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AM6TW-NZ

DIL

Aimtec adds the AM6TW-NZ 6W series to its 24PIN DIL Package DC/DC converters family. With the 6W new single/dual output series, Aimtec provides better coverage of the DIL package product up to 6W.
The AM6TW-NZ series provide a wide 4:1 input voltage range and comes standard with single regulated output voltages of 3.3, 5, 9, 12, 15 and 24VDC with I/O isolation of 1500VDC/3000/6000VDC.

Thanks to its wide -40°C to +85°C operating temperature range, the AM6TW-NZ is suitable for applications such as industrial control, grid power, instrumentation, and telecommunication. In addition, there are protections for input under-voltage, output short circuit, over-voltage and over-current are also included, increasing the overall safety of your new system design.

Features

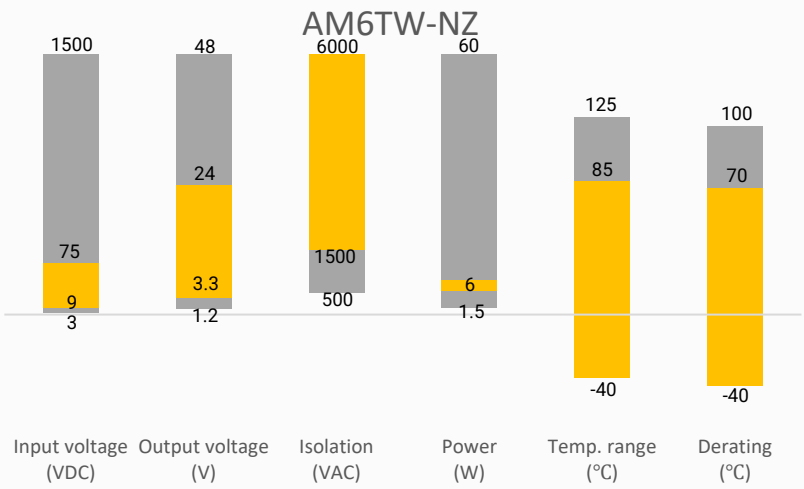
- Wide 4:1 Input Range: 9-36VDC & 18-75VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise, up to 100mV(p-p) typ.
- Efficiency up to 88%
- Output short circuit, over current protection, over-voltage protection, Input under-voltage protection
- Regulated Output

RoHS

3yr Warranty

CE

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications

Power Grid

Industrial

Telecom

Instrumentation

Models & Specifications

Single Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA)		Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency (%) Full Load (Typ.)
			No Load	Full Load			
AM6TW-2403S-NZ	24 (9 ~ 36)	3.3	5	268	1500	1800	77
AM6TW-2405S-NZ	24 (9 ~ 36)	5	5	305	1200	1000	82
AM6TW-2412S-NZ	24 (9 ~ 36)	12	5	294	500	470	85
AM6TW-2415S-NZ	24 (9 ~ 36)	15	5	291	400	220	86
AM6TW-2424S-NZ	24 (9 ~ 36)	24	5	291	250	100	86
AM6TW-4803S-NZ	48 (18 ~ 75)	3.3	5	131	1500	1800	79
AM6TW-4805S-NZ	48 (18 ~ 75)	5	5	150	1200	1000	82
AM6TW-4812S-NZ	48 (18 ~ 75)	12	5	144	500	470	87
AM6TW-4815S-NZ	48 (18 ~ 75)	15	5	142	400	220	88
AM6TW-4824S-NZ	48 (18 ~ 75)	24	5	144	250	100	87
AM6TW-2403SH30-NZ	24 (9 ~ 36)	3.3	5	268	1500	1800	77
AM6TW-2405SH30-NZ	24 (9 ~ 36)	5	5	305	1200	1000	82
AM6TW-2409SH30-NZ	24 (9 ~ 36)	9	5	298	667	680	84
AM6TW-2412SH30-NZ	24 (9 ~ 36)	12	5	294	500	470	85
AM6TW-2415SH30-NZ	24 (9 ~ 36)	15	5	291	400	220	86
AM6TW-2424SH30-NZ	24 (9 ~ 36)	24	5	291	250	100	86
AM6TW-4803SH30-NZ	48 (18 ~ 75)	3.3	5	131	1500	1800	79
AM6TW-4805SH30-NZ	48 (18 ~ 75)	5	5	150	1200	1000	82
AM6TW-4812SH30-NZ	48 (18 ~ 75)	12	5	144	500	470	87
AM6TW-4815SH30-NZ	48 (18 ~ 75)	15	5	142	400	220	88
AM6TW-4824SH30-NZ	48 (18 ~ 75)	24	5	144	250	100	87
AM6TW-2405SH60-NZ	24 (9 ~ 36)	5	5	309	1200	2700	81
AM6TW-2406SH60-NZ	24 (9 ~ 36)	6	5	305	1000	2200	82
AM6TW-2409SH60-NZ	24 (9 ~ 36)	9	5	301	667	1800	83
AM6TW-2412SH60-NZ	24 (9 ~ 36)	12	5	298	500	1000	84
AM6TW-2415SH60-NZ	24 (9 ~ 36)	15	5	294	400	680	85
AM6TW-2424SH60-NZ	24 (9 ~ 36)	24	5	298	250	470	84
AM6TW-4805SH60-NZ	48 (18 ~ 75)	5	5	152	1200	2700	82
AM6TW-4809SH60-NZ	48 (18 ~ 75)	9	5	151	667	1800	83
AM6TW-4812SH60-NZ	48 (18 ~ 75)	12	5	149	500	1000	84
AM6TW-4815SH60-NZ	48 (18 ~ 75)	15	5	147	400	680	85
AM6TW-4824SH60-NZ	48 (18 ~ 75)	24	5	149	250	470	84

Dual Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA)		Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency (%) Full Load (Typ.)
			No Load	Full Load			
AM6TW-2405D-NZ	24 (9 ~ 36)	±5	5	305	±600	680	82
AM6TW-2412D-NZ	24 (9 ~ 36)	±12	5	294	±250	470	85
AM6TW-2415D-NZ	24 (9 ~ 36)	±15	5	291	±200	220	86
AM6TW-2424D-NZ	24 (9 ~ 36)	±24	5	291	±125	100	86
AM6TW-4805D-NZ	48 (18 ~ 75)	±5	5	150	±600	680	83

AM6TW-4812D-NZ	48 (18 ~ 75)	±12	5	144	±250	470	87
AM6TW-4815D-NZ	48 (18 ~ 75)	±15	5	144	±200	220	88
AM6TW-2405DH30-NZ	24 (9 ~ 36)	±5	5	305	±600	680	82
AM6TW-2412DH30-NZ	24 (9 ~ 36)	±12	5	294	±250	470	85
AM6TW-2415DH30-NZ	24 (9 ~ 36)	±15	5	291	±200	220	86

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table	4:1		VDC
Filter	Pi filter			
Absolute maximum rating	24VDC input models, 1 sec. max		50	VDC
	48VDC input models, 1 sec. max, 6000VDC		80	VDC
	48VDC input models, 1 sec. max, others		100	VDC
Start-up voltage	Nominal 24V input models		9	VDC
	Nominal 48V input models		18	VDC
Under voltage protection	Nominal 24V input models	7		VDC
	Nominal 48V input models	15		VDC

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 0.5mA, 1500VDC models	≧1500		VDC
	60 sec, leakage ≤ 0.5mA, 3000VDC models	≧3000		VDC
	60 sec, leakage ≤ 0.5mA, 6000VDC models	≧6000		VDC
Resistance	500VDC, 1500 & 3000VDC models	≧1000		MΩ
	500VDC, 6000VDC models	≧10000		MΩ
Capacitance	I/O capacitance at 100KHz/0.1V, 1500 & 3000VDC models	1000		pF
	I/O capacitance at 100KHz/0.1V, 6000VDC models	20		pF
Isolation creepage and clearances (6000VDC models)	PCB Clearance and Creepage	≧8.0		
	Optocoupler Creepage	≧8.0		
	Transformer Creepage	≧8.0		
	Transformer Clearance	≧5.0		
Insulation system	6000VDC models	Reinforced isolation		
Leakage current	6000VDC models, 240VAC/60Hz	4		μA
Protection grade	6000VDC models, 240VAC/60Hz	2xMOPP		
Applied part	6000VDC models	Type CF		

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance		± 1	± 3	%
Line regulation			± 0.5	%
Load regulation	Single 10 ~ 100% load		± 0.8	%
	Dual 10 ~ 100% load		± 1.0	%
Over current protection		110~210, typ. 140		% Iout

Short circuit protection	Continuous			
Over-voltage protection	Input voltage range	≧110	160	%Vo
Temperature coefficient	Full load		± 0.03	%/ °C
Ripple & Noise	20MHz bandwidth		100	mV pk-pk
Transient recovery time	50% load step change	350		µS

General Specifications

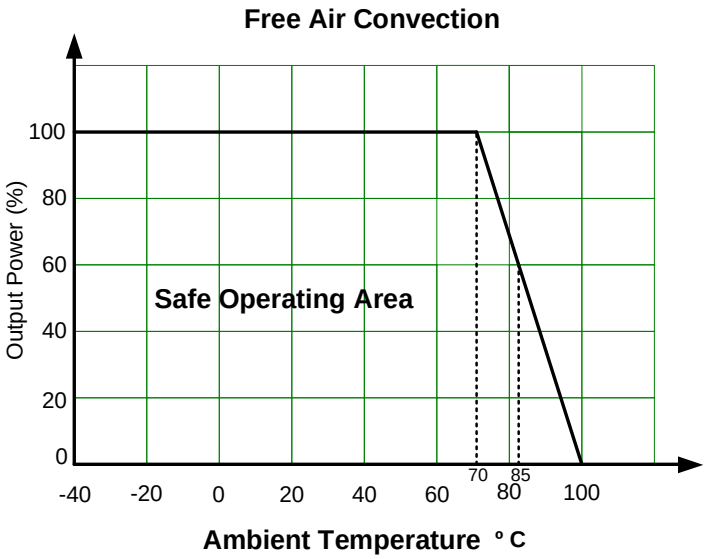
Parameters	Conditions	Typical	Maximum	Units
Switching frequency		330		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
Soldering temperature	1.5mm from case 10 sec max		300	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	1500VDC models	Nickel coated with non-conductive base		
	3000 & 6000VDC models	DAP		
Weight	1500VDC models	16.8		g
	3000 & 6000VDC models	12.8		g
Dimensions (L x W x H)	1500VDC models	1.24 x 0.79 x 0.43 inches (31.6 x 20.1 x 11.0 mm)		
	3000 & 6000VDC models	1.25 x 0.80 x 0.40 inches (31.8 x 20.3 x 10.2 mm)		
MTBF	> 1 500 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

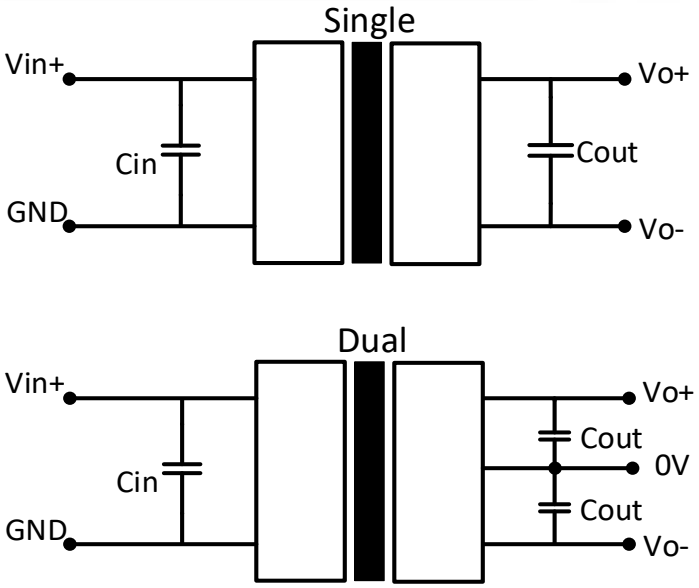
Safety Specifications

Parameters		
Standards	EN60601-1: 2006+A1: 2013 (6000VDC models) EN62368-1 (1500VDC & 3000VDC models)	
	EMC - Conducted and radiated emission	CISPR32/EN55032, CLASS B with EMC recommended circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2 Contact ±4KV, Criteria B (1500 & 3000VDC models) IEC 61000-4-2 Contact ±6KV, Criteria B (6000VDC models)
	Electrical Fast Transient/Burst Immunity	IEC/EN61000-4-4 ±2KV, Criteria B (6000VDC models)
	Surge Immunity	IEC/EN61000-4-5 ±2KV, Criteria B (6000VDC models)
	RF, Conducted Disturbance Immunity	IEC/EN61000-4-6 3 Vr.m.s, Criteria A (6000VDC models)

Derating



Typical Application Circuit



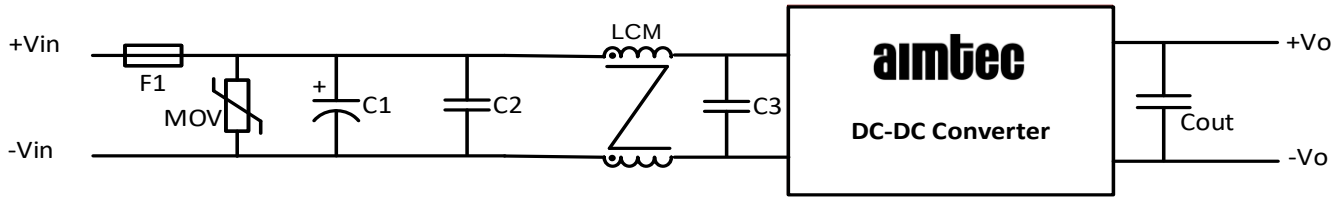
Vin	Cin
24VDC	10μF/100V
48VDC	10μF/100V

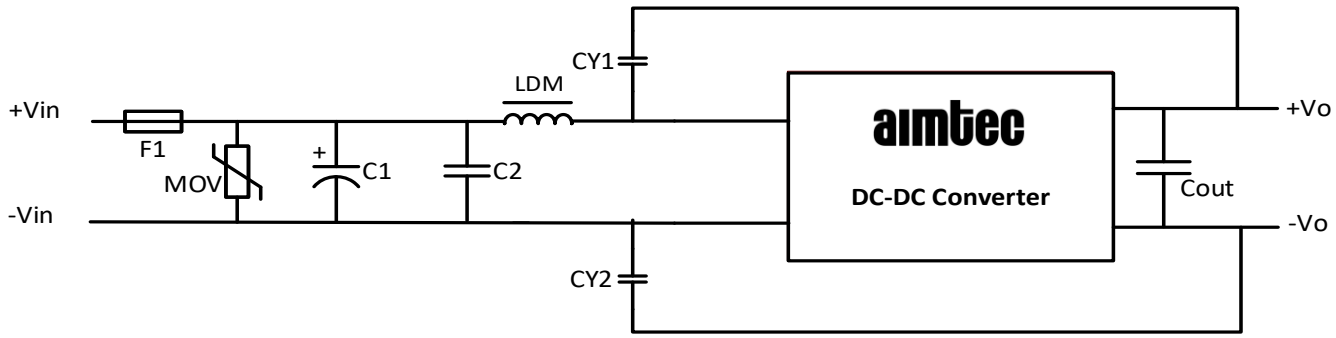
Single Vout	Cout
3.3VDC	100μF/50V
5VDC	
6VDC	
9VDC	
12VDC	
15VDC	
24VDC	

Dual Vout	Cout
±5DC	±100μF/50V
±12VDC	
±15VDC	
±24VDC	

EMC Recommended Circuit

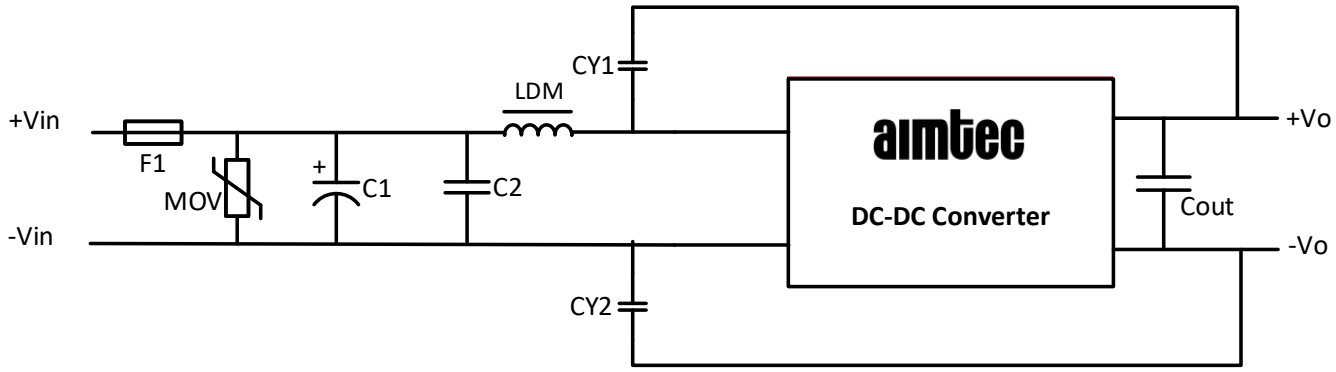
1500VDC & 3000VDC models





Vin	MOV	C1	C2, C3	LCM	LDM	CY1, CY2
24VDC (single)	S20K30	330μF/50V	2.2μF/50V	2.2mH	--	--
48VDC (single)	S14K60	100μF/100V	2.2μF/100V	2.2mH	--	--
24VDC (dual)	S20K30	330μF/50V	1μF/50V	--	4.7μH	1nF/3kV
48VDC (dual)	S14K60	330μF/100V	1μF/100V	--	4.7μH	1nF/3kV
Fuse chose according to actual input current						

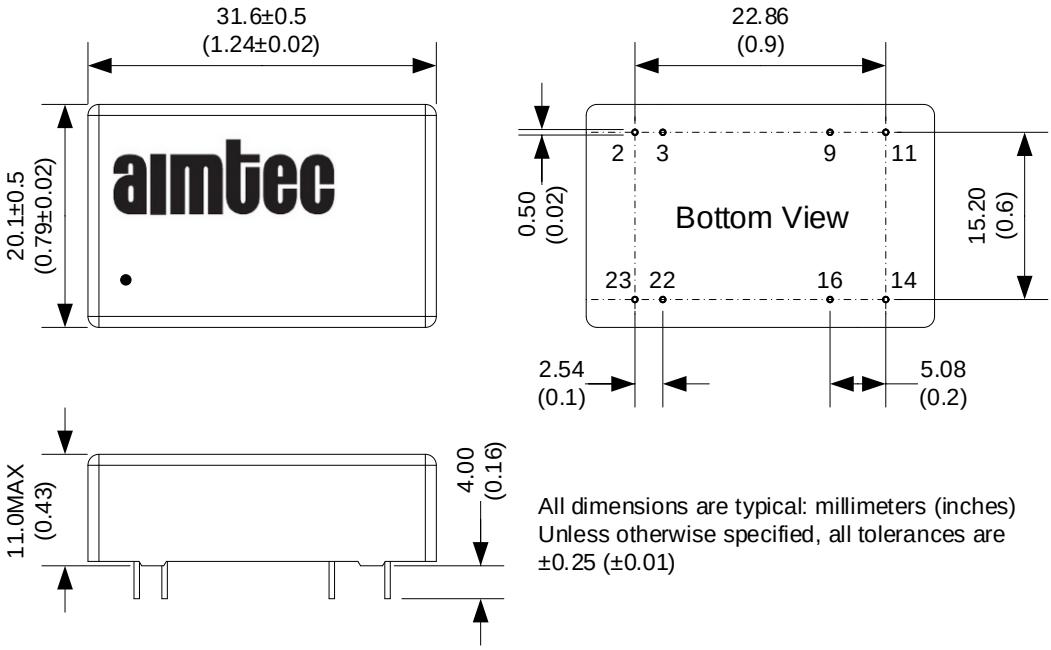
6000VDC models



Vin	MOV	C1	C2	LDM	CY1, CY2
24VDC	S20K30	330μF/50V	2.2μF/50V	10μH	1nF
48VDC	S14K60	100μF/100V	2.2μF/100V	10μH	1nF
Fuse chose according to actual input current					

Dimensions

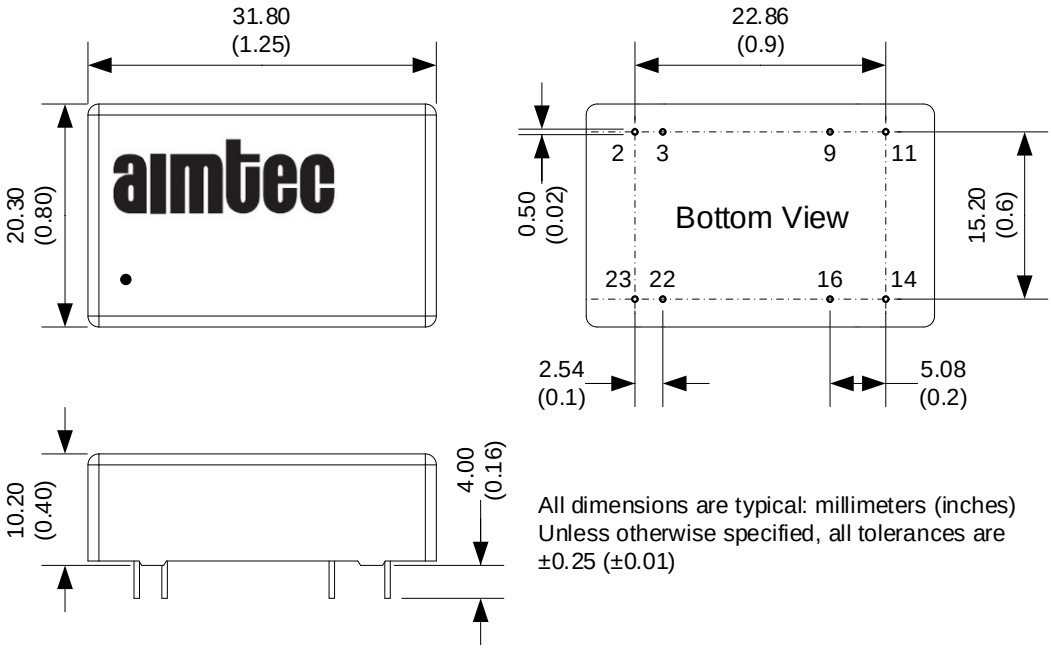
1500VDC models:



All dimensions are typical: millimeters (inches)
Unless otherwise specified, all tolerances are ±0.25 (±0.01)

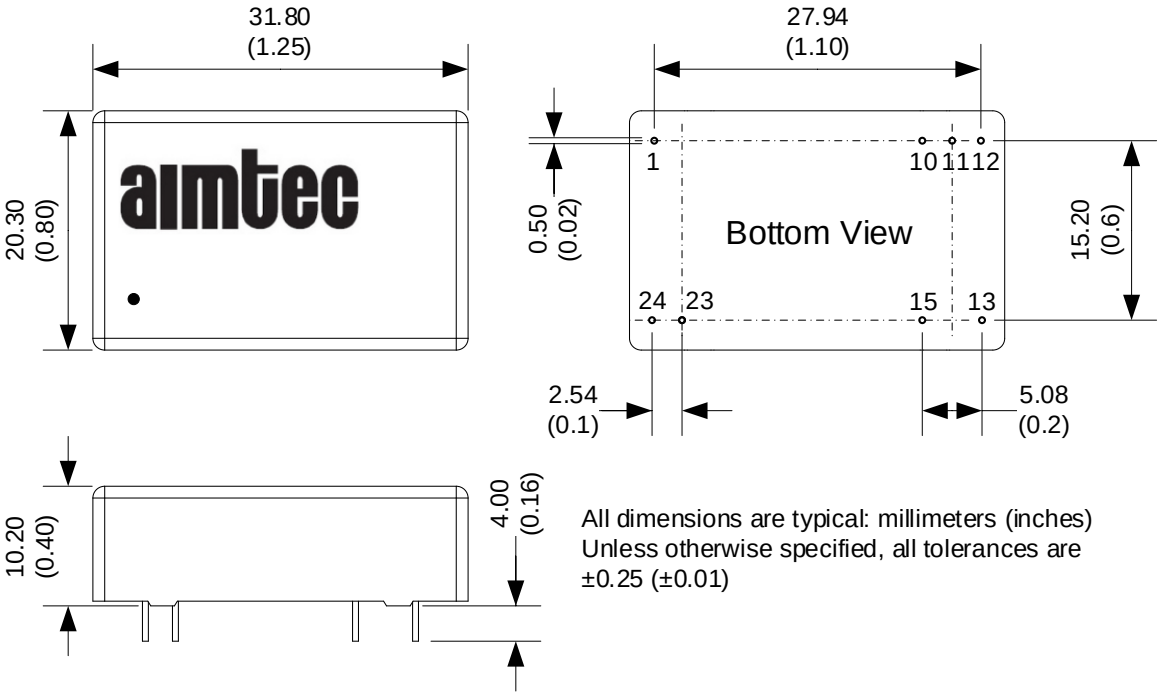
Pin Out Specifications 1500VDC & 3000VDC		
Pin	Single output	Dual output
2	+V Input	+V Input
3	+V Input	+V Input
9	NP	COM
11	NC	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	-V Input	-V Input
23	-V Input	-V Input

3000VDC models:



All dimensions are typical: millimeters (inches)
Unless otherwise specified, all tolerances are ±0.25 (±0.01)

6000VDC models:



Pin Out Specifications 6000VDC	
Pin	Single output
1	+V Input
10	NP
11	NP
12	-V Output
13	+V Output
15	NP
23	-V Input
24	-V Input

All dimensions are typical: millimeters (inches)
Unless otherwise specified, all tolerances are ±0.25 (±0.01)

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