

# Wibbow

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## Thick Filmed DC-DC Converter Brochure

Wibbow International Co., Limited

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### 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)

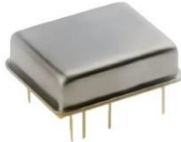
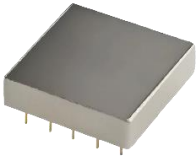



#### 1.2 Characteristics

- 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

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

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

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

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

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

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

### Product List

Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant 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
WTAG20-28D12(F)	20	±12	82		DVHF2812D(F)	MHF2812D(F)	
WTAG20-28D15(F)	20	±15	83		DVHF2815D(F)	MHF2815D(F)	WTF3-28
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

<b>W</b>	<b>T</b>	<b>A</b>			-	<b>28</b>		<b>T</b>		
1	2	3	4	5		6	7	8	9	10

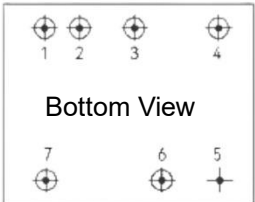
1		2		3		4			5	
Brand Name		Category		Series		Shape & Size			Output Power	
<b>W</b>	Wibbow	<b>T</b>	Thick Filmed	<b>A</b>	Anti-Surge Series	<b>P</b>	Non-Flanged (mm): 37.33*28.94*9.10	Flanged (mm): 51.30*28.94*9.10	<b>7W5</b>	7.5W/7.5W
						<b>N</b>	49.95*34.71*10.79	69.09*34.71*10.79	<b>20</b>	20W/20W

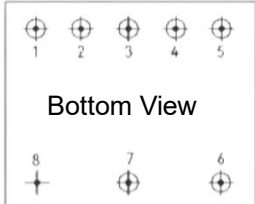
6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
<b>28</b>	28V	<b>None</b>	Not	<b>T</b>	Triple	<b>512</b>	5V/±12V	<b>None</b>	Non-Flanged
		<b>F</b>	Built-in Filter			<b>515</b>	5V/±15V	<b>F</b>	Flanged

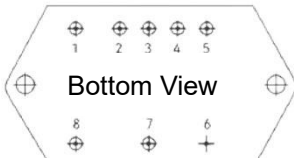
#### Product List

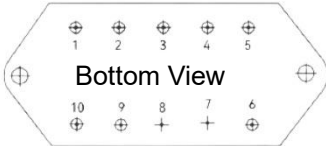
Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant with		Filter
					VPT	Interpoint	
WTAP7W5-28T512(F)	7.5/7.5	5/±12	74	Non-Flanged: 31	DVHF28512T(F)	MHF28512T(F)	WTF1-28
WTAP7W5-28T515(F)	7.5/7.5	5/±15	74	Flanged: 34	DVHF28515T(F)	MHF28515T(F)	WTF3-28
WTAN20-28T512(F)	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)	

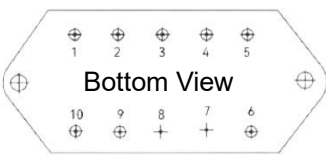
### 1.8 PIN Definitions


Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 <p>Bottom View</p>	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

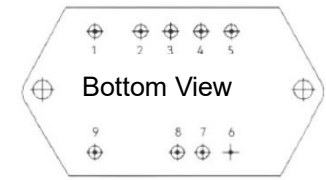
Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 <p>Bottom View</p>	1	Positive Output	1	Positive Output
	2	Ground Output	2	Ground Output
	3	N/C	3	Negative Output
	4	N/C	4	N/C
	5	INHIBIT	5	INHIBIT
	6	Positive Input	6	Positive Input
	7	Ground Input	7	Ground Input
	8	CASE Connection	8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

Shape&Size	PIN	Function (Single Output)	PIN	Function (Dual Output)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	1	Positive Input	1	Positive Input
	2	N/C	2	V <sub>O1</sub> Output
	3	Positive Output	3	Ground Output
	4	Ground Output	4	V <sub>O2</sub> Output
	5	Negative Output	5	V <sub>O3</sub> 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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	1	INHIBIT
	2	V <sub>O1</sub> Output
	3	Ground Output
	4	V <sub>O2</sub> Output
	5	V <sub>O3</sub> 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, ±5V, ±6V, ±10V, ±12V, ±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.

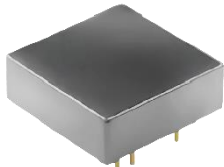
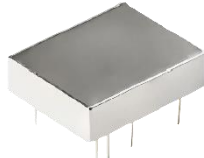
#### 2.2 Characteristics

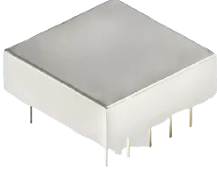

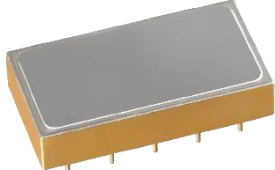
- Operating model: constant frequency control
- Thick filmed hybrid integration process, fully enclosed metal shell
- Mutual Isolated between input, output, and housing
- Circuit structure: active clamp single-ended topology, optocoupler/magnetically isolated feedback, Synchronous rectification
- Capacitance 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

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

1		2		3		4			
Brand Name		Category		Series		Shape & Size			
<b>W</b>	Wibbow	<b>T</b>	Thick Filmed	<b>U</b>	Ultra-small Series	<b>I</b>	Non-Flanged (mm): 20.88*13.26*10.70	Flanged (mm): -	Small-Flanged (mm): -
						<b>V</b>	20.20*20.20*7.00	-	-
						<b>U</b>	25.14*20.66*7.60	-	35.14*20.66*7.60
						<b>W</b>	27.31*27.31*6.86	39.00*27.31*6.86	37.60*27.31*6.86
						<b>X</b>	37.23*28.84*8.70	51.30*28.84*8.70	50.03*28.84*8.70
						<b>Y</b>	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	
<b>3</b>	3W	<b>28</b>	28V	<b>None</b>	Not	<b>S</b>	Single	<b>3V3</b>	3.3V	<b>None</b>	Non-Flanged
<b>5</b>	5W			<b>F</b>	Built-in Filter			<b>5</b>	5V	<b>F</b>	Flanged
<b>8</b>	8W							<b>6V5</b>	6.5V	<b>Z</b>	Small-Flanged
<b>15</b>	15W							<b>12</b>	12V		
<b>30</b>	30W							<b>15</b>	15V		
<b>40</b>	40W							<b>20</b>	20V		
<b>50</b>	50W							<b>24</b>	24V		
<b>60</b>	60W							<b>28</b>	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	
WTUW15-28S5(F/Z)	15	5 ±6% adjustable	84	Non-Flanged: 22 Flanged: 25 Small-Flanged: 24	DVSA2805S	MSA2805S	WTUF1A2-28 WTUF2-28(F)
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

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

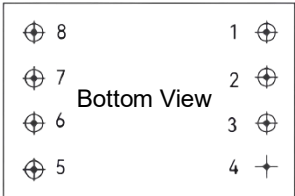
1		2		3		4			
Brand Name		Category		Series		Shape & Size			
<b>W</b>	Wibbow	<b>T</b>	Thick Filmed	<b>U</b>	Ultra-Small Series	<b>I</b>	Non-Flanged (mm): 20.88*13.26*10.70	Flanged (mm): -	Small-Flanged (mm) -
						<b>V</b>	20.20*20.20*7.00	-	-
						<b>W</b>	27.31*27.31*6.86	39.00*27.31*6.86	37.60*27.31*6.86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

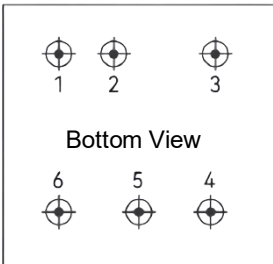
5		6		7		8		9		10			
Output Power		Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package			
<b>3</b>	3W	<b>28</b>	28V	<b>None</b>	Not	<b>D</b>	Dual	<b>5</b>	±5V	<b>None</b>	Non-Flanged		
<b>5</b>	5W			<b>F</b>	Built-in Filter			<b>6</b>	±6V			<b>F</b>	Flanged
<b>15</b>	15W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

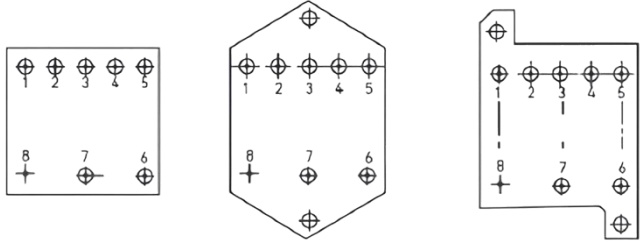
#### Product List

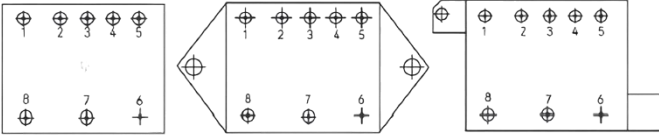
Part Number	Output Power (W)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant with		Filter
					VPT	Interpoint	
WTUI3-28D15	3	±15	74	Non-Flanged: 9.6	/	/	WTUF1-28
WTUV5-28D5	5	±5	80	Non-Flanged: 11	/	/	WTUF1-28
WTUV5-28D12	5	±12	81		/	/	
WTUV5-28D15	5	±15	82		/	/	
WTUW15-28D5(F/Z)	15	±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	DVHF2812D(F)	MHF+2812D(F)	WTUF4-28(F)
WTUX30-28D15(F/Z)	30	±15	87	Flanged: 39 Small-Flanged: 37	DVHF2815D(F)	MHF+2815D(F)	

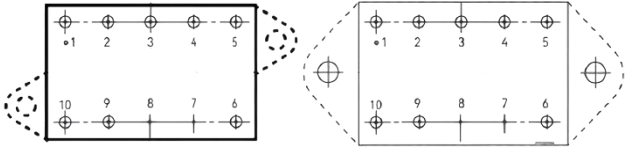
## 2.7 PIN Definitions

Shape&Size: I	PIN	Function (Single Output)	PIN	Function (Dual Output)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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

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

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

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

#### Product List

Part Number	Output Power (W)	Output Voltage (V)	Output Voltage Regulation	Efficiency (Full Load) (%)	Weight (g)	Compliant 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

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

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

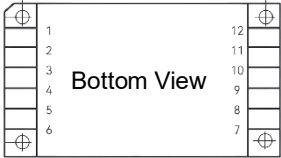
6		7		8		9		10	
Input Voltage		Built-in Filter or Not		Number of Outputs		Output Voltage		Package	
<b>28</b>	28V	<b>None</b>	Not Built-in Filter	<b>D</b>	Dual	<b>5</b>	±5V	<b>None</b>	Non-Flanged
		<b>F</b>				<b>12</b>	±12V	<b>F</b>	Flanged
						<b>15</b>	±15V	<b>Z</b>	Small-Flanged

#### Product List

Part Number	Output Power (W)	Output Voltage (V)	Output Voltage Regulation	Efficiency (Full Load) (%)	Weight (g)	Compliant 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)
 <p>Bottom View</p>	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



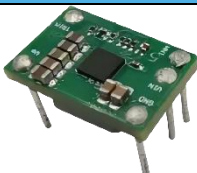
#### 4.2 Characteristics

- 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

<b>W</b>	<b>T</b>	<b>P</b>			-	<b>5</b>	<b>S</b>	
1	2	3	4	5		6	7	8

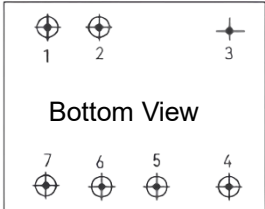
1		2		3		4	
Brand Name		Category		Series		Shape & Size	
<b>W</b>	Wibbow	<b>T</b>	Thick Filmed	<b>P</b>	Point of Load Series	<b>AZ</b>	25.14*20.66*7.36
						<b>MG</b>	18.08*18.08*7.2
						<b>QC</b>	19.8*12.8*14

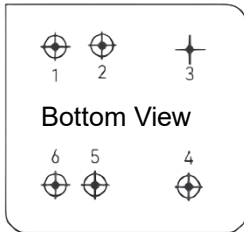
5		6		7		8	
Output Power		Nominal Input Voltage		Number of Outputs		Output Current	
<b>15</b>	<b>15W</b>	<b>5</b>	5V	<b>S</b>	Single	<b>2</b>	2A
<b>20</b>	<b>20W</b>					<b>5</b>	5A

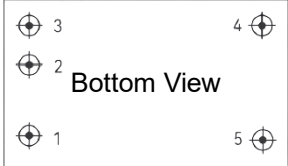
### 4.6 Product List

Part Number	Output Power (W)	Input Voltage (V)	Output Current (A)	Output Voltage (V)	Efficiency (Full Load) (%)	Weight (g)	Compliant 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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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)
 <p>Bottom View</p>	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

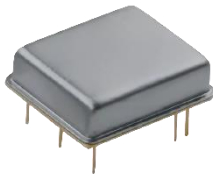
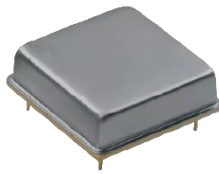
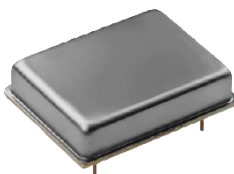
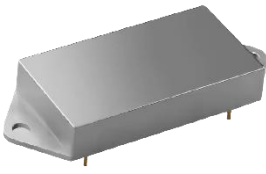
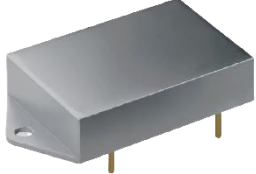

#### 5.2 Characteristics

- 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

<b>W</b>	<b>T</b>			-	<b>28</b>	
1	2	3	4		5	6

1		2		3		4		5		6	
Brand Name		Category		Series		Output Current		Input Voltage		Package	
<b>W</b>	Wibbow	<b>T</b>	Thick Filmed	<b>F</b> <b>UF</b>	EMI Filter Ultra-Small EMI Filter	<b>0A8</b>	0.8A	<b>28</b>	28V	<b>None</b> <b>F</b>	Non-Flanged Flanged
						<b>1</b>	1A				
						<b>1A2</b>	1.2A				
						<b>2</b>	2A				
						<b>3</b>	3A				
						<b>4</b>	4A				
						<b>5</b>	5A				
						<b>6</b>	6A				
						<b>7</b>	7A				
						<b>8</b>	8A				
						<b>15</b>	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)	Compliant 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)	Compliant 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		
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	/	FMCE-0328(F)(3A)

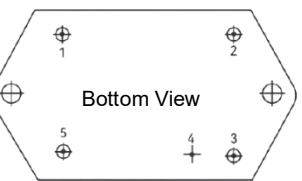
## 5.7 PIN Definitions

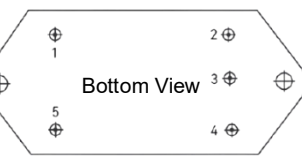
### WTF series

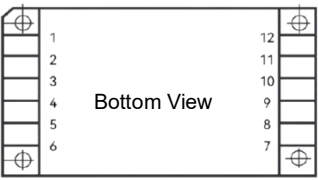
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	Positive Output
	4	CASE Connection
	5	Ground Output
	6	Ground Output
	7	Ground Input
	8	CASE Connection

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

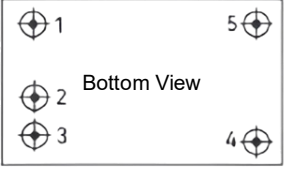
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input


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

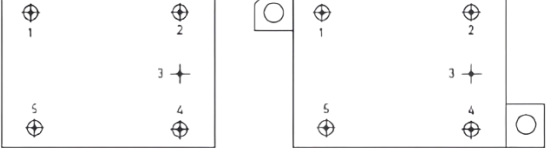
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input

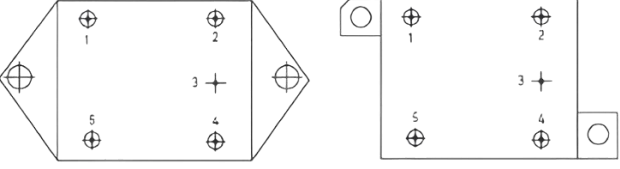
Shape&Size	PIN	Function
	1	Positive Input
	2	Positive Input
	3	Positive Input
	4	Ground Input
	5	Ground Input
	6	Ground Input
	7	Ground Output
	8	Ground Output
	9	Ground Output
	10	Positive Output
	11	Positive Output
	12	Positive Output

WTUF series:

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

WTUF1-28(Z)	PIN	Function
 <p>Bottom View</p>	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
 <p>Bottom View</p>	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
 <p>Bottom View</p>	1	Positive Input
	2	Positive Output
	3	CASE Connection
	4	Ground Output
	5	Ground Input



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