EP Style Transformer

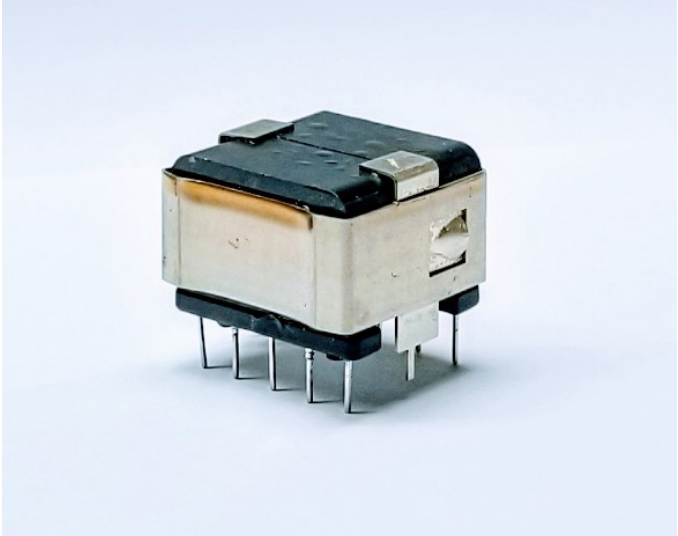
The EP style transformers are dense cubical geometries that provide excellent shielding. These transformers are optimized for applications where the circuit board space is at a premium. The EP geometries compact design and good power density allows it to be used in many wideband transformer applications.

Power vs. Operating Frequency[1,2]

EP Type	Transformer Finished Size			WaAc	20kHz	50kHz	100kHz	250kHz	500kHz
	Length (mm)	Width (mm)	Height (mm)	(cm^4)	(watts)	(watts)	(watts)	(watts)	(watts)
EP10	14.0	13.0	12.0	.013	1	2	2	5	7
EP13	15.9	15.9	13.9	.027	2	3	5	9	14
EP17	21.3	20.3	16.3	.061	5	8	11	22	32
EP20	27.4	25.4	20.7	.317	26	43	60	116	166

Values are for Through-hole Coilforms

The EP series is definded by its cubical shape and shielded windings. Since the winding is mostly surrounded by the core, except on the bottom, the winding is efficiently shielded from other components that are in close proximity when placed on a very densely crowded board. The EP style has coil formers that have many pins for each size. This allows this geometry to be adapted to transformers that require multiple outputs. The EP coilforms come in both SMD and Through-hole styles and have a system of clips and caps to hold and secure the cores to the bobbins.



A_L Values for Common Cores

EP Type	Mag R	Mag P	Mag F	FC 3C90	FC 3C91	FC 3C94	FC 3C96	FC 3F3	TDK PC47	TSC7070
EP10	780	850	1200	1140	1200	1140	1000	1000	800	1080
EP13	1150	1250	2000	1650	1700	1650	1500	1325	1100	1590
EP17	1790	1950	3100	2500	2670	2500	2200	2200	1840	2655
EP20	3170	3450	5000	4435	4900	4435	3850	3550	3200	N/A

A_L values are for ungapped cores and are +/- 25%, measured in nH/T2

EP Style Transformer

The EP style geometry consists of a high throughput power density in a dense cubical shape. The dimensions are optimized to reduce the footprint on crowded circuit boards and at the same time shield the transformer windings from nearby components in a crowded and tightly spaced board.

Technical Data (Through-hole)

EP Type	Ve	Ae/Ac	Le	Wa	WaAc	Bobbin Wind	Bobbin Wind	Mean Length
	(mm^3)	(mm^2)	(mm)	(mm^2)	(cm^4)	Width (mm)	Height (mm)	Turn (mm)
EP10	215	11.3	19.3	11.4	0.013	5.6	2.1	21.5
EP13	472	19.5	24.2	13.6	0.027	7.6	1.8	23.8
EP17	999	33.7	29.5	18.0	0.061	9.4	2.3	28.9
EP20	3230	78.7	41.1	40.3	0.317	12.4	3.0	39.4

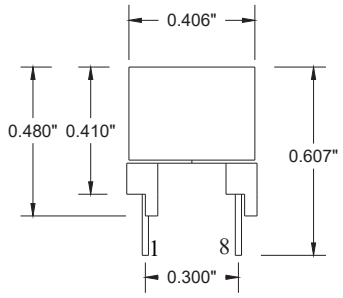
Some manufacturer's core values are slightly different. Check mfg data sheets for exact values.

1. Selection of core size is typically done by evaluating the WaAc (Product of core and window area). This value is used along with some industry recognized formulas developed in A.I. Pressman's book "Switching Power Supply Design". Along with this equation, assumptions of several parameters are usually made to help narrow the core selection.
For this evaluation, the most efficient method of operation is assumed, push-pull square wave. Assuming a Core loss to be approximately 100mW/cm^3. Bmax (flux density) is selected as such: @20kHz - 2000 gauss, @50kHz - 1300 gauss, @100kHz - 900 gauss, @250kHz - 700, @500kHz - 500 gauss.
2. The power handling capabilities are for push-pull topologies. Typically for flyback topologies these values must be de-rated by a factor of 3 or4. For feed-forward topologies de-rate by a factor of 2.

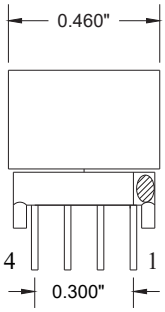
Schematics

EP Style Transformers

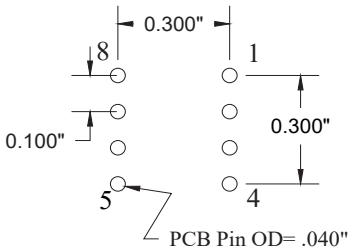
EP10
FRONT VIEW



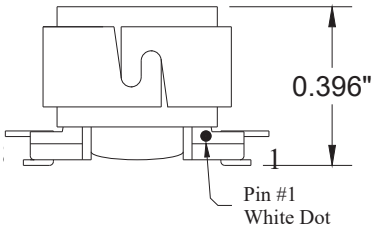
EP10
SIDE VIEW



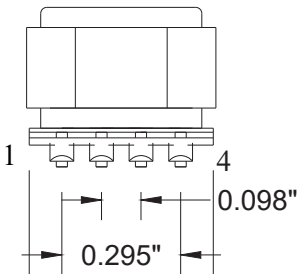
EP10
FOOTPRINT



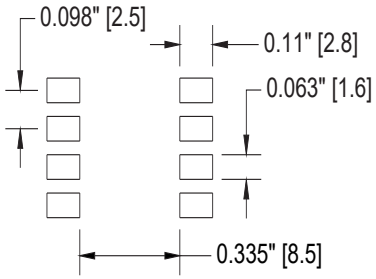
EP10
FRONT VIEW



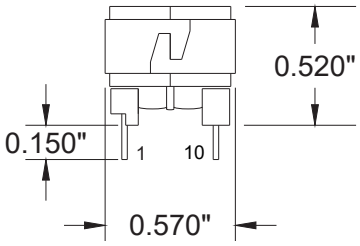
EP10
SIDE VIEW



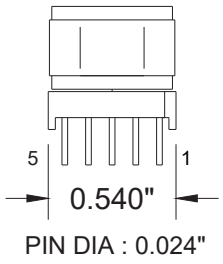
EP10
FOOTPRINT



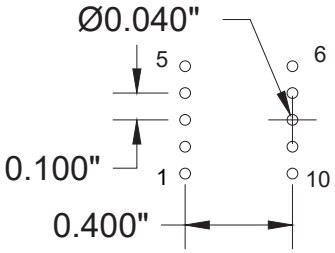
EP13
FRONT VIEW



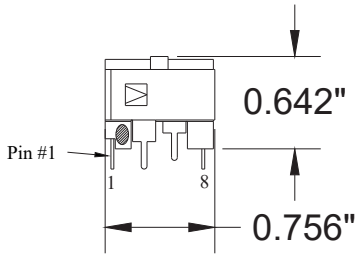
EP13
SIDE VIEW



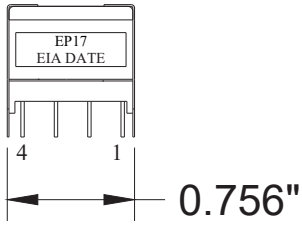
EP13
FOOTPRINT



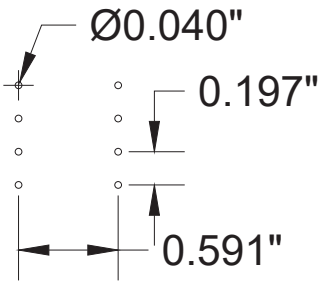
EP17
FRONT VIEW



EP17
SIDE VIEW



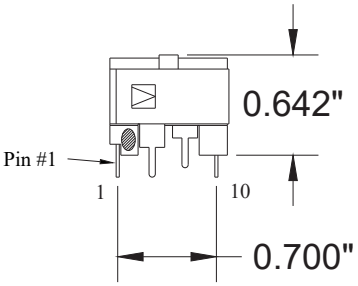
EP17
FOOTPRINT



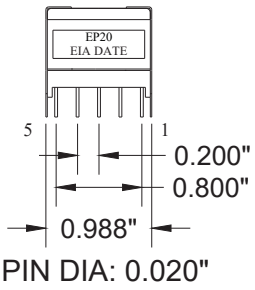
Schematics

EP Style Transformers (cont)

EP20
FRONT VIEW



EP20
SIDE VIEW



PIN DIA: 0.020"

EP20
FOOTPRINT