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AM6TW-LPZ

DIP24

Aimtec adds the AM6TW-LPZ 6W series to its 24PIN DIP Package DC/DC converters family. With the 6W new single output series, Aimtec provides better coverage of the DIP package product up to 6W.

The AM6TW-LPZ series provide a wide 4:1 input voltage range and comes standard with single regulated output voltages of 3.3, 5, 6, 9, 12, 15, 18, 24, ±5, ±9, ±12, ±15, and ±24VDC with I/O isolation of 1500VDC/3000VDC/6000VDC.

Thanks to its wide -40°C to +85°C operating temperature range, the AM6TW-LPZ 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-current are also included, increasing the overall safety of your new system design.

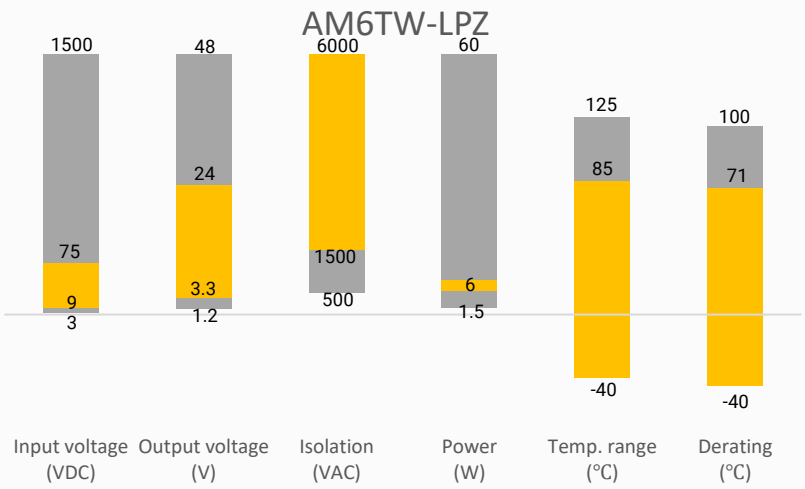
Features

- 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, Input under-voltage protection
- Regulated Output

RoHS

3yr Warranty

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-2403SLPZ	24 (9 ~ 36)	3.3	5	302	1500	1800	77
AM6TW-2405SLPZ	24 (9 ~ 36)	5	5	302	1200	1000	82
AM6TW-2409SLPZ	24 (9 ~ 36)	9	5	302	667	680	83
AM6TW-2412SLPZ	24 (9 ~ 36)	12	5	302	500	470	85
AM6TW-2415SLPZ	24 (9 ~ 36)	15	5	302	400	220	86
AM6TW-2424SLPZ	24 (9 ~ 36)	24	5	302	250	100	86
AM6TW-4803SLPZ	48 (18 ~ 75)	3.3	4	156	1500	1800	80
AM6TW-4805SLPZ	48 (18 ~ 75)	5	4	156	1200	1000	84
AM6TW-4809SLPZ	48 (18 ~ 75)	9	4	156	667	680	85
AM6TW-4812SLPZ	48 (18 ~ 75)	12	4	156	500	470	87
AM6TW-4815SLPZ	48 (18 ~ 75)	15	4	156	400	220	88
AM6TW-4824SLPZ	48 (18 ~ 75)	24	4	156	250	100	87
AM6TW-2403SH30LPZ	24 (9 ~ 36)	3.3	10	261	1500	1800	77
AM6TW-2405SH30LPZ	24 (9 ~ 36)	5	10	297	1200	1000	82
AM6TW-2409SH30LPZ	24 (9 ~ 36)	9	10	297	667	680	83
AM6TW-2412SH30LPZ	24 (9 ~ 36)	12	10	297	500	470	85
AM6TW-2415SH30LPZ	24 (9 ~ 36)	15	10	297	400	220	86
AM6TW-2424SH30LPZ	24 (9 ~ 36)	24	10	297	250	100	86
AM6TW-4803SH30LPZ	48 (18 ~ 75)	3.3	4	131	1500	1800	80
AM6TW-4805SH30LPZ	48 (18 ~ 75)	5	4	146	1200	1000	84
AM6TW-4809SH30LPZ	48 (18 ~ 75)	9	4	146	667	680	85
AM6TW-4812SH30LPZ	48 (18 ~ 75)	12	4	146	500	470	87
AM6TW-4815SH30LPZ	48 (18 ~ 75)	15	4	146	400	220	88
AM6TW-4824SH30LPZ	48 (18 ~ 75)	24	4	146	250	100	87
AM6TW-2405SH60LPZ	24 (9 ~ 36)	5	5	309	1200	2700	80
AM6TW-2406SH60LPZ	24 (9 ~ 36)	6	5	309	1000	2200	81
AM6TW-2409SH60LPZ	24 (9 ~ 36)	9	5	309	667	1800	83
AM6TW-2412SH60LPZ	24 (9 ~ 36)	12	5	309	500	1000	84
AM6TW-2415SH60LPZ	24 (9 ~ 36)	15	5	309	400	680	85
AM6TW-2418SH60LPZ	24 (9 ~ 36)	18	5	309	333	1200	85
AM6TW-2424SH60LPZ	24 (9 ~ 36)	24	5	309	250	470	84
AM6TW-4805SH60LPZ	48 (18 ~ 75)	5	4	154	1200	2700	81
AM6TW-4809SH60LPZ	48 (18 ~ 75)	9	4	154	667	1800	83
AM6TW-4812SH60LPZ	48 (18 ~ 75)	12	4	154	500	1000	84
AM6TW-4815SH60LPZ	48 (18 ~ 75)	15	4	154	400	680	85
AM6TW-4824SH60LPZ	48 (18 ~ 75)	24	4	154	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-2405DLPZ	24 (9 ~ 36)	±5	5	302	±600	680	82
AM6TW-2409DLPZ	24 (9 ~ 36)	±9	5	302	±333	220	84
AM6TW-2412DLPZ	24 (9 ~ 36)	±12	5	302	±250	330	85
AM6TW-2415DLPZ	24 (9 ~ 36)	±15	5	302	±200	220	88
AM6TW-2424DLPZ	24 (9 ~ 36)	±24	5	302	±125	100	86
AM6TW-4805DLPZ	48 (18 ~ 75)	±5	4	156	±600	680	83
AM6TW-4812DLPZ	48 (18 ~ 75)	±12	4	156	±250	330	87
AM6TW-4815DLPZ	48 (18 ~ 75)	±15	4	156	±200	220	88
AM6TW-2405DH30LPZ	24 (9 ~ 36)	±5	10	297	±600	680	82
AM6TW-2409DH30LPZ	24 (9 ~ 36)	±9	10	297	±333	220	84
AM6TW-2412DH30LPZ	24 (9 ~ 36)	±12	10	297	±250	330	85
AM6TW-2415DH30LPZ	24 (9 ~ 36)	±15	10	297	±200	220	88
AM6TW-2424DH30LPZ	24 (9 ~ 36)	±24	10	297	±125	100	86
AM6TW-4805DH30LPZ	48 (18 ~ 75)	±5	4	146	±600	680	83
AM6TW-4812DH30LPZ	48 (18 ~ 75)	±12	4	146	±250	330	87
AM6TW-4815DH30LPZ	48 (18 ~ 75)	±15	4	146	±200	220	88

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table	4:1		VDC
Filter	Capacitor			
Reflected Input Ripple Current		20		mA
Absolute maximum rating	24VDC input models, 1 sec. max		-0.7~50	VDC
	48VDC input models, 1 sec. max		-0.7~100	VDC
Start-up voltage	Nominal 24V input models		9	VDC
	Nominal 48V input models		18	VDC
Under voltage protection	Nominal 24V input models	6.5		VDC
	Nominal 48V input models	15.5		VDC

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 1mA, 1500VDC models	1500		VDC
	60 sec, leakage ≤ 1mA, 3000VDC models	3000		VDC
	60 sec, leakage ≤ 1mA, 6000VDC models	6000		VDC
Resistance	500VDC	≧1000		MΩ
Capacitance	I/O capacitance at 100KHz/0.1V, 1500 & 3000VDC models	1000		pF
	I/O capacitance at 100KHz/0.1V, 6000VDC models	13	20	pF
Isolation Creepage and Clearances (6000VDC models)	PBC Clearance and Creepage	≥ 8.0		mm
	Optocoupler Creepage	≥ 8.0		mm
	Transformer Creepage	≥ 8.0		mm
	Transformer Clearance	≥ 5.0		mm

Insulation System	6000VDC models	Reinforced Isolation		
Leakage Current	6000VDC models, 240VAC/60Hz	3.6	5	µA
Protection Grade	6000VDC models, 240VAC/60Hz	2xMOPP		

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage Tolerance		± 1	± 3	%
Balanced Load	Dual output models	± 0.5	± 1.5	%
Line Regulation	Full load, output 1	± 0.2	± 0.5	%
	Full load, output 2	± 0.5	± 1.0	%
Load Regulation	5 ~ 100% load, output 1	± 0.5	± 1.0	%
	5 ~ 100% load, output 2	± 0.5	± 1.5	%
Cross Voltage Regulation	Output 1 50% load, output 2 10~100% load		± 5	%
Over Current Protection	1500 & 3000VDC models	110~190, typ. 140		% Iout
	6000VDC models	110~260, typ. 150		% Iout
Short Circuit Protection	Continuous, hiccup, auto-recovery			
Over-Voltage Protection	Output voltage range	≧110	160	%Vo
Temperature Coefficient	Full load		± 0.03	%/ °C
Ripple & Noise	20MHz bandwidth, 1500VDC models	50	100	mV pk-pk
	20MHz bandwidth, 3000VDC models	85	120	mV pk-pk
	20MHz bandwidth, 6000VDC models	100	180	mV pk-pk
Transient Recovery Time	25% load step change	300	500	µS
Transient Response Deviation	25% load step change, 1.5KV & 3KV 3.3/5/±5Vout models	± 5	± 8	%
	25% load step change, others	± 3	± 5	%

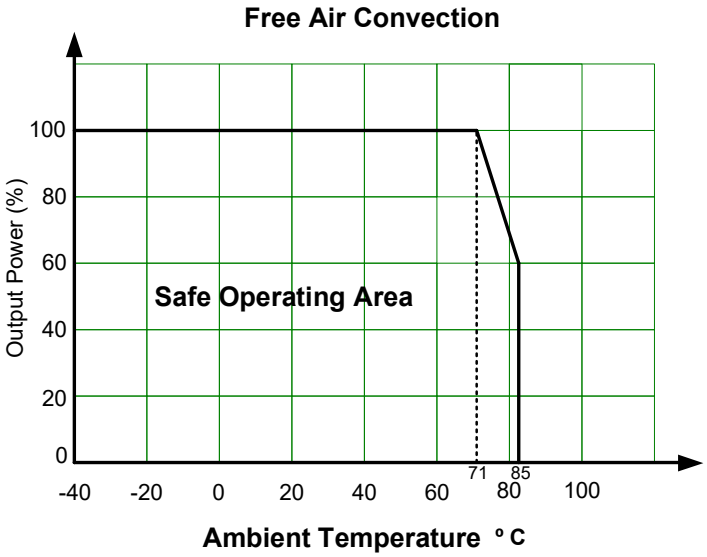
General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency		300		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
Vibration	IEC/EN 61373 Category 1, Class B			
Case material	1500VDC models	Aluminum Alloy		
	3000 & 6000VDC models	Black flame-retardant plastic (UL94 V-0)		
Weight	1500VDC models	14		g
	3000 & 6000VDC models	13		g
Dimensions (L x W x H)	1500VDC models	1.26 x 0.79 x 0.44 inches (32.0 x 20.0 x 11.1 mm)		
	3000 & 6000VDC models	1.26 x 0.79 x 0.47 inches (32.0 x 20.0 x 12.0 mm)		
MTBF	> 1 000 000 hrs (MIL-HDBK -217F, t=+25oC) / Full Load			

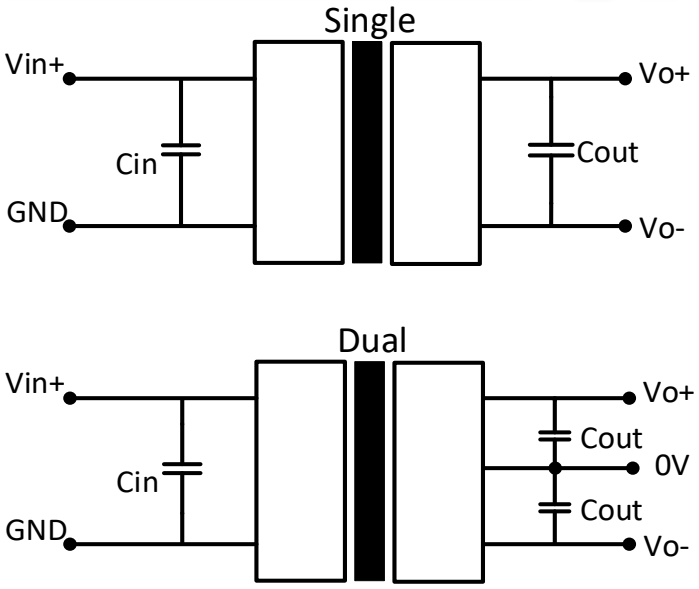
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications		
Parameters		
Standards	Designed to meet UL/EN/IEC 62368-1 (1500 & 3000VDC models) Designed to meet EN/IEC 62368-1, EN60601 (6000VDC models)	
	EMC - Conducted and radiated emission	CISPR32/EN55032, CLASS B with EMC recommended circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2
	RF, Electromagnetic Field Immunity	IEC/EN 61000-4-3
	Electrical Fast Transient/Burst Immunity	IEC/EN 61000-4-4
	Surge Immunity	IEC/EN 61000-4-5
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6

Derating



Typical Application Circuit



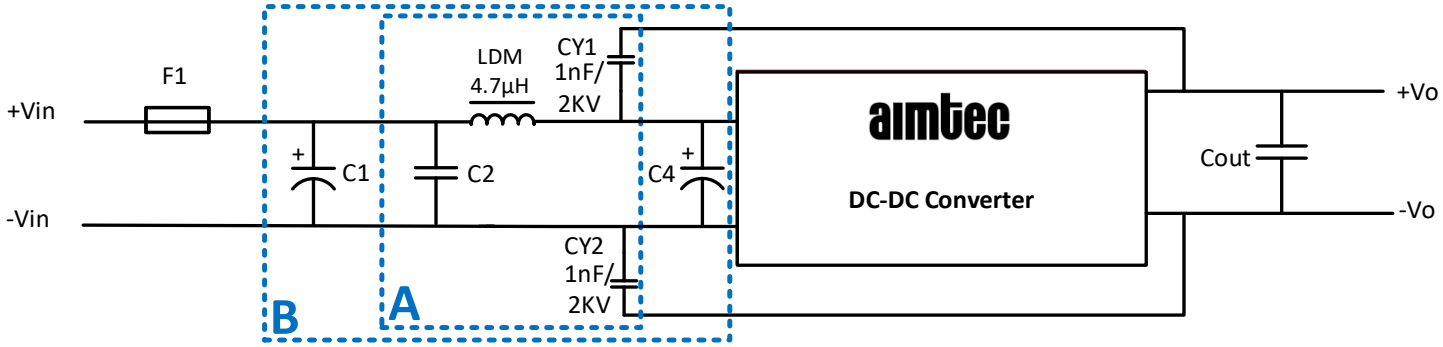
Vin	Cin
24VDC	220μF/50V
48VDC	10-47μF/100V

Single Vout	Cout
3.3VDC	10μF/50V
5VDC	
6VDC	
9VDC	
12VDC	
15VDC	
18VDC	
24VDC	

Dual Vout	Cout
±5VDC	±10μF/50V
±9VDC	
±12VDC	
±15VDC	
±24VDC	

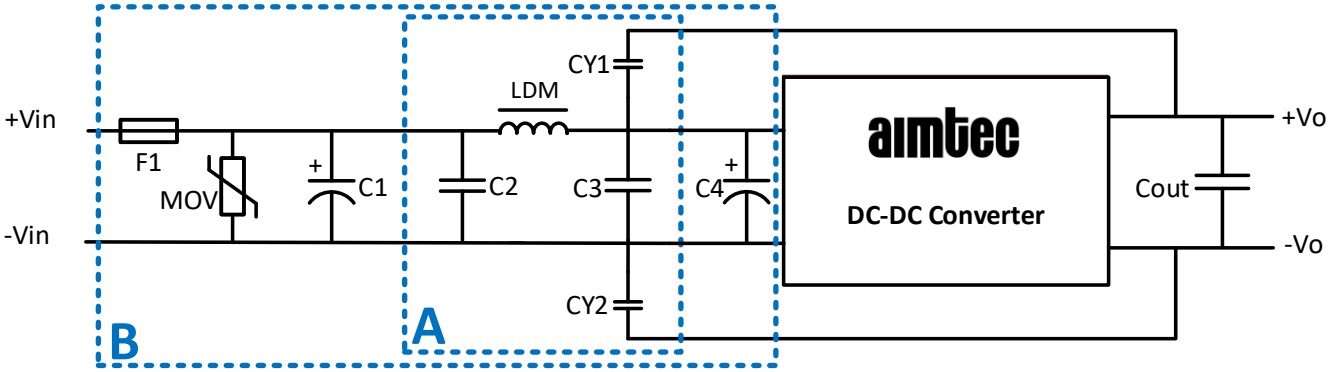
EMC Recommended Circuit

1500VDC & 3000VDC models



Vin	C1, C4	C2
24VDC	330μF/50V	1μF/50V
48VDC	330μF/100V	1μF/100V
Fuse chose according to actual input current		

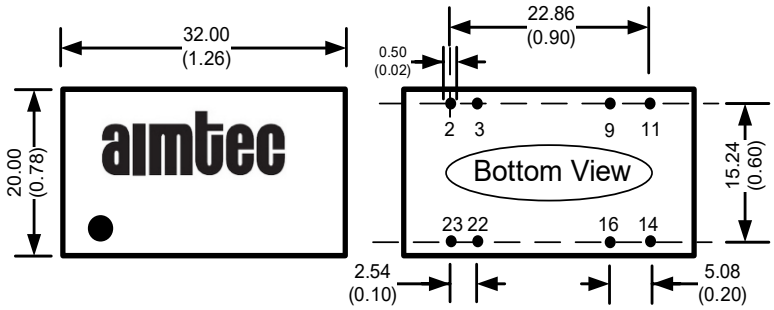
6000VDC models

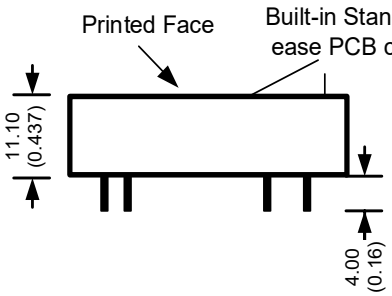


Vin	MOV	C1, C4	C2, C3	LDM	CY1, CY2
24VDC	S20K30	330µF/50V	1µF/50V	10µH	1nF/6KV
48VDC	S14K60	330µF/100V	-	-	-
Fuse chose according to actual input current					

Dimensions

1500VDC models:

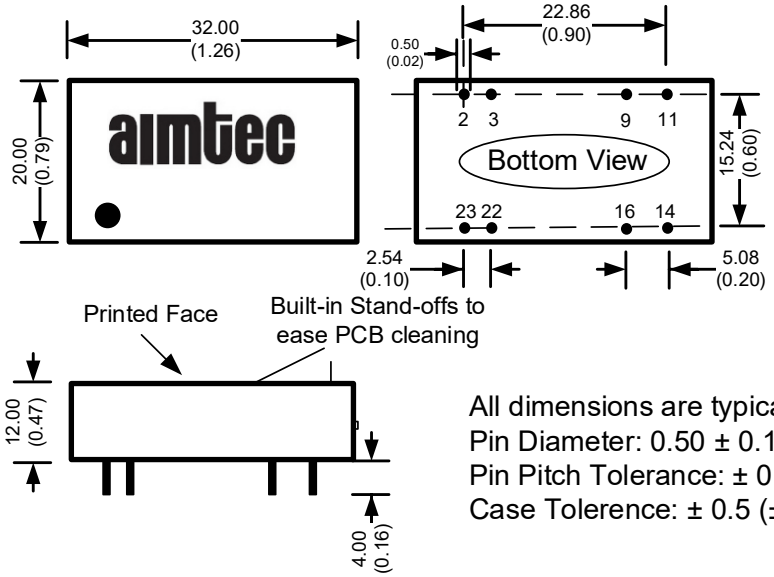




All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.10 (0.02 ± 0.004)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerence: ± 0.5 (±0.02)

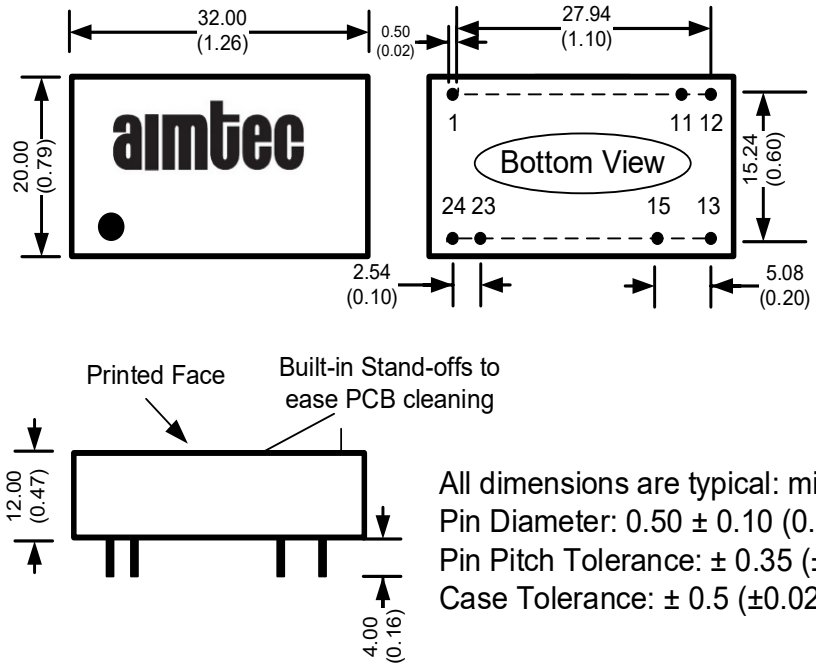
Pin Out Specifications 1500VDC & 3000VDC models		
Pin	Single output	Dual output
2	-V Input	-V Input
3	-V Input	-V Input
9	No Pin	COM
11	N.C.	-V Output
14	+V Output	+V Output
16	-V Output	Common
22	+V Input	+V Input
23	+V Input	+V Input

3000VDC models:



All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.10 (0.02 ± 0.004)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerence: ± 0.5 (±0.02)

6000VDC models:



All dimensions are typical: millimeters (inches)
Pin Diameter: 0.50 ± 0.10 (0.02 ± 0.004)
Pin Pitch Tolerance: ± 0.35 (±0.014)
Case Tolerance: ± 0.5 (±0.02)

Pin Out Specifications 6000VDC models	
Pin	Single output
1	+V Input
11	No Pin
12	-V Output
13	+V Output
15	No Pin
23	-V Input
24	-V Input

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