

KAW SERIES

30W WIDE INPUT RANGE

DANUBE

FEATURES

- 30W DIL PACKAGE
- INDUSTRY STANDARD PACKAGE
- 9-18V,18-36V,36-72V,9-36V,18-72V WIDE INPUT RANGE
- 100% BURN IN
- HIGH EFFICIENCY
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



OUTPUT SPECIFICATIONS

Voltage Set-point Accuracy		
Single Output		+/-2% max.
Dual Output		+/-2% max.
Triple	5V	+/-2% max.
	12V/15V	+/-5% max.
Over Voltage Protection		
Built-in		
Temperature Coefficient		
+/-0.05%/°C		
Ripple & Noise(20MHz BW) ²		
100mVp-p max.		
Line Regulation ³		
Single		+/-0.5% max.
Dual		+/-0.5% max.
Triple	5V	+/-0.5% max.
	12V/15V	+/-1.0% max.
Load Regulation ⁵		
Single		+/-0.5% max.
Dual		+/-0.5% max.
Triple		+/-5% max.
Minimum load		
10% of Full Load		
Short Circuit Protection		
Continuous		
Short Circuit Restart		
Automatic		
External Trim Adj. Range		
+/-10%		
Over Load Protection		
180% typ.		
Transient Response ⁶		
500uS max.		

INPUT SPECIFICATIONS

Input Voltage Range	2:1 or 4:1 Input Range
Input Filter	Pi Network
Protection	Fuse Recommended
Start up time (Nominal Input)	50ms max.

GENERAL SPECIFICATIONS

Efficiency	75% min.
Isolation Voltage ¹	1500 VDC min.
Isolation Resistance	10 ⁹ ohms min.
Isolation Capacitance	2500pF max.
Switching Frequency	100KHz min.
MTBF ⁴	>400,000 Hours
Weight	110g typ.
Case Material	Six-Side Shielded Case
Case Size	50.8mm*50.8mm*21mm
Potting Material	Epoxy(UL94V-0)
Radiated Emissions	EN55032 Class A

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40°C to +71°C
Storage Temperature	-55°C to +100°C
Case Temperature	+105°C max.
Humidity	95% max.
Cooling	Free-Air Convection

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD, AND 25 °C UNLESS OTHERWISE NOTED.

¹ For 10 seconds.

² Measured with 1uF ceramic capacitor connect to the output pins.

³ High Line to Low Line.

⁴ MIL-HDBK-217F @25 °C, Ground Benign.

⁵ Load Regulation is for output load current change from 10% to 100%.

⁶ 25% Step Load Change.

● SELECTION GUIDE(1) 2:1 25W-30W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁷ CURRENT(mA)		EFF (%) ⁸	CAPACITOR LOAD (Max.)
				FULL LOAD	NO LOAD		
KAWS-1205	9-18	5	5000	2604	40	80	2700uF
KAWS-1209	9-18	9	3333	2950	40	84	2200uF
KAWS-1212	9-18	12	2500	2950	40	84	1800uF
KAWS-1215	9-18	15	2000	2950	38	84	1500uF
KAWS-1224	9-18	24	1250	2941	36	85	1000uF
KAWD-1205	9-18	+/-5	+/-2500	2604	40	80	+/-1200uF
KAWD-1212	9-18	+/-12	+/-1250	3125	40	80	+/-820uF
KAWD-1215	9-18	+/-15	+/-1000	3125	38	80	+/-680uF
KAWT-12/0512	9-18	+5,+/-12	3500,+/-310	2598	55	80	2700uF,+/-820uF
KAWT-12/0515	9-18	+5,+/-15	3500,+/-250	2604	40	80	2700uF,+/-680uF
KAWS-2405	18-36	5	5000	1302	20	80	2700uF
KAWS-2409	18-36	9	3333	1470	20	85	2200uF
KAWS-2412	18-36	12	2500	1470	30	85	1800uF
KAWS-2415	18-36	15	2000	1470	30	85	1500uF
KAWS-2424	18-36	24	1250	1453	16	86	1000uF
KAWD-2405	18-36	+/-5	+/-2500	1302	20	80	+/-1200uF
KAWD-2412	18-36	+/-12	+/-1250	1470	18	85	+/-820uF
KAWD-2415	18-36	+/-15	+/-1000	1470	30	85	+/-680uF
KAWD-2424	18-36	+/-24	+/-625	1470	18	85	+/-560uF
KAWT-24/0512	18-36	+5,+/-12	3500,+/-310	1267	18	82	2700uF,+/-820uF
KAWT-24/0515	18-36	+5,+/-15	3500,+/-250	1270	18	82	2700uF,+/-680uF
KAWS-4805	36-72	5	5000	651	10	80	2700uF
KAWS-4809	36-72	9	3333	762	10	82	2200uF
KAWS-4812	36-72	12	2500	762	9	82	1800uF
KAWS-4815	36-72	15	2000	762	9	82	1500uF
KAWS-4824	36-72	24	1250	753	8	83	1000uF
KAWD-4805	36-72	+/-5	+/-2500	651	10	80	+/-1200uF
KAWD-4812	36-72	+/-12	+/-1250	762	9	82	+/-820uF
KAWD-4815	36-72	+/-15	+/-1000	762	9	82	+/-680uF
KAWT-48/0512	36-72	+5,+/-12	3500,+/-310	634	9	82	2700uF,+/-820uF
KAWT-48/0515	36-72	+5,+/-15	3500,+/-250	635	9	82	2700uF,+/-680uF

Note: Other input to output voltages may be available. Please contact factory.

⁷ NOMINAL INPUT VOLTAGE.

⁸ NOMINAL INPUT VOLTAGE, FULL LOAD.

● SELECTION GUIDE(2) 4:1 25W-30W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁹ CURRENT(mA)		EFF (%) ¹⁰	CAPACITOR LOAD (Max.)
				FULL LOAD	NO LOAD		
KAWS-1205T	9-36	5	5000	2604	40	80	2700uF
KAWS-1209T	9-36	9	3333	3182	40	79	2200uF
KAWS-1212T	9-36	12	2500	3100	40	81	1800uF
KAWS-1215T	9-36	15	2000	3100	38	81	1500uF
KAWS-1224T	9-36	24	1250	3100	36	81	1000uF
KAWD-1205T	9-36	+/-5	+/-2500	2604	40	80	+/-1200uF
KAWD-1212T	9-36	+/-12	+/-1250	3125	40	80	+/-820uF
KAWD-1215T	9-36	+/-15	+/-1000	3125	38	80	+/-680uF
KAWT-12/0512T	9-36	+5,+/-12	3500,+/-310	2598	40	80	2700uF,+/-820uF
KAWT-12/0515T	9-36	+5,+/-15	3500,+/-250	2604	40	80	2700uF,+/-680uF
KAWS-2405T	18-72	5	5000	1302	20	80	2700uF
KAWS-2412T	18-72	12	2500	1550	18	81	1800uF
KAWS-2415T	18-72	15	2000	1550	18	81	1500uF
KAWS-2424T	18-72	24	1250	1550	16	81	1000uF
KAWS-2430T	18-72	30	1000	1550	18	81	820uF
KAWD-2405T	18-72	+/-5	+/-2500	1302	20	80	+/-1200uF
KAWD-2412T	18-72	+/-12	+/-1250	1550	18	81	+/-820uF
KAWD-2415T	18-72	+/-15	+/-1000	1550	18	81	+/-680uF
KAWT-24/0512T	18-72	+5,+/-12	3500,+/-310	1267	18	80	2700uF,+/-820uF
KAWT-24/0515T	18-72	+5,+/-15	3500,+/-250	1270	18	82	2700uF,+/-680uF

Note: Other input to output voltages may be available. Please contact factory.

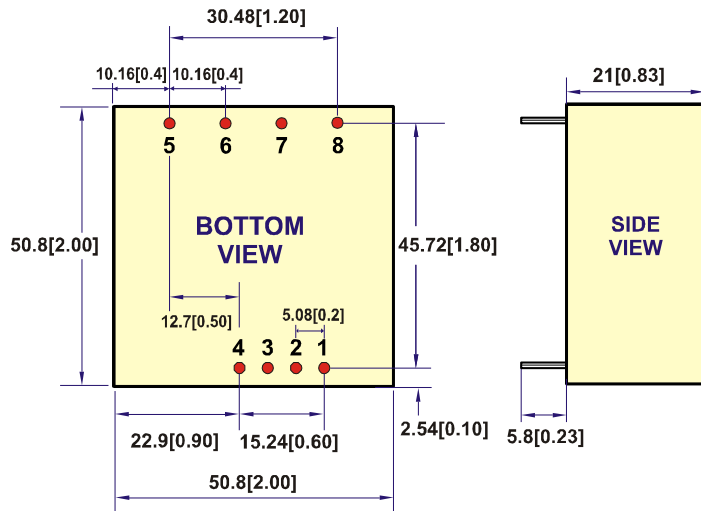
● PART NUMBERS STRUCTURE

Model Name	Difference
KAWv-x1x2x4-zzz KAWT-x1/x2x3x4-zzz	KA=Series Name W=Wide Input Range v=Type of output voltage (S=Single output ; D=Dual output) T=Triple output x1= Input voltage x2=Output voltage1 x3=Output voltage2 x4=Input Voltage Range (T=4:1) zzz= 0~9 , A~Z or blank for market purpose.

⁹ NOMINAL INPUT VOLTAGE.

¹⁰ NOMINAL INPUT VOLTAGE, FULL LOAD.

● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS



All dimensions are in millimeters[inches]

Note: **SINGLE OUTPUT for 24V: PIN 5 = NO PIN

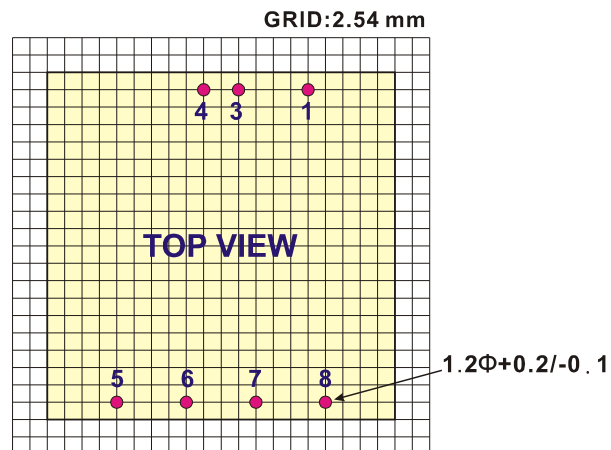
PIN	SINGLE	DUAL	TRIPLE
1	Remote On/Off		
2	NO PIN		
3	-Vin	-Vin	-Vin
4	+Vin	+Vin	+Vin
5	NC	+Vout	+Aux. out
6	+Vout	Common	+5V out
7	-Vout	-Vout	Common
8	TRIM	TRIM	-Aux. out

NOTE:

All dimensions are in millimeters [inches]

Pin Size is Tolerance 1.0Φ ±0.10mm

Tolerance .X or .XX= $\pm 0.8\text{mm}$

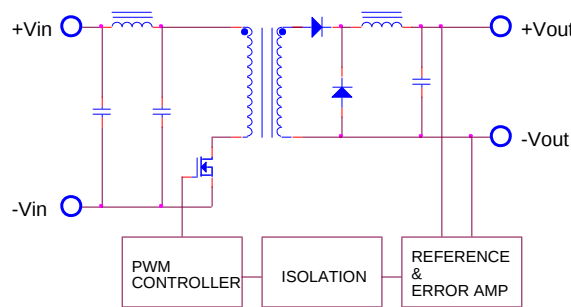


- **Table1 (Remote On/Off Control)**

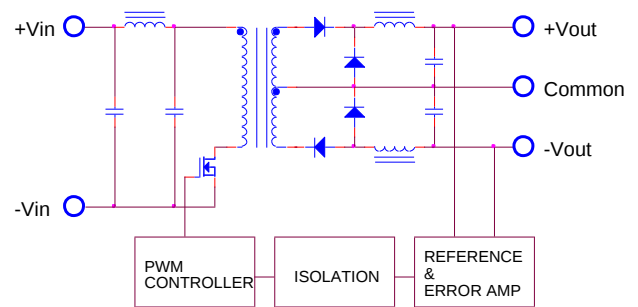
Remote On/Off Control			
Control Input		Control Common	
PIN1		PIN3	
Control Voltage		Converter Shutdown Idle Current	
		10mA	
ON	>+2.5VDC or Open Circuit	CMOS or Open	
OFF	<+0.8VDC or Jumper to PIN3	Logic Compatibility	
		Collector TTL	

● SIMPLIFIED SCHEMATIC

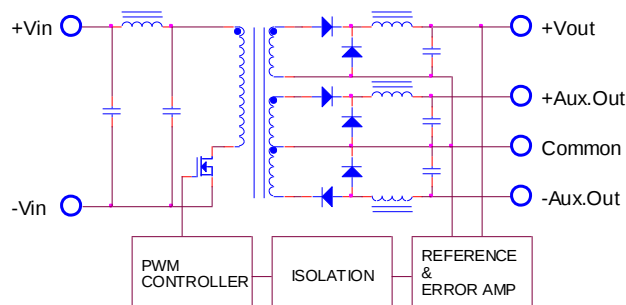
SINGLE OUTPUT



DUAL OUTPUT



TRIPLE OUTPUT

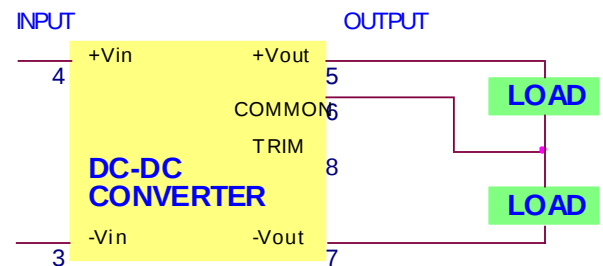
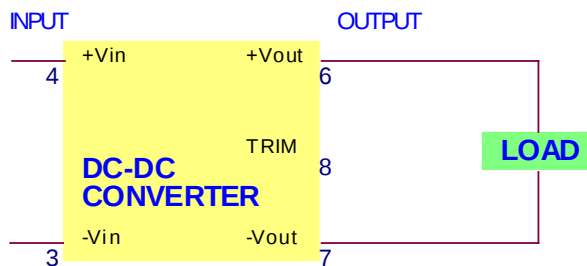


● TYPICAL APPLICATIONS

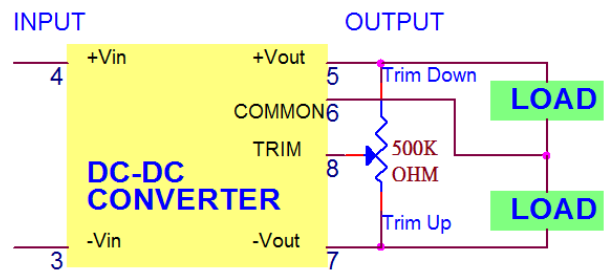
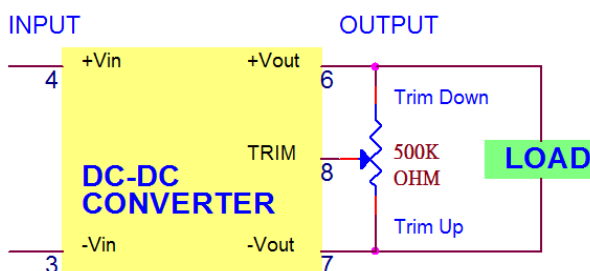
SINGLE OUTPUT

DUAL OUTPUT

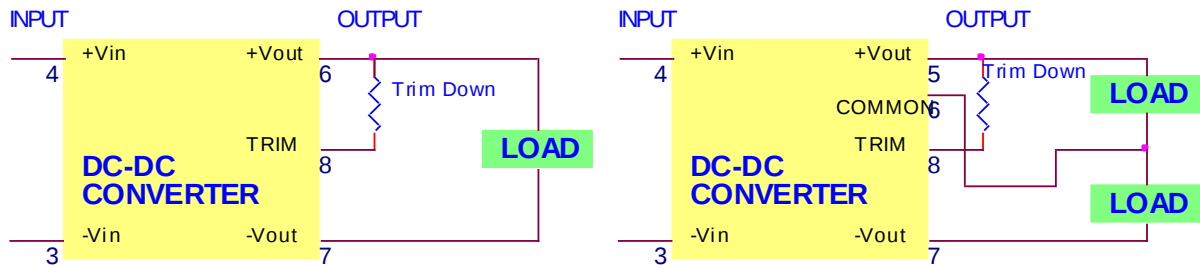
FIXED VOLTAGE OUTPUT



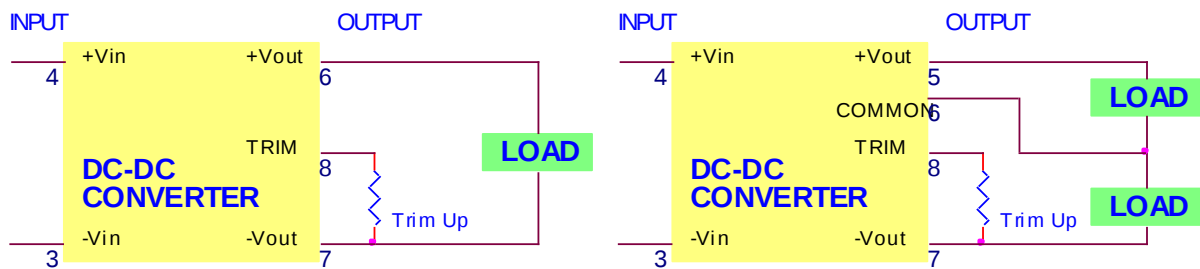
TRIM CONNECTIONS USING A TRIMPOT



FIXED-VALUE TRIM DOWN RESISTOR

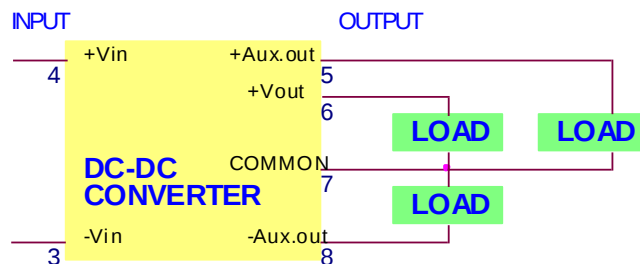


FIXED-VALUE TRIM UP RESISTOR



TRIPLE OUTPUT

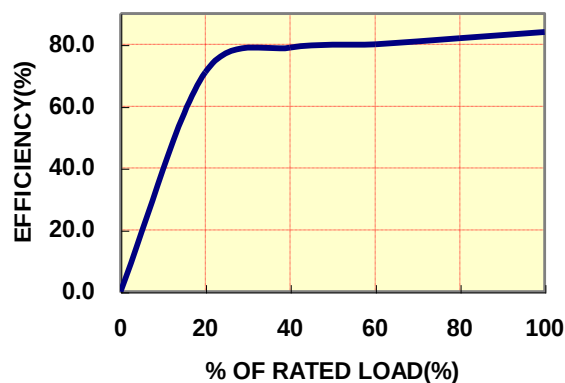
FIXED VOLTAGE OUTPUT



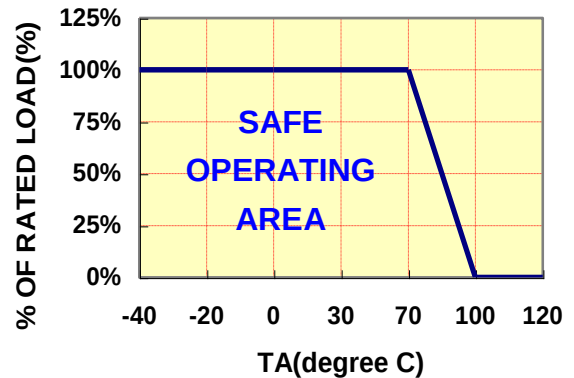
● TYPICAL PERFORMANCE CURVES

Specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage, rated output current unless otherwise specified.

OUTPUT LOAD VS EFFICIENCY



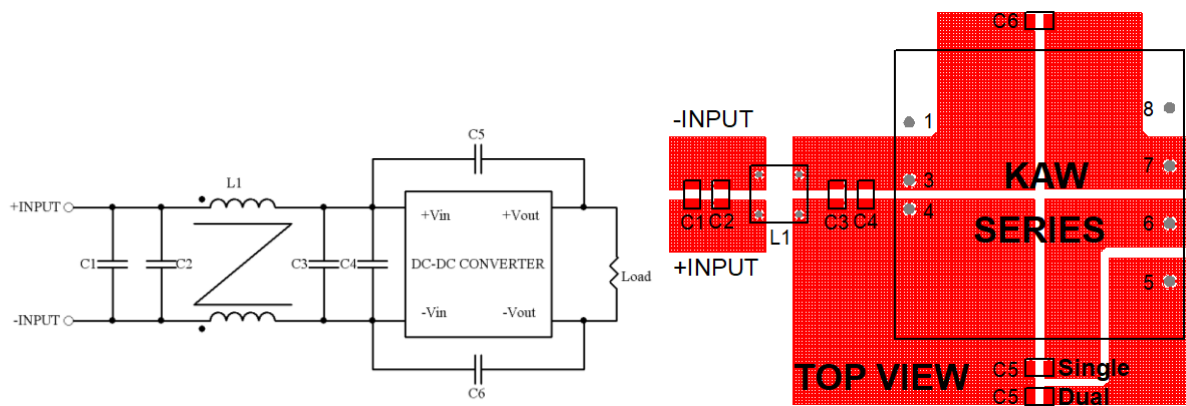
TEMPERATURE DERATING



● RECOMMENDED FILTER FOR EN55032 CLASS B

The components used in the above figure, together with the manufacture's part numbers for these components, are as follows :

	C1	C2	C3	C4	C5	C6	L1
KAWX-12XXX	4.7uF/50V 1210 MLCC	N/A	4.7uF/50V 1210 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	100uH Common Choke
KAWX-24XXX	4.7uF/50V 1210 MLCC	N/A	4.7uF/50V 1210 MLCC	N/A	1000pF/2KV MLCC	1000pF/2KV MLCC	100uH Common Choke
KAWX-48XXX	2.2uF/100V 1210 MLCC	2.2uF/100V 1210 MLCC	2.2uF/100V 1210 MLCC	2.2uF/100V 1210 MLCC	1000pF/2KV MLCC	1000pF/2KV MLCC	100uH Common Choke



RECOMMENDED EN55032 CLASS B FILTER CIRCUIT LAYOUT

● INPUT FUSE SELECTION GUIDE

9-18V or 9-36V INPUT VOLTAGE(VDC)	18-36V or 18-72V INPUT VOLTAGE(VDC)	36-72V INPUT VOLTAGE(VDC)
6000mA Slow-Blow Type	3000mA Slow-Blow Type	1500mA Slow-Blow Type

Note: Certain applications may require the installation of external fuse in front of the input.

KAW SERIES APPLICATION NOTES:

EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the KAW series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 220 KHz is required.

External output capacitance is not required for operation; however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting –OUT as the negative output.

Remote ON/OFF:

The remote ON/OFF pin may be left floating if this function is not use. It is recommended to drive this pin with an open collector arrangement or a relay contact. When the ON/OFF pin is pulled low with respect to the –Vin, the converter is placed in a low power drain state.

Output TRIM:

The TRIM pin may be used to adjust the output +/-10% from the nominal setting .this function allows adjustment for voltage drops in the system wiring. If the TRIM function is not required the pin may be left floating.

FOR MORE INFORMATION CALL:

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Home Page

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