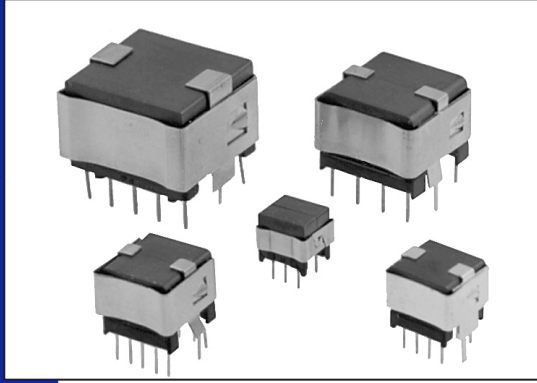


# SWITCH MODE TRANSFORMERS

## WCM 403 Series



### PRODUCT DESCRIPTION

West Coast Magnetics' 403 series transformers are ideal for switch mode power supply applications where very low emitted electromagnetic radiation is a priority. This type of transformer is also used in broadband small signal transmission applications. The cubic shape of the 403 series core and bobbin provides exceptional shielding and facilitates high PCB packing densities.

### FEATURES - BENEFITS



Very low EMI • High PCB packing densities • Standard gapped cores from stock • Design assistance from West Coast Magnetics • Adaptable to UL, CSA, VDE safety agency requirements • SMD mounting available for small sizes

### DESIGN CONSTANTS

Size Code	SMD	$A_{ungapped}$	$A_{single\ gap}$	$A_e$ core area (mm <sup>2</sup> )	$l_e$ magnetic path length (mm)	$V_e$ core volume (mm <sup>3</sup> )	$W_a$ bobbin winding area (mm <sup>2</sup> )	$W_a A_c$ core area x winding area (mm <sup>4</sup> )	Bobbin window width (mm)	Bobbin window height (mm)	Mean length per turn (mm)
EP 7	Yes	750min	63	10.7	15.7	162	3.8	39	3.2	1.3	18.0
EP 10	Yes	750min	63	11.3	19.2	217	11.4	129	5.4	2.1	21.3
EP 13	Yes	1600±25%	100	19.5	24.2	472	13.8	269	7.4	1.9	23.8
EP 17	NA	2500±25%	100	33.7	28.5	966	18.8	637	9.3	2.0	28.7
EP 20	NA	4000±25%	160	78.7	39.8	3100	33.2	2590	11.9	2.8	40.8

### OUTPUT POWER VS FREQUENCY OF OPERATION (WATTS)

Size Code	25 kHz	50 kHz	100 kHz	250 kHz	500 kHz
EP 7	1.0	1.3	1.7	2.7	3.1
EP 10	2.9	3.9	5.1	8.0	9.0
EP 13	5.4	7.3	9.7	23.9	17.2
EP 17	11.6	15.4	20.4	31.9	35.9
EP 20	32.8	43.7	58.8	91.2	103.0

#### Power Curve Assumptions:

1. Push/Pull circuit topology
2. Bobbin Window area utilization = 40%
3. Flux density (B) chosen so that core losses at all frequencies are 100 mW/cm<sup>3</sup>.

#### Notes:

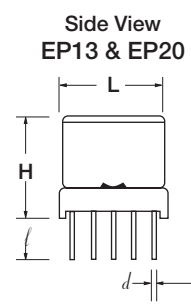
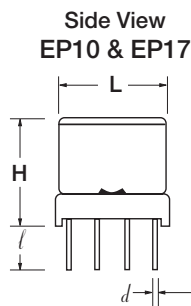
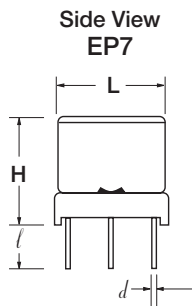
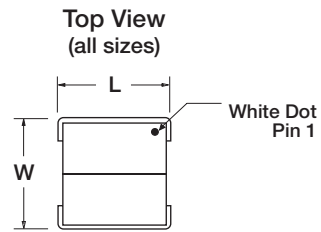
1. Reduce power rating in Table above by 50% for forward and flyback converter topologies.
2. Final sizing of the transformer will depend on a number of interrelated variables. The data in the above table should be considered a starting point only.
3. If safety agency is required, the final size may be significantly larger than the data in the table would indicate.



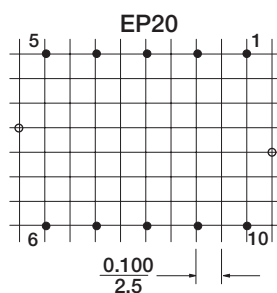
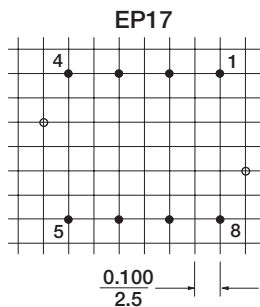
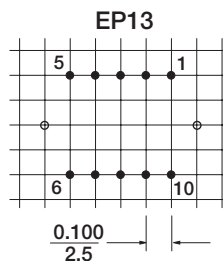
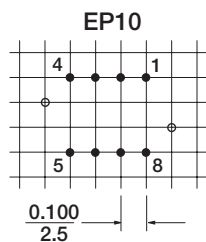
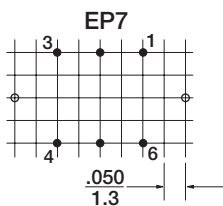
# SWITCH MODE TRANSFORMERS

## WCM 403 Series

Dimensions:  $\frac{\text{Inches}}$   
 $\text{mm}$



PCB Layouts  
 • Holes for bobbin  
 ○ Holes for clip pins



Note: This series can be supplied with or without mounting hardware. Mounting hardware clip pins are rectangular. Consult West Coast Magnetics for dimensions.

Note: L, W, H are maximum dimensions with mounting hardware.

Note:  $d$  is maximum diameter. This dimension may vary by 15%.

Note:  $l$  is nominal pin length. Allow for  $\pm 10\%$  variation in this dimension.

Size Code	L	W	H	$l$	$d$
EP7	<u>.485</u> 12.3	<u>.385</u> 9.8	<u>.413</u> 10.5	<u>1.22</u> 3.1	<u>.026</u> .66
EP10	<u>.550</u> 14.0	<u>.510</u> 13.0	<u>.470</u> 11.9	<u>.190</u> 4.8	<u>.026</u> .66
EP13	<u>.625</u> 15.9	<u>.625</u> 15.9	<u>.545</u> 13.8	<u>.210</u> 5.3	<u>.026</u> .66
EP17	<u>.840</u> 21.3	<u>.800</u> 20.3	<u>.640</u> 16.3	<u>.197</u> 5.0	<u>.026</u> .66
EP20	<u>1.080</u> 27.4	<u>1.000</u> 25.4	<u>.815</u> 20.7	<u>.197</u> 5.0	<u>.026</u> .66

Note: All materials of construction minimum Class B 130 degrees C rated.

