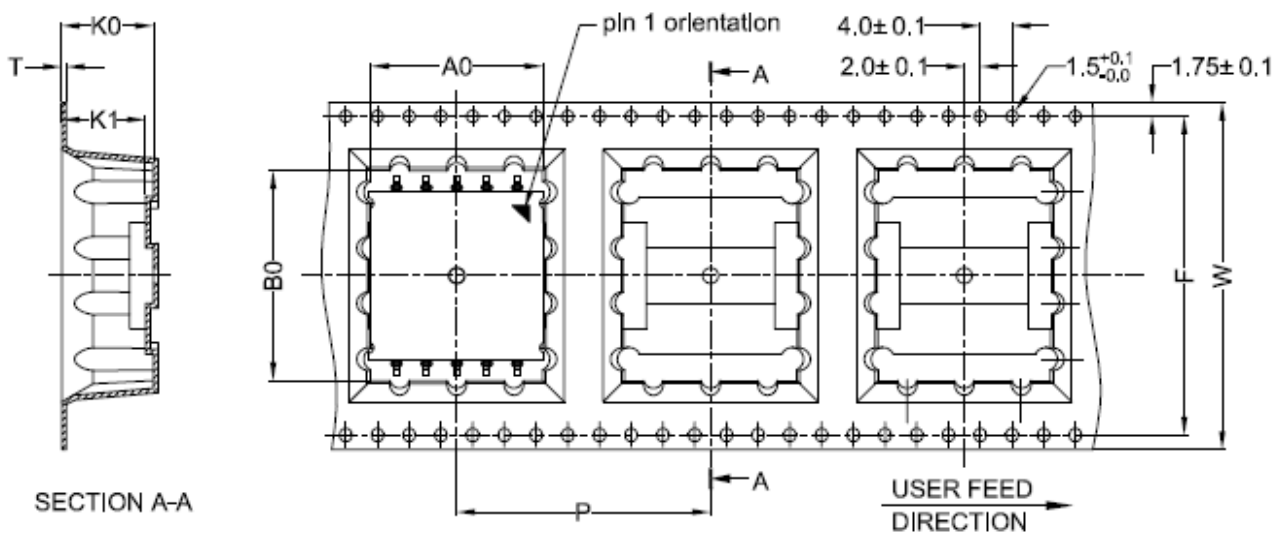
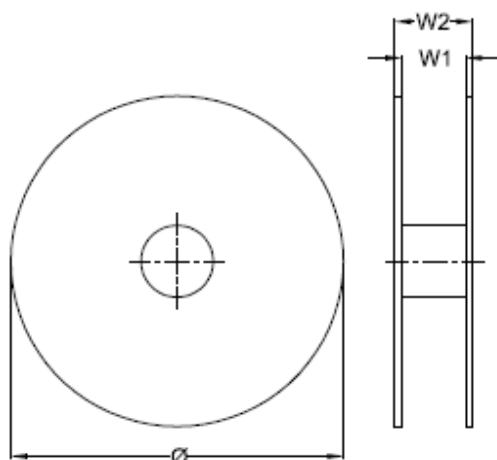
Characteristics and ordering codes

| Ordering code | Core | Schematic | L μH | $L_{stray,max}$ μH | Turns ratio | | DC resistance R_{max} (Ω) | | | |
|-----------------|-------|-----------|---------|-----------------------|--------------------------|------------------|-----------------------------|------------|------------|-------|
| | | | | | | | Pri | Sec | | |
| | | | | | | | V_{out1} | V_{out2} | V_{out3} | |
| B82802A0012A215 | EFD15 | Fig 1 | 100 | 3.0 | (1-10):(2-9):(5-4) | 1:2.25:6.5 | 0.03 | 0.19 | 0.45 | - |
| B82802A0012A315 | EFD15 | Fig 2 | 100 | 3.0 | (1-10):(2-9):(3-8):(5-4) | 1:2.5:0.75:7.5 | 0.05 | 0.37 | 0.43 | 0.03 |
| B82802A0030A220 | EFD20 | Fig 3 | 40 | 1.5 | (1-10):(2-9):(5-4) | 1:2.25:6.5 | 0.015 | 0.04 | 0.1 | - |
| B82802A0030A320 | EFD20 | Fig 4 | 40 | 1.8 | (1-10):(2-9):(3-8):(5-4) | 1:2.25:0.75:6.5 | 0.018 | 0.04 | 0.1 | 0.01 |
| B82802A0055A225 | EFD25 | Fig 5 | 22 | 1.5 | (1-10):(2-9):(5,4-7) | 1:2.5:7.5 | 0.003 | 0.04 | 0.03 | - |
| B82802A0055A325 | EFD25 | Fig 6 | 22 | 1.2 | (1-10):(2-9):(3-8):(5-4) | 1:2.33:0.66:6.67 | 0.015 | 0.04 | 0.05 | 0.003 |

| Ordering code | Core | Schematic | Power W | V_{out1} V/A | V_{out2} V/A | V_{out3} V/A |
|-----------------|-------|-----------|------------|-------------------|-------------------|-------------------|
| B82802A0012A215 | EFD15 | Fig 1 | 12 | 12/0.5 | 5.0/1.2 | - |
| B82802A0012A315 | EFD15 | Fig 2 | 12 | 5.0/0.8 | 3.3/1.2 | 12/0.33 |
| B82802A0030A220 | EFD20 | Fig 3 | 30 | 12/1.25 | 5.0/3.0 | - |
| B82802A0030A320 | EFD20 | Fig 4 | 30 | 5.0/2.0 | 3.3/3.0 | 12/0.83 |
| B82802A0055A225 | EFD25 | Fig 5 | 55 | 12/2.3 | 5.0/5.5 | - |
| B82802A0055A325 | EFD25 | Fig 6 | 55 | 5.0/3.7 | 3.3/5.5 | 12/1.5 |

Taping and Packing

| Item | Core | Blister tape | | | | | | | | Reel | | |
|--------------|-------|--------------|-------|------|------|------|------|------|------|-------|------|-------|
| | | W | T | A0 | B0 | P | K0 | K1 | F | Φ | W1 | W2 |
| DIM. (mm) | EFD15 | 44.0 | 0.5 | 16.6 | 22.3 | 24.0 | 8.6 | 8.1 | 40.4 | 330.0 | 44.0 | 48.0 |
| | EFD20 | 44.0 | 0.6 | 21.7 | 26.6 | 32.0 | 11.6 | 10.6 | 40.4 | 330.0 | 44.0 | 48.0 |
| | EFD25 | 56.0 | 0.6 | 26.2 | 33.0 | 44.0 | 14.6 | 13.8 | 52.4 | 330.0 | 56.0 | 60.0 |
| Tolerance | | ±0.3 | ±0.05 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.5 | ±2.0 | ±0.15 |

Blister tape

Reel


Cautions and warnings

- Please note the recommendations in our Inductors data book (latest edition) and in the data sheets.
 - Particular attention should be paid to the derating curves given there.
 - The soldering conditions should also be observed. Temperatures quoted in relation to wave soldering refer to the pin, not the housing.
- If the components are to be washed varnished it is necessary to check whether the washing varnish agent that is used has a negative effect on the wire insulation, any plastics that are used, or on glued joints. In particular, it is possible for washing varnish agent residues to have a negative effect in the long-term on wire insulation
Washing processes may damage the product due to the possible static or cyclic mechanical loads (e.g. ultrasonic cleaning). They may cause cracks to develop on the product and its parts, which might lead to reduced reliability or lifetime.
- The following points must be observed if the components are potted in customer applications:
 - Many potting materials shrink as they harden. They therefore exert a pressure on the plastic housing or core. This pressure can have a deleterious effect on electrical properties, and in extreme cases can damage the core or plastic housing mechanically.
 - It is necessary to check whether the potting material used attacks or destroys the wire insulation, plastics or glue.
 - The effect of the potting material can change the high-frequency behaviour of the components.
- Ferrites are sensitive to direct impact. This can cause the core material to flake, or lead to breakage of the core.
- Even for customer-specific products, conclusive validation of the component in the circuit can only be carried out by the customer..

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