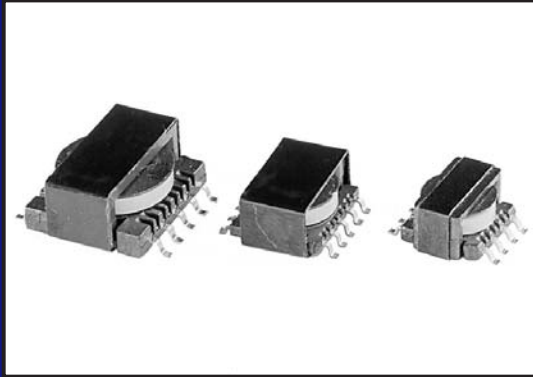


HIGH FREQUENCY TRANSFORMERS

WCM 401 Series



PRODUCT DESCRIPTION

West Coast Magnetics' 401 series high frequency transformers are intended for use in switch mode power supplies including push/pull, flyback, and forward converter circuits. Output power as high as 7 watts can be achieved in push/pull circuits. All sizes are based on low profile ER core geometry and all sizes are offered in surface mount packaging. West Coast Magnetics stocks core material which will accommodate a range of operating frequencies from 50 kHz to 3 MHz.

FEATURES - BENEFITS



- Low profile, surface mount core geometry
- Low loss material
- Operating frequency to 3 MHz
- Standard gapped cores available from stock
- Design assistance from West Coast Magnetics

DESIGN CONSTANTS

Size Code	A_l frequency > 500 kHz ^a	A_l frequency \leq 500 kHz ^a	A_l single gap	A_l double gap	A_e core area (mm ²)	l_e magnetic path length (mm)	V_e core volume (mm ³)	W_a bobbin winding area (mm ²)	$W_a A_c$ core area x winding area (mm ⁴)	Bobbin window width (mm)	Bobbin window height (mm)	Mean length per turn (mm)
ER 9.5	525	950	70	135	8.6	14.0	120	3.1	26.7	2.15	1.43	18
ER 11	725	1400	70	135	11.7	14.6	170	3.3	38.6	2.00	1.65	22
ER 14.5	—	1600	70	135	17.6	19.0	330	5.5	96.8	2.00	2.75	27

OUTPUT POWER VS. FREQUENCY OF OPERATION (WATTS)

Size Code	50 kHz	100 kHz	250 kHz	500 kHz	1000 kHz	2000 kHz	3000 kHz
ER 9.5	0.9	1.3	2.0	2.3	3.5	2.8	2.3
ER 11	1.3	1.8	2.8	3.1	4.8	3.9	3.2
ER 14.5	2.8	3.9	6.1	6.9	— not available —		

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/cm³.

a. A_l measured for ungapped cores. $nH/T^2 \pm 25\%$

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.
4. High frequency material (>500kHz) is available in ER 9.5 and ER 11 sizes only.

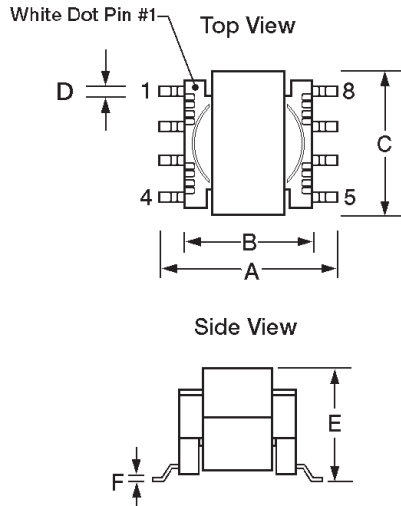


HIGH FREQUENCY TRANSFORMERS

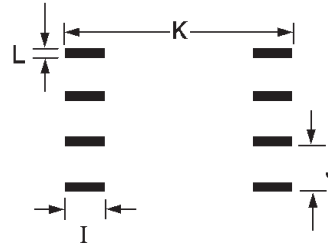
WCM 401 Series

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

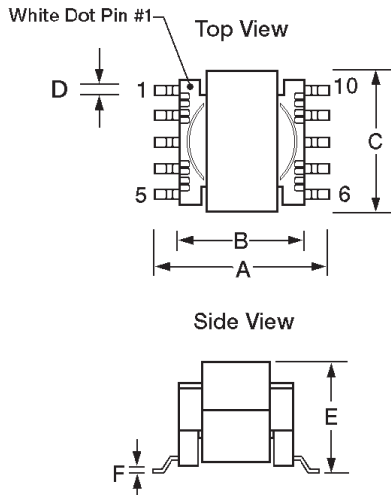
ER 9.5



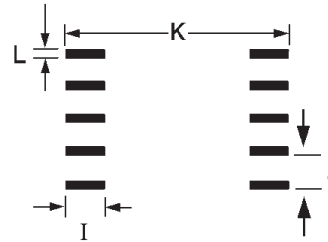
RECOMMENDED PCB PAD PATTERN



ER 11 & ER 14.5



RECOMMENDED PCB PAD PATTERN



Size Code	A	B	C	D	E	F	I	J	K	L
ER 9.5	$\frac{.457}{11.6}$	$\frac{.319}{8.1}$	$\frac{.395}{10.0}$	$\frac{.028}{0.7}$	$\frac{.240}{6.1}$	$\frac{.004}{0.1}$	$\frac{.079}{2.0}$	$\frac{.079}{2.0}$	$\frac{.535}{13.6}$	$\frac{.051}{1.3}$
ER 11	$\frac{.480}{12.2}$	$\frac{.362}{9.2}$	$\frac{.460}{11.7}$	$\frac{.028}{0.7}$	$\frac{.240}{6.1}$	$\frac{.004}{0.1}$	$\frac{.079}{2.0}$	$\frac{.079}{2.0}$	$\frac{.559}{14.2}$	$\frac{.051}{1.3}$
ER 14.5	$\frac{.630}{16.0}$	$\frac{.472}{12.0}$	$\frac{.600}{15.2}$	$\frac{.028}{0.7}$	$\frac{.295}{7.5}$	$\frac{.004}{0.1}$	$\frac{.079}{2.0}$	$\frac{.098}{2.5}$	$\frac{.708}{18.0}$	$\frac{.051}{1.3}$

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

