



AM6TW-NZ



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.

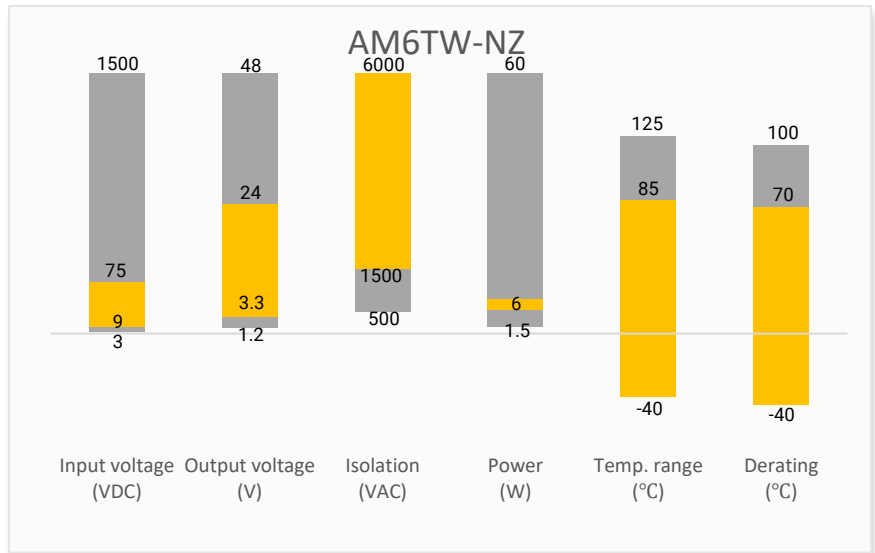
Thanks to its wide -40°C to +85°C operating temperature range, the AM6TW-NZ is suitable for applications such as industrial control, grid power, instrumentation, and telecommunication. In addition, there are protections for input under-voltage, output short circuit, over-voltage and over-current are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

Features

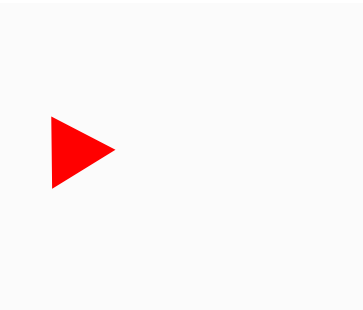


- Wide 4:1 Input Range: 9-36VDC & 18-75VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise, up to 100mV(p-p) typ.
- Efficiency up to 88%
- Output short circuit, over current protection, over-voltage protection, Input under-voltage protection
- Regulated Output

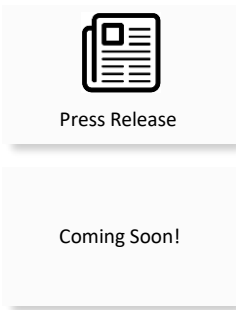
Summary



Training



Product Training Video
(click to open)



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-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		

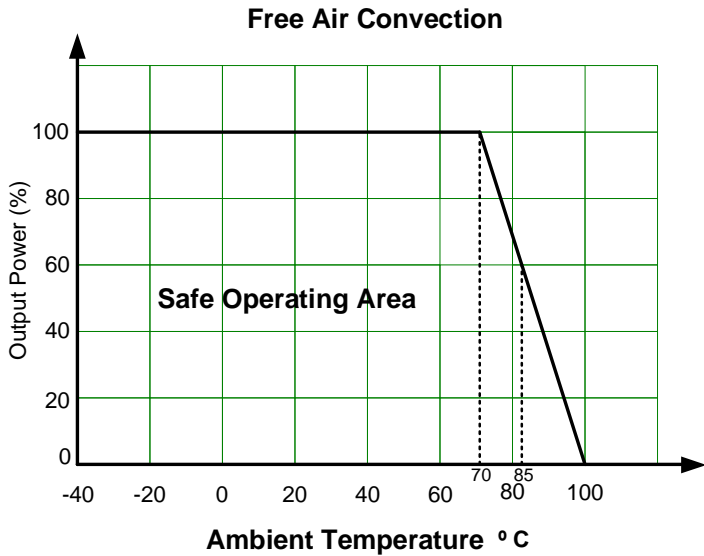
Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance		± 1	± 3	%
Line regulation			± 0.5	%
Load regulation	Single 10 ~ 100% load		± 0.8	%
	Dual 10 ~ 100% load		± 1.0	%
Over current protection		110~210, typ. 140		% Iout
Short circuit protection	Continuous			

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

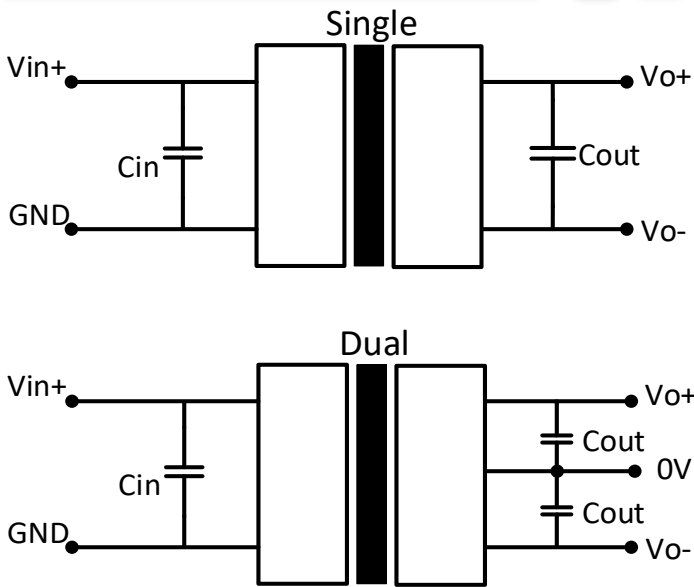
General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency		330		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
Soldering temperature	1.5mm from case 10 sec max		300	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	1500VDC models	Nickel coated with non-conductive base		
	3000 & 6000VDC models	Black plastic (flammability to UL 94V-0)		
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 $\pm 4KV$, Criteria B (1500 & 3000VDC models) IEC 61000-4-2 Contact $\pm 6KV$, Criteria B (6000VDC models)
	Electrical Fast Transient/Burst Immunity	IEC/EN61000-4-4 $\pm 2KV$, Criteria B (6000VDC models)
	Surge Immunity	IEC/EN61000-4-5 $\pm 2KV$, 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

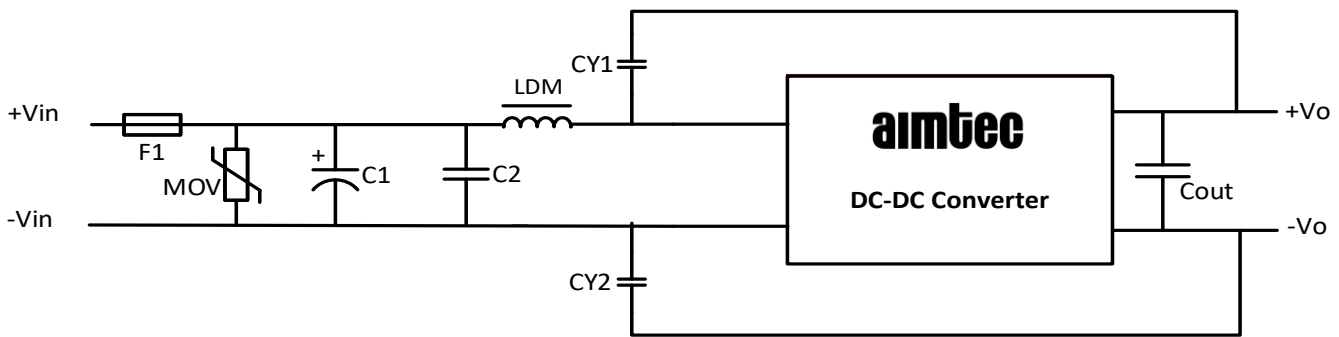
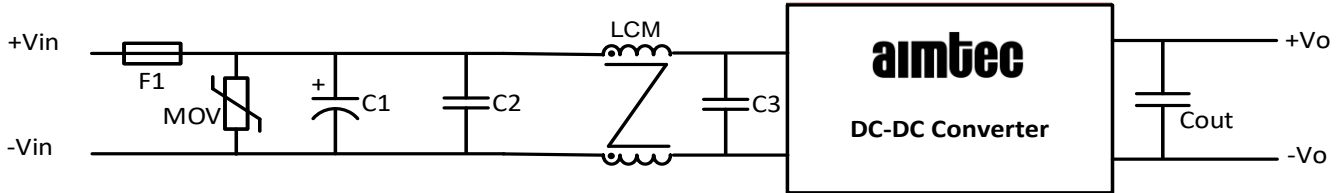
Single Vout	Cout
3.3VDC	100μF/50V
5VDC	
6VDC	
9VDC	
12VDC	
15VDC	
24VDC	

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

EMC Recommended Circuit



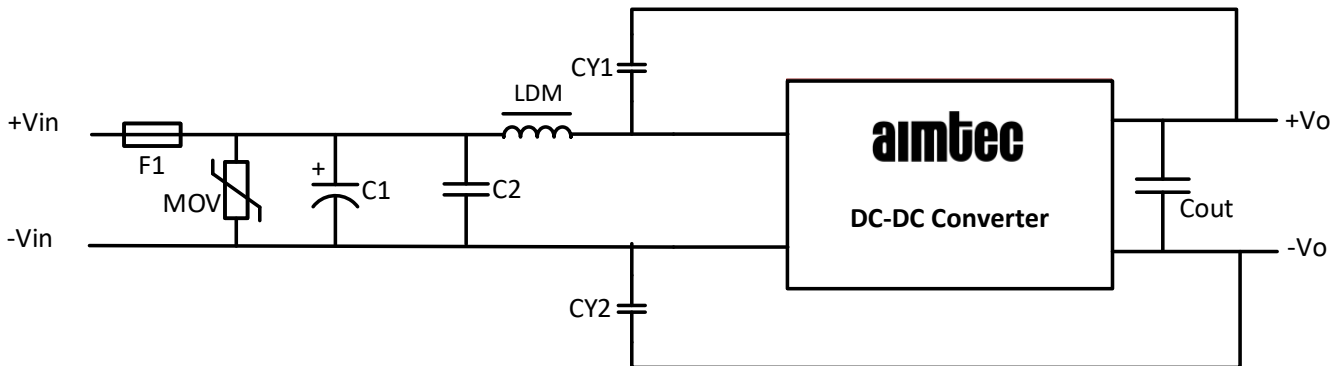
1500VDC & 3000VDC models



Vin	MOV	C1	C2, C3	LCM	LDM	CY1, CY2
24VDC (single)	S20K30	330 μ F/50V	2.2 μ F/50V	2.2mH	--	--
48VDC (single)	S14K60	100 μ F/100V	2.2 μ F/100V	2.2mH	--	--
24VDC (dual)	S20K30	330 μ F/50V	1 μ F/50V	--	4.7 μ H	1nF/3kV
48VDC (dual)	S14K60	330 μ F/100V	1 μ F/100V	--	4.7 μ H	1nF/3kV

Fuse chose according to actual input current

6000VDC models

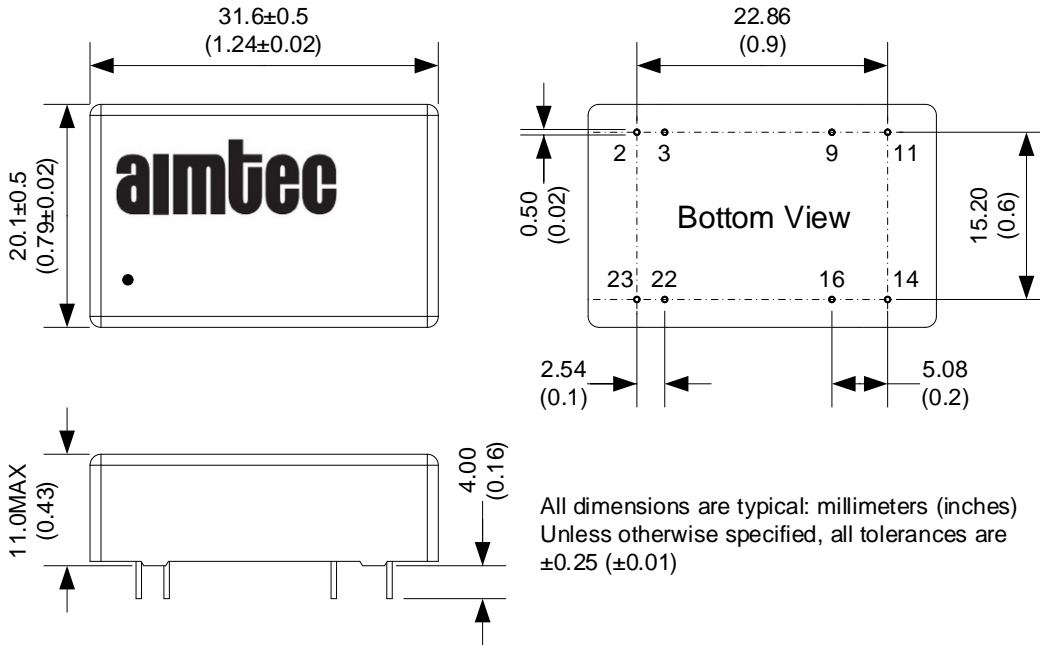


Vin	MOV	C1	C2	LDM	CY1, CY2
24VDC	S20K30	330 μ F/50V	2.2 μ F/50V	10 μ H	1nF
48VDC	S14K60	100 μ F/100V	2.2 μ F/100V	10 μ H	1nF

Fuse chose according to actual input current

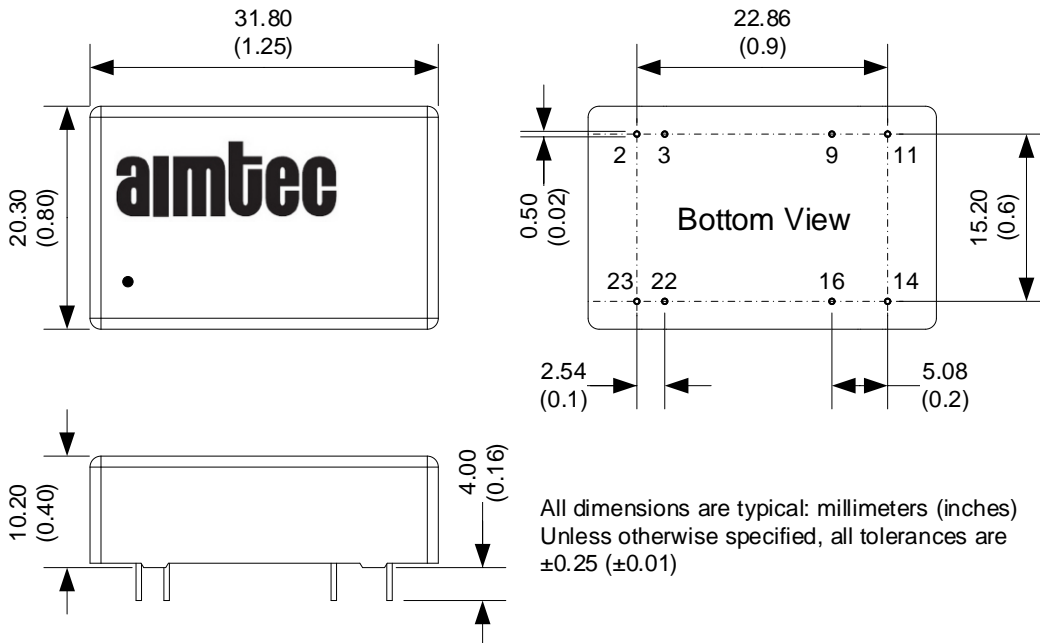
Dimensions

1500VDC models:

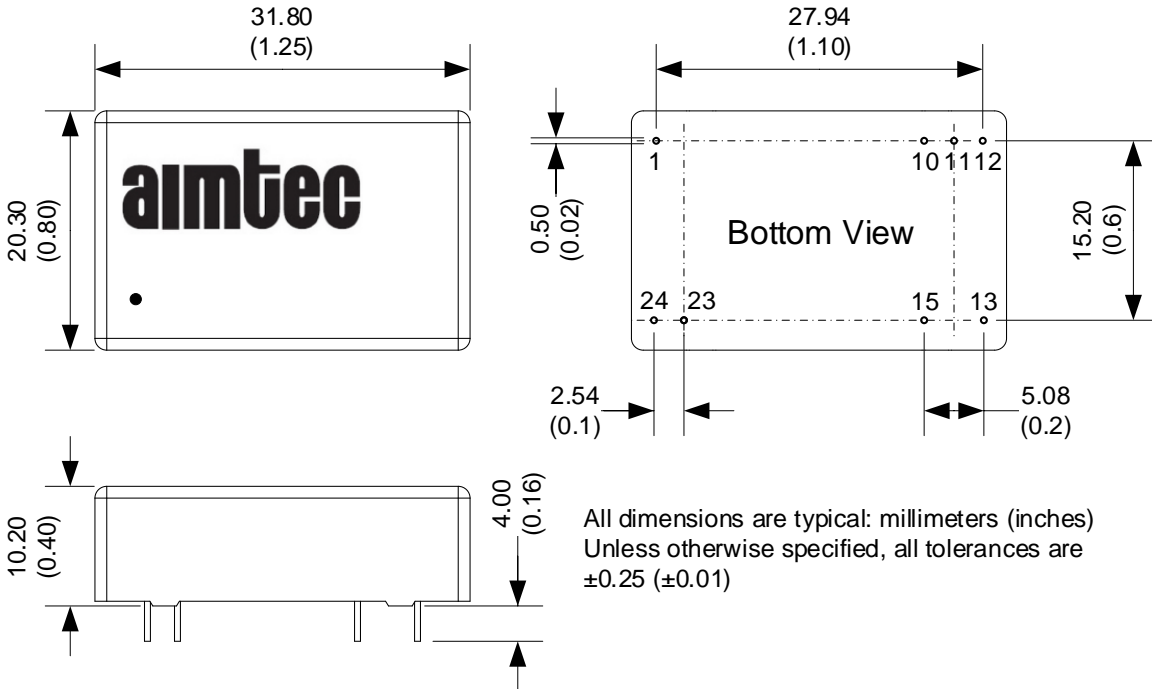


Pin Out Specifications 1500VDC & 3000VDC		
Pin	Single output	Dual output
2	-V Input	-V Input
3	-V Input	-V Input
9	NP	COM
11	NC	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

3000VDC models:



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)

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.