

## Features

- Power from 10 to 60 W
- Output voltage from 3.3 to 12 V
- Hi-Pot up to 1500 VAC
- Surface mount
- RoHS compliant\*

## Applications

- High efficiency PoE interface and DC/DC controllers
- PoE PD controllers
- Synchronous flyback converters

## PDC-FD Series – DC to DC Transformers

### General Specifications

Operating Temperature.....	-40 °C to +125 °C
Storage Temperature.....	-40 °C to 85 °C
Moisture Sensitivity Level.....	1

### Additional Information

Click these links for more information:



### Electrical Specifications @ 25 °C

Bourns Part Number	Primary Inductance		Leakage Inductance		DC Resistance @ 0.3 V		Turns Ratio @ 100 kHz, 0.1 V <sub>rms</sub> <sup>1</sup>		Hi-Pot	
PDC010-FD15A03S	(3-5) @ 100 kHz, 0.1 V <sub>rms</sub>	166.5 μH ±10 %	(3-5) Other terminals shorted @ 250 kHz, 0.1 V <sub>rms</sub>	2.5 μH max.	(1-2)	720 mΩ max.	(3-5:2-1)	2 ±2 %	(2,3-8,11,12) @ 2 mA, 1 sec.	1500 VAC ref.
					(3-5)	765 mΩ max.	(3-5:8-7)	3.7 ±2 %		
			(7-8) Secondary terminals shorted @ 250 kHz, 0.1 V <sub>rms</sub>	0.4 μH max.	(7-8)	380 mΩ max.	(3-5:11-9)	6.5 ±2 %		
					(9&10-11&12)	20 mΩ max.	(3-5:12-10)			
PDC015-FD15A05S	(1,2-3,4) @ 250 kHz, 0.1 V <sub>rms</sub>	95 μH ±10 %	(1,2-3,4) Other terminals shorted @ 100 kHz, 0.1 V <sub>rms</sub>	1.5 μH max.	(1,2-3,4)	230 mΩ max.	(1-3:2-4)	1.0 ±2 %	(1,2,5-10,11,12) @ 2 mA, 1 sec.	1500 VAC ref.
					(4-6)	375 mΩ max.	(1-3:5-6)	2.25 ±2 %		
					(7,8,9-10,11,12)	10 mΩ max.	(1-3:10-7,11-8,12-9)	5.4 ±2 %		
PDC020-FD15A12S	(3,4-5,6) @ 250 kHz, 0.1 V <sub>rms</sub>	200 μH ±10 %	(3,4-5,6) w/ (9,10-11,12 shorted) @ 250 kHz, 0.1 V <sub>rms</sub>	1.8 μH max.	(3,4-5,6)	200 mΩ max.	(3,4-5,6:2-1)	4.0 ±2 %	(2,3,4-8,11,12) @ 5 mA, 1 sec.	1500 VAC ref.
					(9,10-11,12)	35 mΩ max.	(3,4-5,6:7-8)	6.66 ±2 %		
			(3,4-5,6) w/ (7-8 shorted) @ 250 kHz, 0.1 V <sub>rms</sub>	5.8 μH max.	(1-2)	250 mΩ max.	(3,4-5,6:12,11-9,10)	4.0 ±2 %		
					(8-7)	160 mΩ max.				
PDC025-FD20A05S	1 - 3 (1,2 short 3,4 short) @ 250 kHz, 0.5 V <sub>rms</sub>	70 μH ±10 %	(1-3) w/ (1,2 short 3,4 short 5,6 short 7,8, 9,10,11,12 short) @ 250 kHz, 0.5 V <sub>rms</sub>	1.0 μH max.	(1-3) w/ (1,2 short 3,4 short)	70 mΩ max.	(1-3:5-6) w/ (1,2 short 3,4 short 7,8, 9 short 10,11,12 short)	2.444 ±5 %	(5-1) w/ (1,2 short 3,4 short 7,8, 9 short 10,11,12 short) @ 1mA, 2 sec.	1500 VAC ref.
					(12-7)	20 mΩ max.				
					(11-8)		310 mΩ max.			
					(10-9)					
					(5-6)					

<sup>1</sup> Turn ratio condition of PDC025-FD20A05S is 250 kHz, 0.5 V<sub>rms</sub>, other part numbers are 100 kHz, 0.1 V<sub>rms</sub>

(Continued)



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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# PDC-FD Series – DC to DC Transformers

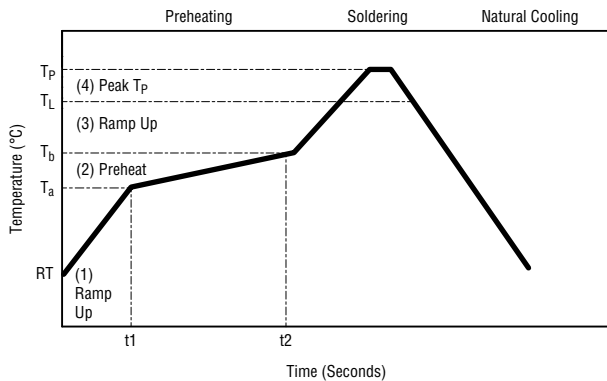
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## Electrical Specifications @ 25 °C (continued)

Bourns Part Number	Primary Inductance		Leakage Inductance		DC Resistance @ 0.3 V		Turns Ratio @ 100 kHz, 0.1 V <sub>rms</sub> <sup>1</sup>		Hi-Pot	
PDC025-FD20A12S	(3,4-5,6) @ 250 kHz, 0.1 V <sub>rms</sub>	75 μH ±10 %	(3,4-5,6) w/ (9,10,11,12 shorted) @ 250 kHz, 0.1 V <sub>rms</sub>	0.76 μH max.	(3,4-5,6)	77 mΩ max.	(3,4-5,6:12,11-9,10)	4.0 ±2 %	(2,3,4-8,11,12) @ 5 mA, 2 sec.	1500 VAC ref.
					(9,10-11,12)	9.8 mΩ max.	(3,4-5,6:2-1)	4.0 ±2 %		
					(1-2)	96 mΩ max.	(3,4-5,6:8-7)	6.66 ±2 %		
					(8-7)	70 mΩ max.				
PDC060-FD20A12S	(1,2-3,4) @ 200 kHz, 1.0 V <sub>rms</sub>	20.5 μH ±5 %	(1,2-3,4) w/ (5,6,7,8,9,10,11,12 shorted) @ 100 kHz, 1.0 V <sub>rms</sub>	1.0 μH max.	(1,2-3,4)	45 mΩ max.	(1,2-3,4:10,11,12-7,8,9)	2.67 ±5 %	(1,2,5-10,11,12) @ 1 mA, 2 sec.	
					(10,11,12-7,8,9)	12 mΩ max.	(1,2-3,4:10,11,12-7,8,9)	2.28 ±5 %		
					(5-6)	250 mΩ max.				

<sup>1</sup> Turn ratio condition of PDC025-FD20A05S is 250 kHz, 0.5 V<sub>rms</sub>, other part numbers are 100 kHz, 0.1 V<sub>rms</sub>

## Solder Profile



IR Reflow Profile		Pb-Free Assembly
Step #	Profile Feature	Condition / Duration
Step 1	Ramp Up Rate	3 °C / second max.
Step 2	Preheat 150 °C to 200 °C ( $T_a$ to $T_b$ )	t1-t2: 60-120 seconds
Step 3	Ramp Up Rate ( $T_l$ to $T_p$ )	3 °C / second max.
	Temperature Maintained Above 217 °C	60-150 seconds
Step 4	Peak Temperature ( $T_p$ )	260 +0/-5 °C
	Time Within 5 °C of Actual Peak Temperature	30 seconds max.
Ramp Down Rate ( $T_p$ to $T_l$ )		6 °C/second max.

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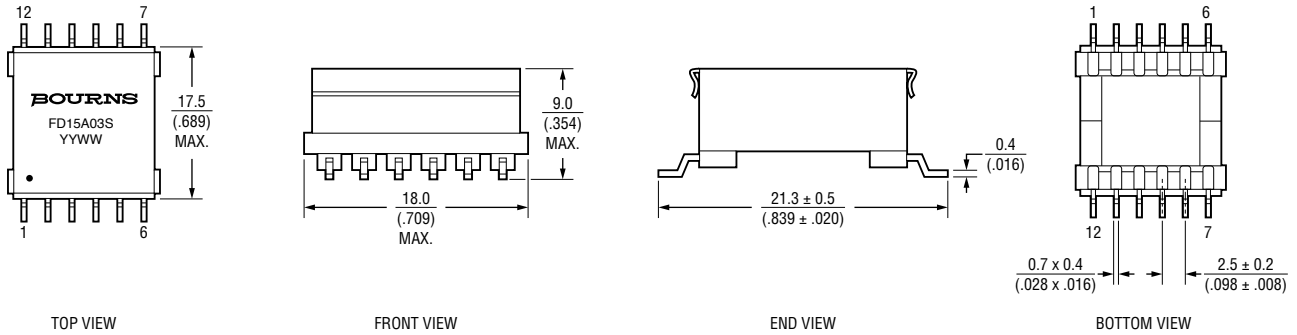
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# PDC-FD Series – DC to DC Transformers

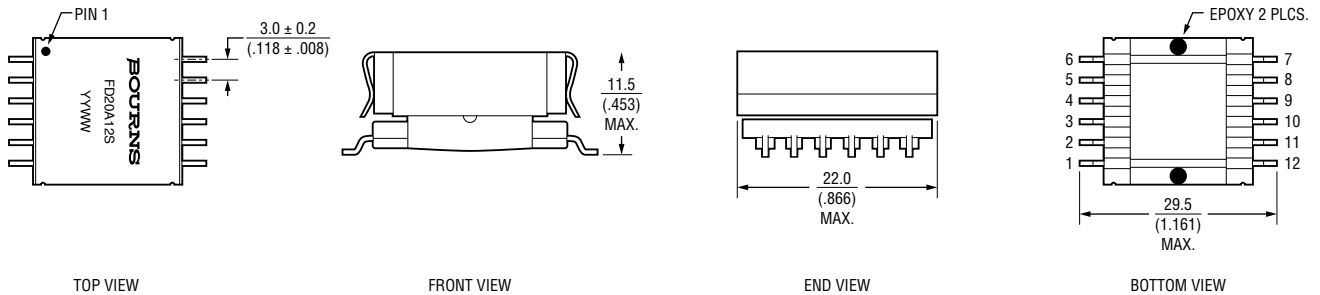
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## Product Dimensions

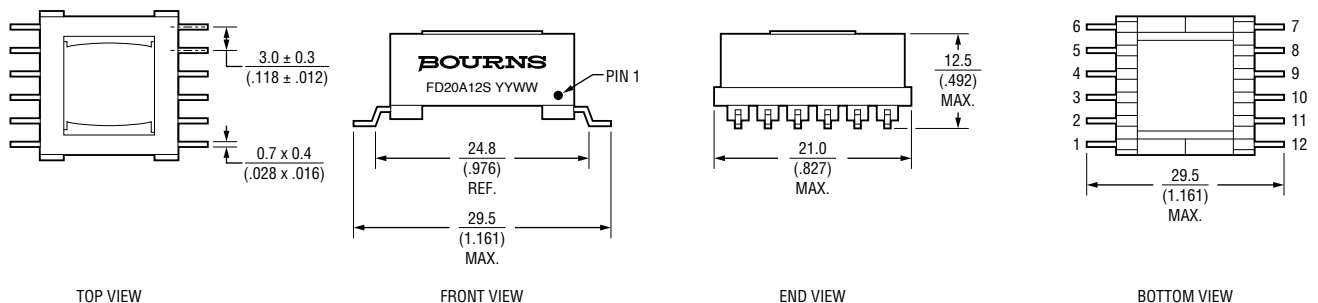
### PDC010-FD15A03S, PDC015-FD15A05S, PDC020-FD15A12S



### PDC025-FD20A05S, PDC025-FD20A12S



### PDC060-FD20A12S



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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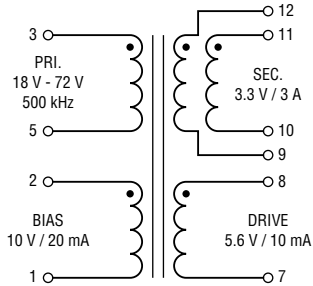
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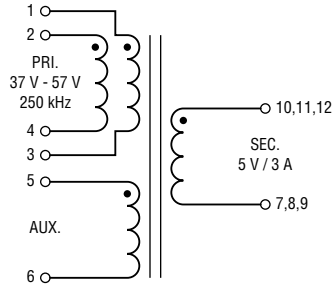


## Electrical Schematics

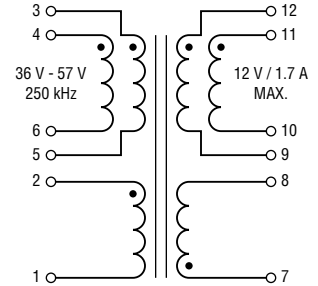
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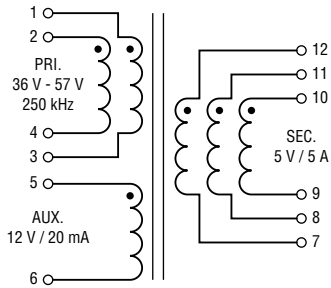
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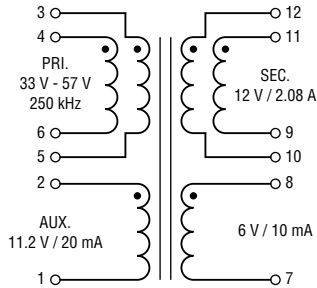
**PDC020-FD15A12S**



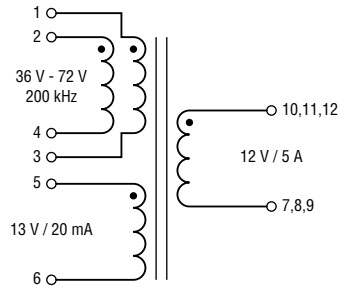
**PDC025-FD20A05S**



**PDC025-FD20A12S**

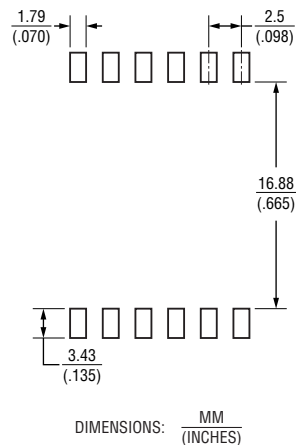


**PDC060-FD20A12S**

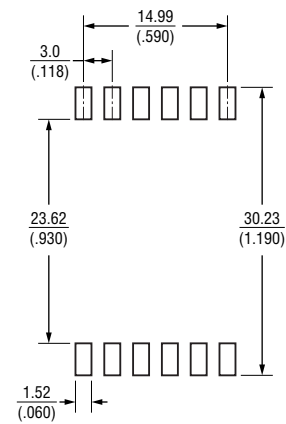


## Recommended Layout

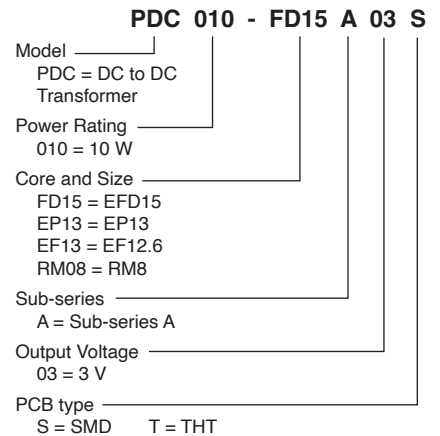
**PDC010-FD15A03S, PDC015-FD15A05S, PDC020-FD15A12S**



**PDC025-FD20A05S, PDC025-FD20A12S, PDC060-FD20A12S**



## How To Order



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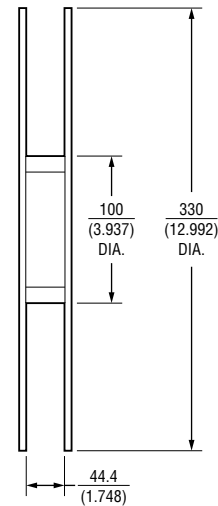
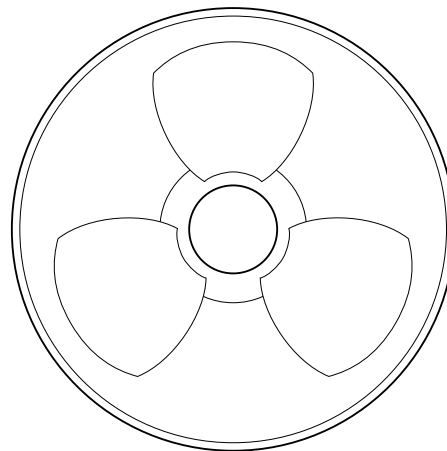
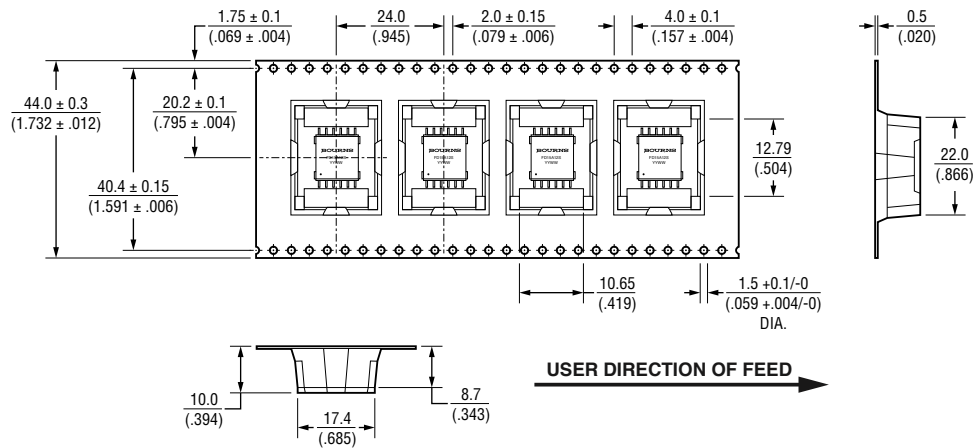
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# PDC-FD Series – DC to DC Transformers

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## Packaging Specifications

PDC010-FD15A03S, PDC015-FD15A05S, PDC020-FD15A12S: 200 pcs./reel, 2 reels/carton, 400 pcs.



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

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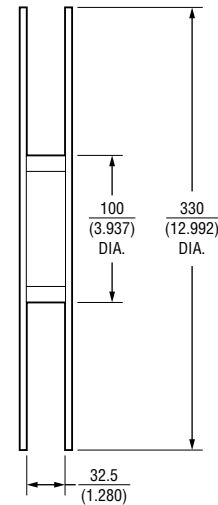
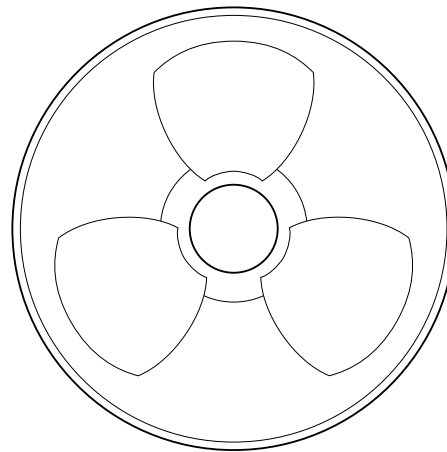
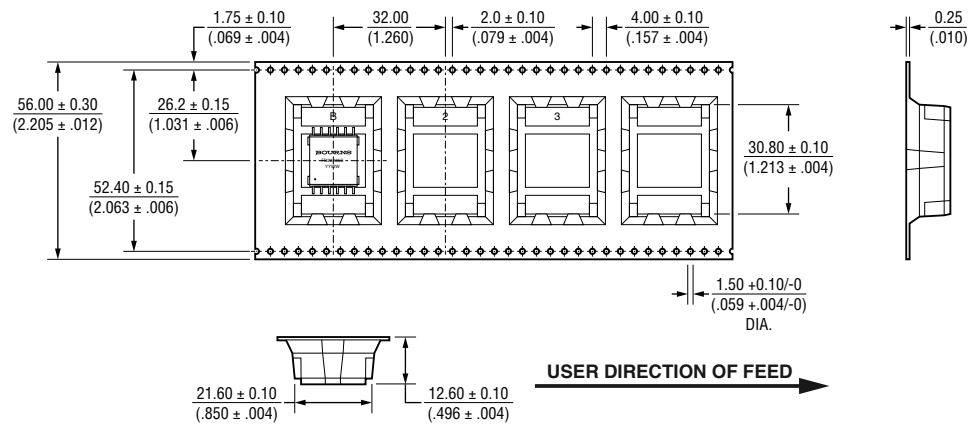
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# PDC-FD Series – DC to DC Transformers

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## Packaging Specifications

PDC025-FD20A05S, PDC025-FD20A12S: 150 pcs./reel, 2 reels/carton, 300 pcs.



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

PDC060-FD20A12S: 40 pcs./tray, 4 trays/inner box, 6 inner boxes/carton, 960 pcs.

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