



**FEATURES:**

- RoHS Compliant
- Ultra-wide 4:1 Input range
- Adjustable Output Voltage
- Remote On/Off
- 2" x 1" package
- Soft start
- Industrial temperature range -40 to +85°C
- High efficiency up to 91%
- No minimum load required

**Models**  
**Single output**



Model	Input Voltage (V)	Output Voltage (V)	Output Current max (A)	Maximum capacitive load (μF)	Efficiency (%)
AM20EW-2403SZ	9-36	3.3	5.5	10000	89
AM20EW-2405SZ	9-36	5	4	6800	91
AM20EW-2412SZ	9-36	12	1.67	1000	89
AM20EW-2415SZ	9-36	15	1.33	680	89
AM20EW-4803SZ	18-75	3.3	5.5	10000	89
AM20EW-4805SZ	18-75	5	4	6800	91
AM20EW-4812SZ	18-75	12	1.67	1000	89
AM20EW-4815SZ	18-75	15	1.33	680	89

Add suffix "-K" for optional heatsink

**Models**  
**Dual output**

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (A)	Maximum capacitive load (μF)	Efficiency (%)
AM20EW-2405DZ	9-36	±5	±2	±2200	89
AM20EW-2412DZ	9-36	±12	±0.835	±470	88
AM20EW-2415DZ	9-36	±15	±0.665	±330	89
AM20EW-4805DZ	18-75	±5	±2	±2200	89
AM20EW-4812DZ	18-75	±12	±0.835	±470	88
AM20EW-4815DZ	18-75	±15	±0.665	±330	89

Add suffix "-K" for optional heatsink

**Input Specifications**

Parameters	Nominal	Typical	Maximum	Units
Voltage range	24 48	9-36 18-75		VDC
Under voltage lockout	24 (ON/OFF) 48 (ON/OFF)	8.6/7.9 17.8/16		VDC
Filter	π (Pi) Network			
Transient recovery time	25% load step change	250		μs
Transient recovery deviation	25% load step change		±3	%
Startup time		20		ms
Absolute Maximum Rating	24 48	-0.7~50 -0.7~100		VDC
Peak Input Voltage time			100	ms
On/Off Control	ON: 3 ~12VDC or open circuit OFF: 0 ~ 1.2VDC or Short circuit between pin 2 and pin 1			
OFF idle current		5		mA
Input reflected ripple current *		20		mA p-p

\* The input reflected ripple current should be measured with a 12μH inductor and a 47μF input capacitor (ESR<1Ω at 100 KHz)

### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		1600	VDC
Tested I,O to case voltage	60 sec	1600		VDC
Resistance		>1000		MOhm
Capacitance		1200		pF

### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			±1	%
Over voltage protection	3.3Vout, Zener diode clamp	3.9		VDC
	5Vout, Zener diode clamp	6.2		VDC
	12Vout, Zener diode clamp	15		VDC
	15Vout, Zener diode clamp	18		VDC
	±12Vout, Zener diode clamp	±15		VDC
	±15Vout, Zener diode clamp	±18		VDC
Over current protection		120		% of FL
Short Circuit protection	Continuous			
Short Circuit restart	Auto recovery			
Line voltage regulation	HL-LL		±0.5	% of Vin
Load voltage regulation	Single output, 0-100% load		±0.5	%
Load voltage regulation	Dual output, Balanced load		±1	%
Cross regulation	25% load on 1 <sup>st</sup> output and 100% load on 2 <sup>nd</sup> output	±5		%
Temperature coefficient		±0.02		%/°C
Ripple & Noise *	At 20MHz Bandwidth		75	mV p-p
Voltage adjustment range		±10		%

\* Measured with 1µF CC.

### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	330		KHz
Operating temperature	With derating above 65°C	-40 to +85		°C
Storage temperature		-55 to +125		°C
Derating	Without heatsink, 66 to 85°C	2.57		%/°C
	With heatsink, 72 to 85°C	3.03		%/°C
Max Case temperature			105	°C
Cooling	Free air convection			
Humidity			95	% RH
Case material	Nickel coated copper with non conductive base			
Potting material	UL94V-0 rated			
Weight		31		g
Dimensions (L x W x H)	2.00 x 1.00 x 0.40 inches 50.80 x 25.40 x 10.2 mm			
MTBF	>560 000 hrs (MIL-HDBK -217F, Ground Benign, t <sub>a</sub> =+25°C)			

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.

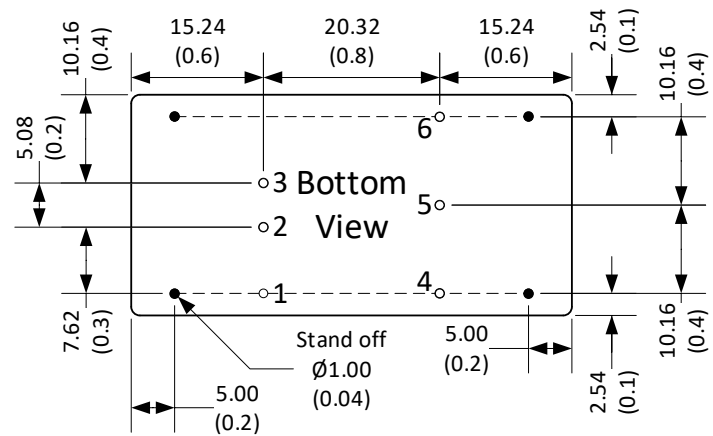
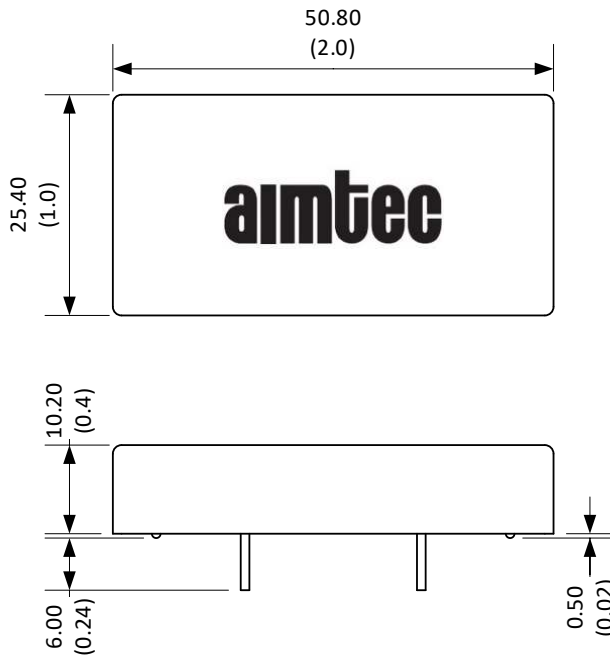
### Safety Specifications

Parameters	
Agency Approvals	CE
Standards	Designed to meet IEC/EN 60950-1
	EN55032, class A, with the recommended circuit
	EN61000-4-2, criteria A
	EN61000-4-3, criteria A
	EN61000-4-4, criteria A, with external filter capacitor, 220µF/100V
	EN61000-4-5, criteria A, with external filter capacitor, 220µF/100V
	EN61000-4-6, criteria A
EN61000-4-8, criteria A	

### Pin Out Specifications

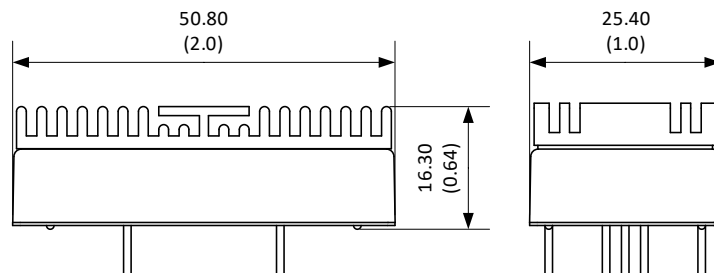
Pin	Single	Dual
1	On/Off Control	On/Off Control
2	-V Input	-V Input
3	+V Input	+V Input
4	-V Output	-V Output
5	Trim	Common
6	+V Output	+V Output

### Dimensions



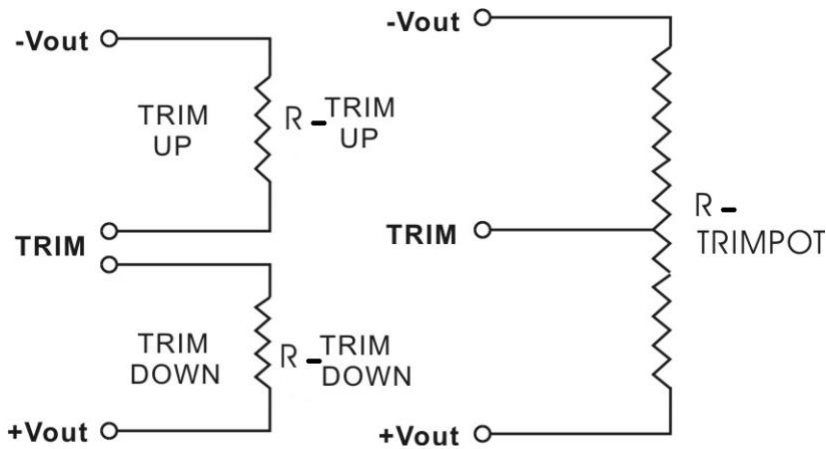
All dimensions are typical: millimeters (inches)  
 Pin Diameter:  $1.0 \pm 0.05$  ( $0.04 \pm 0.002$ )  
 Pin Pitch tolerance:  $\pm 0.35$  ( $\pm 0.014$ )  
 Case tolerance:  $\pm 0.5$  ( $\pm 0.02$ )  
 Stand off tolerance:  $\pm 0.1$  ( $\pm 0.004$ )

### Dimensions with Optional Heatsink



Notes: Add “-K” suffix for ordering, heatsink is affixed with thermally dissipative adhesive tape.  
 See derating graph for temperature performance. Heatsink material is anodized (black) aluminum, adds weight 11.3g to total mass (42.3g).

### Trimming



### Trim Table

#### AM20E(W)-xx03SZ

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	3.267	3.234	3.201	3.168	3.135	3.102	3.069	3.036	3.003	2.970	Volts
Rtrim-down	315.932	172.257	112.528	79.806	59.153	44.930	34.539	26.616	20.374	15.330	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	3.333	3.366	3.399	3.432	3.465	3.498	3.531	3.564	3.597	3.630	Volts
Rtrim-up	544.612	184.034	103.305	67.715	47.676	34.824	25.880	19.297	14.249	10.255	KOhms

#### AM20E(W)-xx05SZ

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	4.950	4.900	4.850	4.800	4.750	4.700	4.650	4.600	4.550	4.500	Volts
Rtrim-down	230.566	106.182	64.301	43.281	30.643	22.207	16.177	11.651	8.129	5.310	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	5.050	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500	Volts
Rtrim-up	244.547	113.776	70.631	49.142	36.274	27.707	21.592	17.010	13.447	10.598	KOhms

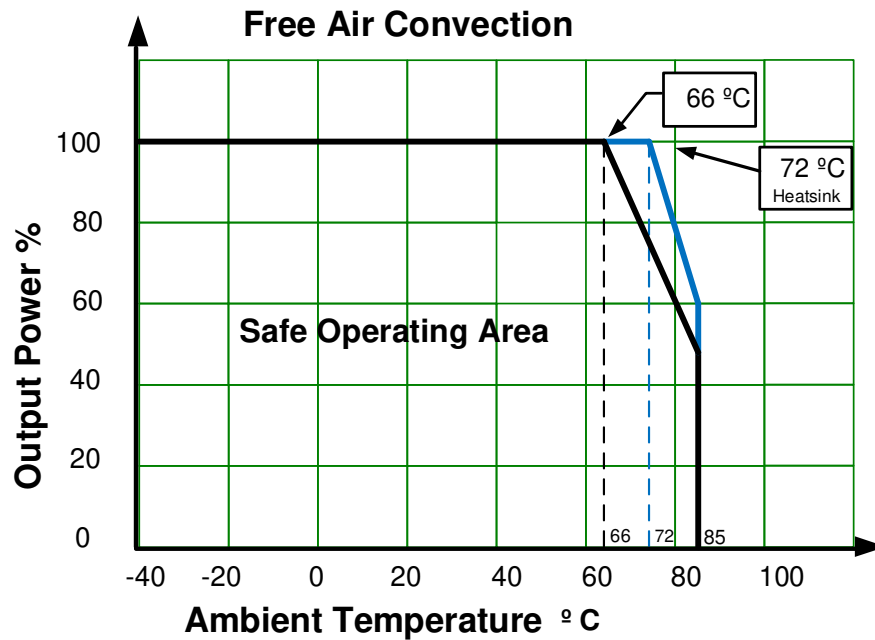
#### AM20E(W)-xx12SZ

Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800	Volts
Rtrim-down	327.351	142.100	83.928	55.470	38.591	27.418	19.477	13.542	8.939	5.264	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200	Volts
Rtrim-up	371.425	183.645	117.623	83.929	63.489	49.767	39.919	32.508	26.728	22.094	KOhms

#### AM20E(W)-xx15SZ

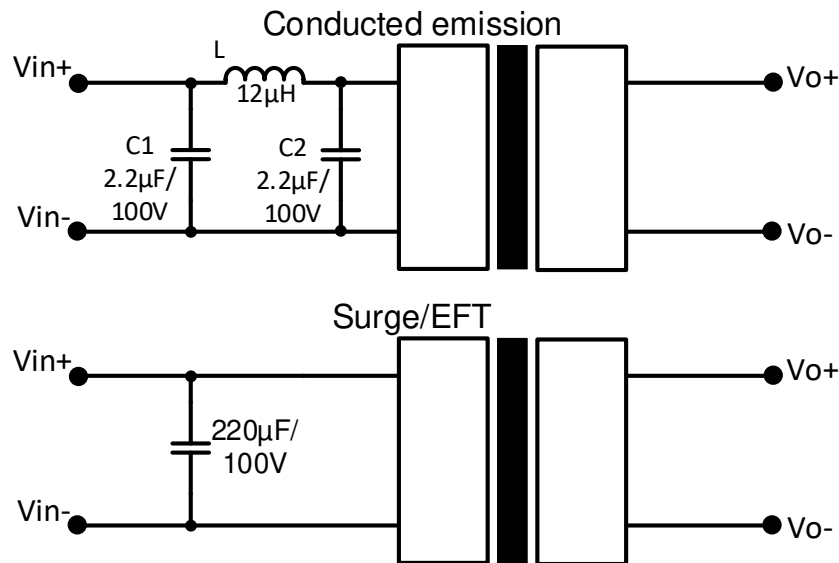
Trim down	1	2	3	4	5	6	7	8	9	10	%
Vout=	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500	Volts
Rtrim-down	433.811	174.916	100.946	65.907	45.468	32.077	22.625	15.596	10.165	5.842	KOhms
Trim up	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000	10.000	%
Vout=	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.500	Volts
Rtrim-up	347.293	178.523	115.235	82.084	61.683	47.863	37.882	30.336	24.430	19.682	KOhms

## Derating



Extended temperature performance can be achieved with optional heat sink. (add suffix “-K” to part number)

## Recommended Circuits



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