

Thick Filmed DC-DC Converter Brochure

Contents

I. Anti-Surge DC-DC Converter	4
1.1 Features	4
1.2 Characteristics	4
1.3 Applications	4
1.4 Photos of Real Products	4
1.5 WTAx28S Series	5
1.6 WTAx28D Series	7
1.7 WTAx28T Series	9
1.8 PIN Definitions	9
II. Ultra-Small DC-DC Converter	12
2.1 Features	12
2.2 Characteristics	12
2.3 Applications	12
2.4 Photos of Real Products	12
2.5 WTUx28S Series	13
2.6 WTUx28D Series	15
2.7 PIN Definitions	16
III. High-Power DC-DC Converter	18
3.1 Features	18
3.2 Characteristics	18
3.3 Applications	18
3.4 Photos of Real Products	18
3.5 WTHZ28S Series	19
3.6 WTHZ28D Series	20
3.7 PIN Definitions	21
IV. Point of Load DC-DC Converter	22
4.1 Features	22
4.2 Characteristics	22
4.3 Applications	22
4.4 Photos of Real Products	22
4.5 Part Numbering	23
4.6 Product List	23
4.7 PIN Definitions	23

V. EMI Filter25

5.1 Features 25

5.2 Characteristics 25

5.3 Applications 25

5.4 Photos of Real Products 25

5.5 Part Numbering 26

5.6 Product List 27

5.7 PIN Definitions 28

I. Anti-Surge DC-DC Converter

1.1 Features

- Input voltage: 15~50V, nominal value: 28V
- Voltage Surge Protection Capability: 80V/1s
- Typical output voltage: 3.3V, 4.8V, 5V, 5.1V, 5.2V, 6V, 6.5V, 8V, 8.5V, 10V, 12V, 15V, 18V, 21V, 24V, 28V, $\pm 5V$, $\pm 8V$, $\pm 12V$, $\pm 15V$
- Output power: 1.5W, 2W, 5W, 6W, 7.5W, 10W, 15W, 15.3W, 15.6W, 18W, 20W, 30W, 35W, 37.4W, 40W
- Efficiency (full load): max. 85%
- Other functions: synchronous input, inhibition, self-resettable output short-circuit protection, input under-voltage protection (11~14V)

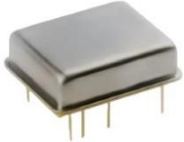
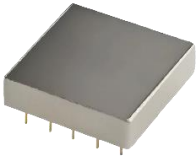
1.2 Characteristics

- Operating model: constant frequency control
- Thick filmed hybrid integration process, fully enclosed metal shell
- Mutual Isolated between input, output, and housing
- Circuit structure: single-ended flyback topology, optocoupler isolation feedback
- Fixed operating frequency (350~500kHz)
- MTBF: $\geq 2 \times 10^5$ h
- Compliant with VPT, INTERPOINT

1.3 Applications

Highly reliable electronic systems such as aviation and aerospace, as well as occasions where high ability to resist surge voltage required.

1.4 Photos of Real Products

Size (mm)	O	D	G	P
Photo				-
Non-Flanged	25.14*20.66*7.38	27.73*27.73*7.16	37.33*28.94*8.90	37.33*28.94*9.10
Flanged	-	39.00*27.73*7.16	51.30*28.94*8.90	51.30*28.94*9.10
Size (mm)	R	N	T	L
Photo			-	-
Non-Flanged	54.40*29.00*10.66	49.95*34.71*10.79	49.53*34.29*10.56	76.70*38.60*10.46
Flanged	74.00*29.00*10.66	69.95*34.71*10.79	-	-

1.5 WTAx28S Series

Part Numbering

W	T	A			-	28		S		
1	2	3	4	5		6	7	8	9	10

1		2		3		4			5	
Brand Name		Category		Series		Shape&Size			Output	
W	Wibbow	T	Thick Filmed	A	Anti-Surge Series	O	Non-Flanged (mm): 25.14*20.66*7.38	Flanged (mm): -	1W5	1.5W
						D	27.73*27.73*7.16	39.00*27.73*7.16	5	5W
						G	37.33*28.94*8.90	51.30*28.94*8.90	6	6W
						R	54.40*29.00*10.66	74.00*29.00*10.66	10	10W
									15	15W
									15W3	15.3W
									15W6	15.6W
									18	18W
									20	20W
									30	30W
									35	35W
									37W4	37.4W
									40	40W

6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
28	28V	None	Not	S	Single	3V3	3.3V	None	Non-Flanged
		F	Built-in Filter			4V8	4.8V	F	Flanged
						5	5V		
						5V1	5.1V		
						5V2	5.2V		
						6	6V		
						6V5	6.5V		
						8	8V		
						8V5	8.5V		
						10	10V		
						12	12V		
						15	15V		
						18	18V		
						21	21V		
						24	24V		
						28	28V		

Product List

Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant with		Filter
					VPT	Interpoint	
WTAO1W5-28S5	1.5	5	72	Non-Flanged: 11	DVCH2805S	MCH2805S	WTF0A8-28
WTAD5-28S5(F)	5	5	70	Non-Flanged: 19 Flanged: 24	DVSA2805S(F)	MSA2805S(F)	WTF1-28
WTAD6-28S6V5(F)	6	6.5	70		/	/	
WTAD5-28S8(F)	5	8	70		/	/	
WTAD6-28S12(F)	6	12	75		DVSA2812S(F)	MSA2812S(F)	
WTAD6-28S15(F)	6	15	75		DVSA2815S(F)	MSA2815S(F)	
WTAD6-28S28(F)	6	28	73		/	/	
WTAG10-28S3V3(F)	10	3.3	70	Non-Flanged: 31 Flanged: 34	DVHF283R3S(F)	MHF283R3S(F)	WTF1-28 WTF3-28
WTAG15-28S4V8(F)	15	4.8	75		/	/	
WTAG15-28S5(F)	15	5	75		DVHF2805S(F)	MHF2805S(F)	
WTAG15V3-28S5V1(F)	15.3	5.1	75		/	/	
WTAG15V6-28S5V2(F)	15.6	5.2	75		DVHF285R2(F)	MHF285R2(F)	
WTAG18-28S6(F)	18	6	76		/	/	
WTAG20-28S8(F)	20	8	79		DVHF2808S(F)	MHF2808S(F)	
WTAG20-28S12(F)	20	12	79		DVHF2812S(F)	MHF2812S(F)	
WTAG20-28S15(F)	20	15	80		DVHF2815S(F)	MHF2815S(F)	
WTAG20-28S18(F)	20	18	80		DVHF2818S(F)	MHF2818S(F)	
WTAG20-28S28(F)	20	28	83		DVHF2828S(F)	MHF2828S(F)	
WTAR30-28S5(F)	30	5	74	Non-Flanged: 47 Flanged: 55	DVTR2805S(F)	MTR2805S(F)	WTF4-28
WTAR30-28S5V1(F)	30	5.1	78		/	/	
WTAR35-28S8(F)	35	8	80		DVTR2808S(F)		
WTAR37V4-28S8V5(F)	37.4	8.5	80		/	/	
WTAR40-28S10(F)	40	10	82		/	/	
WTAR40-28S12(F)	40	12	85		DVTR2812S(F)	MTR2812S(F)	
WTAR40-28S15(F)	40	15	85		DVTR2815S(F)	MTR2815S(F)	
WTAR40-28S21(F)	40	21	82		/	/	
WTAR40-28S24(F)	40	24	82		/	/	
WTAR40-28S28(F)	40	28	82		DVTR2828S(F)	/	
WTAL40-28FS5	40	5 (up to 10% adjustable)	78	Non-Flanged: 70	/	FMTR2805S	Built-in Filter

1.6 WTAx28D Series

Part Numbering

W	T	A			-	28		D		
1	2	3	4	5		6	7	8	9	10

1		2		3		4			5	
Brand Name		Category		Series		Shape & Size			Output Power	
W	Wibbow	T	Thick Filmed	A	Anti-Surge Series	O D G R	Non-Flanged (mm):	Flanged (mm):	2	2W
							25.14*20.66*7.38	-	5	5W
							27.73*27.73*7.16	39.00*27.73*7.16	6	6W
							37.33*28.94*8.90	51.30*28.94*8.90	15	15W
							54.40*29.00*10.66	74.00*29.00*10.66	20	20W
									30	30W
									35	35W
				40	40W					

6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
28	28V	None F	Not Built-in Filter	D	Dual	5	±5V	None F	Non-Flanged Flanged
						8	±8V		
						12	±12V		
						15	±15V		

Product List

Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliable with		Filter
					VPT	Interpoint	
WTAO2-28D15	2	±15	72	Non-Flanged: 12	DVCH2815D	MCH2815D	WTF0A8-28
WTAD5-28D5(F)	5	±5	70	Non-Flanged: 19 Flanged: 24	DVSA2805D(F)	MSA2805D(F)	WTF1-28
WTAD6-28D12(F)	6	±12	74		DVSA2812D(F)	MSA2812D(F)	
WTAD6-28D15(F)	6	±15	75		DVSA2815D(F)	MSA2815D(F)	
WTAG15-28D5(F)	15	±5	76	Non-Flanged: 31 Flanged: 34	DVHF2805D(F)	MHF2805D(F)	WTF1-28 WTF3-28
WTAG20-28D12(F)	20	±12	82		DVHF2812D(F)	MHF2812D(F)	
WTAG20-28D15(F)	20	±15	83		DVHF2815D(F)	MHF2815D(F)	
WTAR30-28D5(F)	30	±5	73	Non-Flanged: 47 Flanged: 55	DVTR2805D(F)	MTR2805D(F)	WTF4-28
WTAR35-28D8(F)	35	±8	80		/	/	
WTAR40-28D12(F)	40	±12	82		DVTR2812D(F)	MTR2812D(F)	
WTAR40-28D15(F)	40	±15	83		DVTR2815D(F)	MTR2815D(F)	
WTAT40-28FD15	40	±15	75	Non-Flanged: 65	DVETR2815D	/	Built-in Filter

1.7 WTAx28T Series

Part Numbering

W	T	A			-	28		T		
1	2	3	4	5		6	7	8	9	10

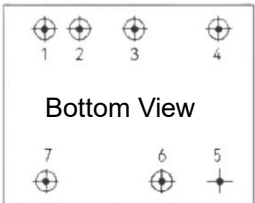
1		2		3		4			5	
Brand Name		Category		Series		Shape & Size			Output Power	
W	Wibbow	T	Thick Filmed	A	Anti-Surge Series	P	Non-Flanged (mm): 37.33*28.94*9.10		Flanged (mm): 51.30*28.94*9.10	
						N	49.95*34.71*10.79		69.09*34.71*10.79	
									7W5	7.5W/7.5W
									20	20W/20W

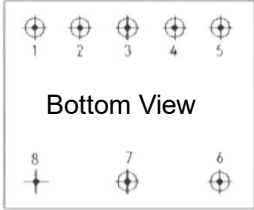
6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
28	28V	None	Not	T	Triple	512	5V/±12V	None	Non-Flanged
		F	Built-in Filter			515	5V/±15V	F	Flanged

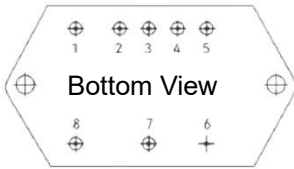
Product List

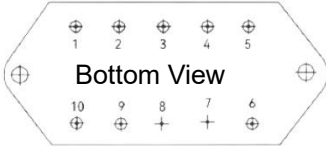
Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliable with		Filter
					VPT	Interpoint	
WTAP7W5-28T512(F)	7.5/7.5	5/±12	74	Non-Flanged: 31	DVHF28512T(F)	MHF28512T(F)	WTF1-28
WTAP7W5-28T515(F)	7.5/7.5	5/±15	74	Flanged: 34	DVHF28515T(F)	MHF28515T(F)	WTF3-28
WTAN20-28T512(F)	20/20	5/±12	73	Non-Flanged: 51	DVTR28512T(F)	MTR28512T(F)	WTF4-28
WTAN20-28T515(F)	20/20	5/±15	75	Flanged: 57	DVTR28515T(F)	MTR28515T(F)	

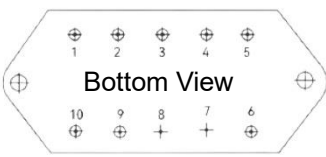
1.8 PIN Definitions

Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Positive Input	1	Positive Input
	2	Ground Input	2	Ground Input
	3	Positive Output	3	Positive Output
	4	Ground Output	4	Ground Output
	5	CASE Connection	5	CASE Connection
	6	N/C	6	Negative Output
	7	INHIBIT	7	INHIBIT

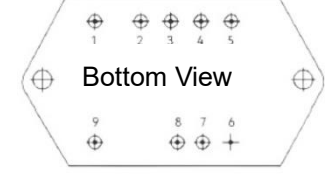
Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Positive Output	1	Positive Output
	2	Ground Output	2	Ground Output
	3	N/C	3	Negative Output
	4	N/C	4	N/C
	5	INHIBIT	5	INHIBIT
	6	Positive Input	6	Positive Input
	7	Ground Input	7	Ground Input
	8	CASE Connection	8	CASE Connection

Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	INHIBIT	1	INHIBIT
	2	N/C	2	Positive Output
	3	Ground Output	3	Ground Output
	4	Positive Output	4	Negative Output
	5	N/C	5	N/C
	6	CASE Connection	6	CASE Connection
	7	Ground Input	7	Ground Input
	8	Positive Input	8	Positive Input

Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Positive Input	1	Positive Input
	2	N/C	2	V _{O1} Output
	3	Positive Output	3	Ground Output
	4	Ground Output	4	V _{O2} Output
	5	Negative Output	5	V _{O3} Output
	6	N/C	6	CASE Connection
	7	CASE Connection	7	CASE Connection
	8	INHIBIT	8	INHIBIT
	9	N/C	9	External Synchronization
	10	Ground Input	10	Ground Input

Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Positive Input	1	Positive Input
	2	INHIBIT	2	INHIBIT
	3	Output Negative Terminal	3	Positive Output
	4	Ground Output	4	Ground Output
	5	Positive Output	5	Negative Output
	6	Output Positive Terminal	6	CASE Connection
	7	CASE Connection	7	CASE Connection
	8	CASE Connection	8	CASE Connection
	9	Synchronization Signal	9	Synchronization Signal
	10	Ground Input	10	Ground Input

Shape&Size	PIN	Function (Single Output)
 Bottom View	1	Synchronization Input
	2	Ground Connection for INHIBIT and Synchronization
	3	Ground Output for Filter
	4	Positive Output for Filter
	5	INHIBIT
	6	N/C
	7	Ground Input
	8	Positive Input
	9	Negative Terminal
	10	Ground Output
	11	Positive Output
	12	Positive Terminal

Shape&Size	PIN	Function (Single Output)
 Bottom View	1	INHIBIT
	2	V _{O1} Output
	3	Ground Output
	4	V _{O2} Output
	5	V _{O3} Output
	6	CASE Connection
	7	Synchronization Signal
	8	Ground Input
	9	Positive Input

II. Ultra-Small DC-DC Converter

2.1 Features

- Input voltage: 15~50V, nominal value: 28V (15W, 30W)
16~40V, nominal value: 28V (3W, 5W, 60W)
- Voltage Surge Protection Capability: 50V/1s (5W, 60W)
- Typical output voltage: 3.3V, 5V, 6.5V, 12V, 15V, 20V, 24V, 28V, $\pm 5V$, $\pm 6V$, $\pm 10V$, $\pm 12V$, $\pm 15V$
- Output power: 3W, 5W, 8W, 15W, 30W, 40W, 50W, 60W
- Efficiency (full load): max. 87%
- Other functions: input under-voltage protection; self-resettable short-circuit protection; initial inhibition (low-level inhibition); Output overcurrent protection; fine adjustment of output voltage.

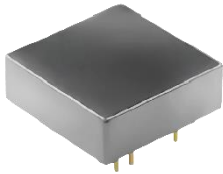
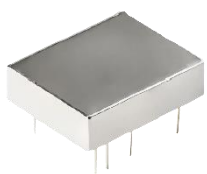
2.2 Characteristics

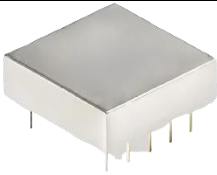
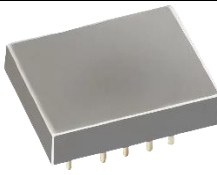
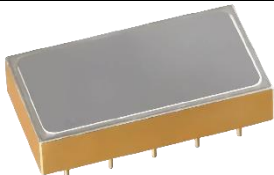
- Operating model: constant frequency control
- Thick filmed hybrid integration process, fully enclosed metal shell
- Mutual Isolated between input, output, and housing
- Circuit structure: active clamp single-ended topology, optocoupler/magnetically isolated feedback, Synchronous rectification
- Capacitance between internal input/output ground and casing: $\leq 4700\text{pF}/1000\text{V}$
- Operating frequency: 300~600kHz
- MTBF: $\geq 2 \times 10^5\text{h}$
- Compared to similar-power products from abroad, volume reduced by 1/3, loss reduced by 1/3 and power density increased by 1/3.

2.3 Applications

Highly reliable electronic systems such as aviation and aerospace, as well as occasions with high requirements for the volume and power density of the secondary power supply.

2.4 Photos of Real Products

Size (mm)	I	V	U
Photo	-		
Non-Flanged	20.88*13.26*10.70	20.20*20.20*7.00	25.14*20.66*7.60
Flanged	-	-	-
Small-Flanged	-	-	35.14*20.66*7.60

Size (mm)	W	X	Y
Photo			
Non-Flanged	27.31*27.31*6.86	37.23*28.84*8.70	54.40*29.00*10.96
Flanged	39.00*27.31*6.86	51.30*28.84*8.70	74.00*29.00*10.96
Small-Flanged	37.60*27.31*6.86	50.03*28.84*8.70	71.14*29.00*10.96

2.5 WTUx28S Series

Part Numbering

W	T	U			-	28		S		
1	2	3	4	5		6	7	8	9	10

1		2		3		4			
Brand Name		Category		Series		Shape & Size			
W	Wibbow	T	Thick Filmed	U	Ultra-small Series		Non-Flanged (mm):	Flanged (mm):	Small-Flanged (mm)
						I	20.88*13.26*10.70	-	-
						V	20.20*20.20*7.00	-	-
						U	25.14*20.66*7.60	-	35.14*20.66*7.60
						W	27.31*27.31*6.86	39.00*27.31*6.86	37.60*27.31*6.86
						X	37.23*28.84*8.70	51.30*28.84*8.70	50.03*28.84*8.70
					Y	54.40*29.00*10.96	74.00*29.00*10.96	71.14*29.00*10.96	

5		6		7		8		9		10	
Output Power		Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
3	3W	28	28V	None	Not	S	Single	3V3	3.3V	None	Non-Flanged
5	5W			F	Built-in Filter			5	5V	F	Flanged
8	8W							6V5	6.5V	Z	Small-Flanged
15	15W							12	12V		
30	30W							15	15V		
40	40W							20	20V		
50	50W							24	24V		
60	60W							28	28V		

Product List

Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant with		Filter
					VPT	Interpoint	
WTUI3-28S15	3	15	72	Non-Flanged: 9.6	/	/	WTUF1-28
WTUV5-28S5	5	5	80	Non-Flanged: 11	/	/	WTUF1-28
WTUV5-28S12	5	12	81		/	/	
WTUV5-28S15	5	15	81		/	/	
WTUU8-28S5(Z)	8	5	82.5	Non-Flanged: 15 Small-Flanged: 17	DVCH2805S	MCH2805S	WTUF1A2-28 WTUF2-28(F)
WTUW15-28S5(F/Z)	15	5 ±6% adjustable	84	Non-Flanged: 22 Flanged: 25 Small-Flanged: 24	DVSA2805S	MSA2805S	
WTUW15-28S12(F/Z)	15	12 ±5% adjustable	84		DVSA2812S	MSA2812S	
WTUW15-28S15(F/Z)	15	15 ±5% adjustable	84		DVSA2815S	MSA2815S	
WTUW15-28S24(F/Z)	15	24	84		/	/	
WTUX30-28S5(F/Z)	30	5 ±10% adjustable	85	Non-Flanged: 35 Flanged: 39 Small-Flanged: 37	DVHF2805S(F)	MHF+2805S(F)	WTUF4-28(F)
WTUX30-28S12(F/Z)	30	12 ±10% adjustable	87		DVHF2812S(F)	MHF+2812S(F)	
WTUX30-28S15(F/Z)	30	15 ±10% adjustable	86		DVHF2815S(F)	MHF+2815S(F)	
WTUX30-28S24(F/Z)	30	24	87		/	/	
WTUY40-28S3V3(F/Z)	40	3.3 ±6% adjustable	85	Non-Flanged: 56 Flanged: 60 Small-Flanged: 58	DVHE283R3S(F)	/	WTUF4-28(F) WTUF6-28(F)
WTUY50-28S6V5(F/Z)	50	6.5 ±6% adjustable	86		/	/	
WTUY60-28S5(F/Z)	60	5 ±6% adjustable	87		DVHE2805S(F)	/	
WTUY60-28S12(F/Z)	60	12 ±6% adjustable	87		/	/	
WTUY60-28S15(F/Z)	60	15 ±6% adjustable	87		/	/	
WTUY60-28S20(F/Z)	60	20 ±6% adjustable	85		/	/	
WTUY60-28S24(F/Z)	60	24 ±6% adjustable	86		/	/	
WTUY60-28S28(F/Z)	60	28 ±6% adjustable	86		/	/	

2.6 WTUx28D Series

Part Numbering

W	T	U			-	28		D		
1	2	3	4	5		6	7	8	9	10

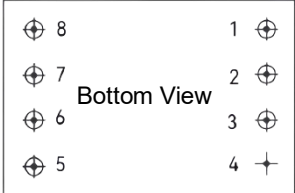
1		2		3		4			
Brand Name		Category		Series		Shape & Size			
W	Wibbow	T	Thick Filmed	U	Ultra-Small Series	I	Non-Flanged (mm): 20.88*13.26*10.70	Flanged (mm): -	Small-Flanged (mm): -
						V	20.20*20.20*7.00	-	-
						W	27.31*27.31*6.86	39.00*27.31*6.86	37.60*27.31*6.86
						X	37.23*28.84*8.70	51.30*28.84*8.70	50.03*28.84*8.70

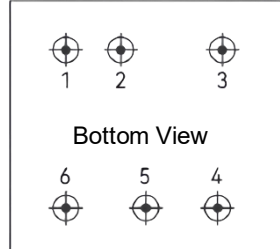
5		6		7		8		9		10	
Output Power		Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
3	3W	28	28V	None	Not	D	Dual	5	±5V	None	Non-Flanged
5	5W			F	Built-in Filter			6	±6V	F	Flanged
15	15W							10	±10V	Z	Small-Flanged
30	30W							12	±12V		
								15	±15V		

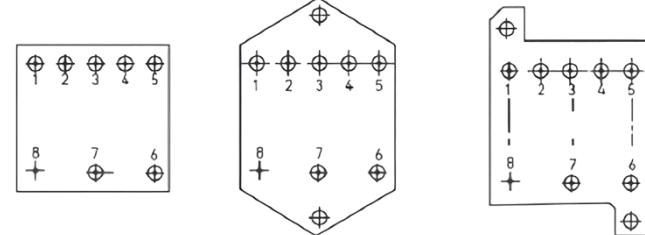
Product List

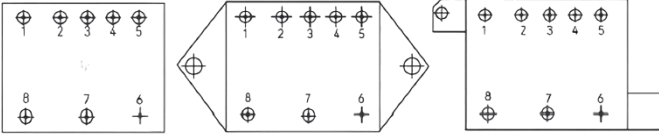
Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant with		Filter
					VPT	Interpoint	
WTUI3-28D15	3	±15	74	Non-Flanged: 9.6	/	/	WTUF1-28
WTUV5-28D5	5	±5	80	Non-Flanged: 11	/	/	WTUF1-28
WTUV5-28D12	5	±12	81		/	/	
WTUV5-28D15	5	±15	82		/	/	
WTUW15-28D5(F/Z)	15	±5	82	Non-Flanged: 22 Flanged: 25 Small-Flanged: 24	DVSA2805D	MSA2805D	WTUF1A2-28 WTUF2-28(F)
WTUW15-28D6(F/Z)	15	±6	82		/	/	
WTUW15-28D10(F/Z)	15	±10	83		/	/	
WTUW15-28D12(F/Z)	15	±12	84		DVSA2812D	MSA2812D	
WTUW15-28D15(F/Z)	15	±15	84		DVSA2815D	MSA2815D	
WTUX30-28D12(F/Z)	30	±12	87	Non-Flanged: 35 Flanged: 39 Small-Flanged: 37	DVHF2812D(F)	MHF+2812D(F)	WTUF4-28(F)
WTUX30-28D15(F/Z)	30	±15	87		DVHF2815D(F)	MHF+2815D(F)	

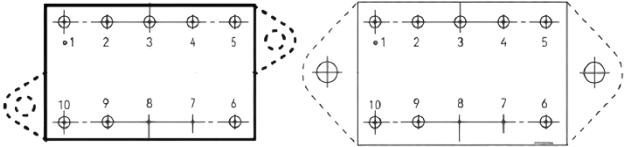
2.7 PIN Definitions

Shape&Size: I	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Ground Input	1	Ground Input
	2	Positive Input	2	Positive Input
	3	N/C	3	N/C
	4	CASE Connection	4	CASE Connection
	5	N/C	5	N/C
	6	N/C	6	Negative Output
	7	Ground Output	7	Ground Output
	8	Positive Output	8	Positive Output

Shape&Size: V&U	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	INHIBIT	1	INHIBIT
	2	Positive Input	2	Positive Input
	3	Ground Input	3	Ground Input
	4	CASE Connection	4	Negative Output
	5	Ground Output	5	Ground Output
	6	Positive Output	6	Positive Output

Shape&Size: W	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	Positive Output	1	Positive Output
	2	Ground Output	2	Ground Output
	3	Adjustment Terminal	3	Negative Output
	4	Synchronization Signal	4	N/C
	5	INHIBIT	5	INHIBIT
	6	Positive Input	6	Positive Input
	7	Ground Input	7	Ground Input
	8	CASE Connection	8	CASE Connection

Shape&Size: X	PIN	Function (Single Output)	PIN	Function (Dual Output)
 Bottom View	1	INHIBIT	1	INHIBIT
	2	Adjustment Terminal	2	Positive Output
	3	Ground Input	3	Ground Output
	4	Positive Output	4	Negative Output
	5	Synchronization Signal	5	Adjustment Terminal
	6	CASE Connection	6	CASE Connection
	7	Ground Input	7	Ground Input
	8	Positive Input	8	Positive Input

Shape&Size: Y	PIN	Function (Single Output)
 Bottom View	1	Positive Input
	2	Adjustment Terminal
	3	Negative Terminal
	4	Ground Output
	5	Positive Output
	6	Positive Terminal
	7	CASE Connection
	8	CASE Connection
	9	INHIBIT
	10	Ground Input

III. High-Power DC-DC Converter

3.1 Features

- Input voltage: 16~40V, nominal value: 28V
- Voltage Surge Protection Capability: 50V/1s
- Typical output voltage: 5V, 6.3V, 9.5V, 12V, 15V, 24V, 28V, $\pm 5V$, $\pm 12V$, $\pm 15V$
- Output power: 100W, 110W, 120W, 133W
- Efficiency (full load): max. 87%
- Other functions: synchronous input/output; initial inhibition; Output overcurrent protection; output short-circuit protection, input under-voltage protection; parallel current sharing; adjustment of output voltage; secondary inhibition

3.2 Characteristics

- Operating model: constant frequency PWM control
- Thick filmed hybrid integration process, fully enclosed metal shell
- Mutual Isolated between input, output, and housing
- Circuit structure: half-bridge topology, single-ended forward topology
- Fixed operating frequency (300~600kHz)
- Input-Output Magnetic Coupling or optocoupler isolation
- Compliant with VPT, INTERPOINT

3.3 Applications

Highly reliable electronic systems such as aviation and aerospace.

3.4 Photos of Real Products

Size (mm)	Z
Photo	
Non-Flanged	76.70*38.60*10.66

3.5 WTHZ28S Series

Part Numbering

W	T	H	Z		-	28		S		
1	2	3	4	5		6	7	8	9	10

1		2		3		4		5	
Brand Name		Category		Series		Shape & Size		Output Power	
W	Wibbow	T	Thick Filmed	H	High-Power Series	Z	Non-Flanged (mm): 76.70*38.60*10.66	100 110 120 133	100W 110W 120W 133W

6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
28	28V	None F	Not Built-in Filter	S	single	5 6V3 9V5 12 15 24 28	5V 6.3V 9.5V 12V 15V 24V 28V	None F Z	Non-Flanged Flanged Small-Flanged

Product List

Part Number	Output Power (W)	Output Voltage (V)	Output Voltage Regulation	Efficiency (Full Load) (%)	Weight (g)	Compliable with		Filter
						VPT	Interpoint	
WTHZ100-28S5	100	5	80%~110%	78	75	DVFL2805S	MOR2805S	WTF7-28F WTF15-28
WTHZ100-28S6V3	100	6.3	80%~110%	79		DVFL286R3S	MOR286R3S	
WTHZ100-28S9V5	100	9.5	80%~110%	81		DVFL289R5S	MOR289R5S	
WTHZ133-28S9V5	133	9.5	80%~110%	85	87	DVFL289R5S	MOR289R5S	
WTHZ110-28S12	110	12	80%~110%	83	75	DVFL2812S	MOR2812S	
WTHZ120-28S15	120	15	80%~110%	83		DVFL2815S	MOR2815S	
WTHZ110-28S24	110	24	80%~110%	86		/	/	
WTHZ100-28S28	100	28	80%~110%	86		DVFL2828S	MOR2828S	
WTHZ120-28S28	120	28	80%~110%	86		DVFL2828S	MOR2828S	

Note: output leads can be plugged up or down via plug-ins.

3.6 WTHZ28D Series

Part Numbering

W	T	H	Z		-	28		D		
1	2	3	4	5		6	7	8	9	10

1		2		3		4		5	
Brand Name		Category		Series		Shape & Size		Output Power	
W	Wibbow	T	Thick Filmed DC-DC Converter	H	High-Power Series	Z	Non-Flanged (mm): 76.70*38.60*10.66	100 120	100W 120W

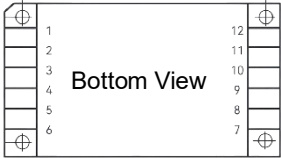
6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
28	28V	None F	Not Built-in Filter	D	Dual	5 12 15	±5V ±12V ±15V	None F Z	Non-Flanged Flanged Small-Flanged

Product List

Part Number	Output Power (W)	Output Voltage (V)	Output Voltage Regulation	Efficiency (Full Load) (%)	Weight (g)	Compliable with		Filter
						VPT	Interpoint	
WTHZ120-28D12	120	±12	80%~110%	83	75	DVFL2812D	MOR2812D	WTF7-28F WTF15-28
WTHZ120-28D15	120	±15	80%~110%	87		DVFL2815D	MOR2815D	
WTHZ100-28D5	100	±5	80%~110%	78		DVFL2805D	MOR2805D	

Note: output leads can be plugged up or down via plug-ins.

3.7 PIN Definitions

Shape&Size: Z	PIN	Function (Single Output)	PIN	Function (Dual Output)
	1	Positive Input	1	Positive Input
	2	Ground Input	2	Ground Input
	3	Adjustment Terminal/Housing	3	Housing
	4	INHIBIT 1	4	INHIBIT 1
	5	External Synchronization Output	5	Synchronization Output
	6	External Synchronization Input	6	Synchronization Input
	7	Positive Output	7	Positive Output
	8	Ground Output	8	Ground Output
	9	Negative Terminal	9	Negative Output
	10	Positive Terminal	10	Adjustment Terminal
	11	Current Sharing Terminal	11	Current Sharing Terminal
	12	INHIBIT 2	12	INHIBIT 2

IV. Point of Load DC-DC Converter

4.1 Features

- Nominal input voltage: 5V (input voltage adjustable)
- Output voltage: 0.8~3.6V (adjustable)
- Output current: 5A, 2A
- Efficiency (full load): max. 92%
- Other functions: thermal protection, inhibition

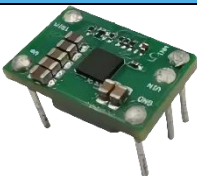
4.2 Characteristics

- Thick filmed hybrid integration process, fully enclosed metal shell, SMT process
- Chip-on-Board technology
- Non-isolated between input, output, and housing
- Circuit structure: buck circuit topology

4.3 Applications

Power supply for load ends of devices like MCU, FPGA, DSP in the field of aviation and aerospace

4.4 Photos of Real Products

Size (mm)	AZ	MG	QC
Photo			
Non-Flanged	25.14*20.66*7.36	18.08*18.08*7.2	19.8*12.8*14

4.5 Part Numbering

W	T	P			-	5	S	
1	2	3	4	5		6	7	8

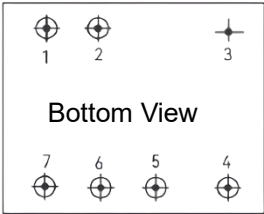
1		2		3		4	
Brand Name		Category		Series		Shape & Size	
W	Wibbow	T	Thick Filmed	P	Point of Load Series	AZ MG QC	25.14*20.66*7.36 18.08*18.08*7.2 19.8*12.8*14

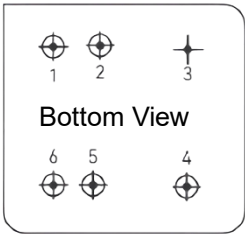
5		6		7		8	
Output Power		Nominal Input Voltage		Number of Outputs		Output Current	
15 20	15W 20W	5	5V	S	Single	2 5	2A 5A

4.6 Product List

Part Number	Output Power (W)	Input Voltage (V)	Output Current (A)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliable with	
							VPT	TI
WTPAZ20-5S5	20	3.0~5.5	5	0.8~3.3	91	13	DVPL0505S	/
WTPMG15-5S2	15	4.5~6	2	0.8~3.6	92	8	DVPL0503S	/
WTPQC15-5S5	15	4.5~5.5	5 (room temperature)	0.9~3.6		4.5	/	PTH05000WAH

4.7 PIN Definitions

Shape&Size	PIN	Function (Single Output)
 Bottom View	1	N/C
	2	Positive Input
	3	CASE Connection
	4	Positive Output
	5	Common Return Connection
	6	Output Adjustment Terminal
	7	INHIBIT

Shape&Size	PIN	Function (Single Output)
 Bottom View	1	Positive Output
	2	Common Return Connection
	3	CASE Connection
	4	Positive Input
	5	INHIBIT
	6	Output Adjustment Terminal

Shape&Size	PIN	Function (Single Output)
 Bottom View	1	Common Return Connection
	2	Positive Input
	3	INHIBIT
	4	Output Adjustment Terminal
	5	Positive Output

V. EMI Filter

5.1 Features

- Nominal Input voltage: 28V
- Voltage Surge Protection Capability: WTF series: 80V/1s
WTUF series: 50V/1s
- Typical output current: 0.8A, 1A, 1.2A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 15A
- Noise suppression: WTF series: no less than 40dB (@500kHz)
WTUF series: no less than 50dB (@500kHz)
- Operating temperature: -55~125°C

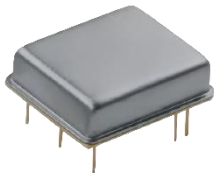
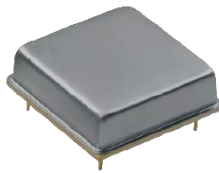
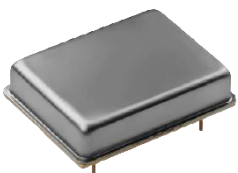
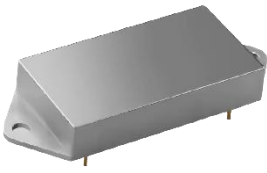
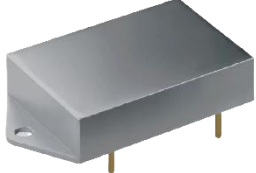
5.2 Characteristics

- Thick filmed hybrid integration process, fully enclosed metal shell
- Circuit structure: differential-mode filtering topologies & common-mode filtering topologies
- MTBF: $\geq 2 \times 10^5$ h
- Used with a DC-DC converter, which can reduce high-frequency reflected noise
- Compliant with VPT, INTERPOINT

5.3 Applications

Highly reliable electronic systems such as aviation and aerospace, as well as occasions where high ability to resist surge voltage required.

5.4 Photos of Real Products

Photo			
Non-Flanged (mm)	25.14*20.66*7.38	27.57*27.57*7.16	37.33*28.94*8.90
Flanged (mm)	-	-	51.30*28.94*8.90
Photo			
Non-Flanged (mm)	53.90*28.50*10.26	49.95*34.71*10.24	76.83*38.73*10.66
Flanged (mm)	73.50*28.50*10.26	68.59*34.71*10.24	-

5.5 Part Numbering

W	T			-	28	
1	2	3	4		5	6

1		2		3		4		5		6	
Brand Name		Category		Series		Output Current		Input Voltage		Package	
W	Wibbow	T	Thick Filmed	F UF	EMI Filter Ultra-Small EMI Filter	0A8	0.8A	28	28V	None F	Non-Flanged Flanged
						1	1A				
						1A2	1.2A				
						2	2A				
						3	3A				
						4	4A				
						5	5A				
						6	6A				
						7	7A				
						8	8A				
						15	15A				

5.6 Product List

WTF series

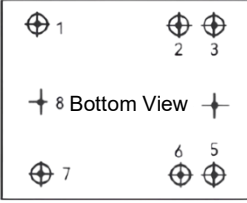
Part Number	Input Voltage (V)	Output Current (A)	Noise Suppression	DC Resistance (mΩ)	Shape&Size (mm)	Weight (g)	Compliable with	
							VPT	Interpoint
WTF0A8-28	15-50	0.8	40dB@500kHz	280	Non-Flanged: 25.14*20.66*7.38	Non-Flanged: 12	DVMSA28	/
WTF1-28		1	40dB@500kHz	200	Non-Flanged: 27.57*27.57*7.16	Non-Flanged: 16	DVMA28	/
WTF3-28(F)		3	55dB@500kHz	250	Non-Flanged: 37.33*28.94*8.90 Flanged: 51.30*28.94*8.90	Non-Flanged: 24 Flanged: 29	DVMH28(F)	FMCE-0328(F)
WTF4-28(F)		4	40dB@500kHz	150	Non-Flanged: 53.98*28.69*10.69 Flanged: 73.91*28.69*10.69	Non-Flanged: 50 Flanged: 51	DVMC28(F)	/
WTF5-28(F)		5	55dB@500kHz 60dB@1MHz	125	Non-Flanged: 53.90*28.50*10.26 Flanged: 73.50*28.50*10.26	Non-Flanged: 51 Flanged: 55	/	FMCE-0528(F)
WTF7-28F		7	40dB@500kHz	120	Non-Flanged: 49.95*34.71*10.24	Non-Flanged: 51 Flanged: 55	DVMD28F	/
WTF8-28(F)		8	50dB@500kHz 50dB@1MHz	120	Flanged: 68.59*34.71*10.24		/	FMCE-0828F
WTF15-28		15	70dB@500kHz 60dB@1MHz	70	Non-Flanged: 76.83*38.73*10.66	Non-Flanged: 85	/	FMCE-1528F

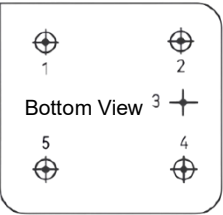
WTUF series

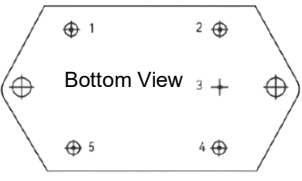
Part Number	Input Voltage (V)	Output Current (A)	Noise Suppression	DC Resistance (mΩ)	Shape&Size (mm)	Weight (g)	Compliable with	
							VPT	Interpoint
WTUF1-28(Z)	0~40	1	70dB@500kHz 70dB@1MHz	0.365	Non-Flanged: 25.14*20.66*7.35 Small-Flanged: 35.14*20.66*7.35	Non-Flanged: 16 Small-Flanged: 20	/	FMSA-461(0.8A)
WTUF1A2-28		1.2	55dB@500kHz 58dB@1MHz	0.333	Non-Flanged: 21.20*14.70*8.55	Non-Flanged: 12	/	/
WTUF2-28(F/Z)		2	72dB@500kHz 67dB@1MHz	0.203	Non-Flanged: 27.61*27.61*9.20 Flanged: 39.00*27.61*9.20 Small-Flanged: 37.73*27.61*9.20	Non-Flanged: 20 Flanged: 23 Small-Flanged: 22	DVMA28(F) (1A)	/
WTUF4-28(F/Z)		4	77dB@500kHz 75dB@1MHz	0.139	Non-Flanged: 37.33*28.94*9.00	Non-Flanged: 33	/	FMCE-0328(F)(3A)
WTUF6-28(F/Z)		6	75dB@500kHz 73dB@1MHz	0.117	Flanged: 51.00*28.94*9.00 Small-Flanged: 50.03*28.94*9.00	Flanged: 37 Small-Flanged: 35		

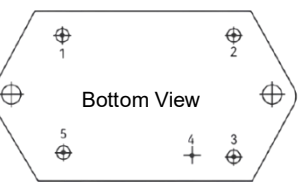
5.7 PIN Definitions

WTF series

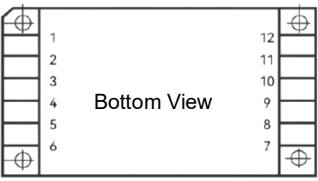
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	Positive Output
	4	CASE Connection
	5	Ground Output
	6	Ground Output
	7	Ground Input
	8	CASE Connection

Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input

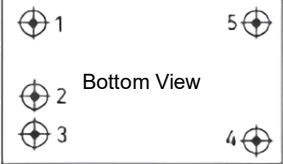
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input

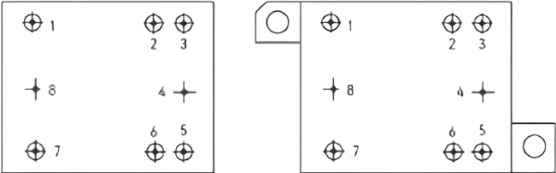
Shape&Size	PIN	Function
	1	Positive Input
	2	Ground Input
	3	Ground Output
	4	CASE Connection
	5	Positive Output

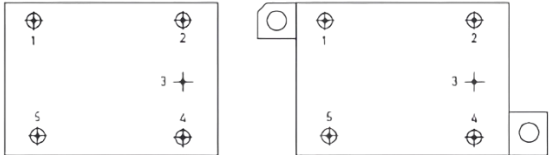
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input

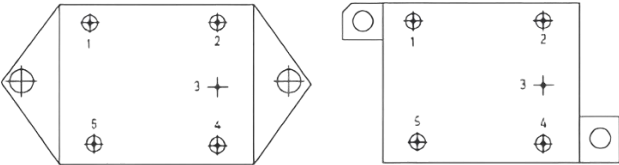
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Input
	3	Positive Input
	4	Ground Input
	5	Ground Input
	6	Ground Input
	7	Ground Output
	8	Ground Output
	9	Ground Output
	10	Positive Output
	11	Positive Output
	12	Positive Output

WTUF series:

WTUF1A2-28	PIN	Function
 Bottom View	1	Ground Input
	2	CASE Connection
	3	Positive Input
	4	Positive Output
	5	Ground Output

WTUF1-28(Z)	PIN	Function
 Bottom View	1	Positive Input
	2	Positive Output
	3	Positive Output
	4	CASE Connection
	5	Ground Output
	6	Ground Output
	7	Ground Input
	8	CASE Connection

WTUF2-28(F/Z)	PIN	Function
 Bottom View	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input

WTUF4-28(F/Z) & WTUF6-28(F/Z)	PIN	Function
 Bottom View	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input



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