



FEATURES:

- Wide Input range 2:1
- High Efficiency up to 93%
- Remote On/Off Control
- Trim Adjustment
- Input to Output Isolation of 1500VDC
- Input Over Voltage and Under Voltage Lockout
- Output OVP, OCP & SCP
- Operating Temperature -40 to +85°C

Models
Single output



Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (A)	Full load/No load Input Current (mA)	Max Capacitive Load(uF)	Efficiency (%)
AM50E-2403S-NZ	18-36	3.3	10	1545/55	27000	91
AM50E-2405S-NZ	18-36	5	10	2341/105	18900	91
AM50E-2412S-NZ	18-36	12	4.167	2290/105	3700	93
AM50E-2415S-NZ	18-36	15	3.333	2290/105	2000	93
AM50E-2424S-NZ	18-36	24	2.083	2341/65	1000	91
AM50E-4805S-NZ	36-75	5	10	1171/55	18900	91
AM50E-4812S-NZ	36-75	12	4.167	1145/55	3700	93
AM50E-4815S-NZ	36-75	15	3.333	1145/70	2000	93
AM50E-4824S-NZ	36-75	24	2.083	1158/50	1000	92

**Add suffix “-ST” for optional screw terminal bottom plate or “-STD” for optional DIN Rail screw terminal bottom plate.
**Add suffix “-K” for optional heatsink, “-K-ST” for optional heatsink and screw terminal bottom plate or “-K-STD” for optional heatsink and DIN Rail screw terminal bottom plate.*

The AM50E-NZ series will be discontinued (EOL) by December 30, 2020; for new designs, please refer to AM50E-Z series.

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.

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	24	18-36		VDC
	48	36-75		
Filter	π(Pi) Network			
Start up time		10		ms
Absolute Maximum Rating	24		-0.7 ~ 50	VDC
	48		-0.7 ~ 100	
Peak Input Voltage time			1	s
On/Off control*	ON – open or TTL high (3 - 12VDC) ; OFF – connected to GND or TTL low (0 - 1.2VDC)			
Over Voltage Lockout	24		41	VDC
	48		83	
Under Voltage Lockout	24		15	VDC
	48		31	
Input reflected current	24	40		mA
	48	30		

*The voltage on the On/Off Control pin is relative to input Ground.

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	1 min, ≤1mA	1500	1500	VDC
Resistance	Isolation 500VDC	>1000		MOhm
Capacitance	100kHz, 0.1V	2000		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units	
Voltage accuracy		±1	±3	%	
Over voltage protection*	3.3V output		3.9	VDC	
	5V output		6.2		
	12V output		15		
	15V output		18		
	24V output		30		
Over current protection		135		%	
Short Circuit protection	Hiccup, continuous				
Short circuit restart	Auto-restart				
Line voltage regulation	LL-HL	±0.2	±0.5	% of Vin	
Load voltage regulation	10-100% load	±0.5	±1	%	
Temperature coefficient			±0.03	%/°C	
Ripple & Noise	20MHz Bandwidth	3.3V/5V Vout	100	250	mV p-p
		AM50E-4824S-NZ	200	350	
		Others	200	300	
Voltage adjustment range		±10		%	
Transient recovery time	25% load step	24V Vout	500	1000	µS
		Others	200	500	
Transient recovery deviation	25% load step	±3	±5	%	

*Restart needed to function properly

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	300		KHz
Operating temperature	See derating curve	-40 to +85		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			105	°C
Cooling	Free Air Convection			
Humidity			95	% RH
Case material	Aluminum alloy			
Weight	Pin mountable		35	g
	With optional -ST mounting plate		57	
	With optional -STD mounting plate		77	
	With optional -K Pin mountable		43	
	With optional -ST-K mounting plate		65	
	With optional -STD-K mounting plate		85	
Dimensions (L x W x H)	Pin mountable	2.00 x 1.00 x 0.46inches	50.80 x 25.40 x 11.80mm	
	With optional -ST mounting plate	2.99 x 1.24 x 0.84inches	76.00 x 31.50 x 21.20mm	
	With optional -STD mounting plate	2.99 x 1.24 x 1.02inches	76.00 x 31.50 x 25.80mm	
	With optional -K Pin mountable	2.02 x 1.03 x 0.65inches	51.40 x 26.20 x 16.50mm	
	With optional -ST-K mounting plate	2.99 x 1.24 x 1.00inches	76.00 x 31.50 x 25.30mm	
	With optional -STD-K mounting plate	2.99 x 1.24 x 1.18inches	76.00 x 31.50 x 29.90mm	
MTBF	>1 000 000 hrs (MIL-HDBK-217 F at +25 °C)			
Maximum soldering temperature	10sec, 1.5mm from case		300	°C

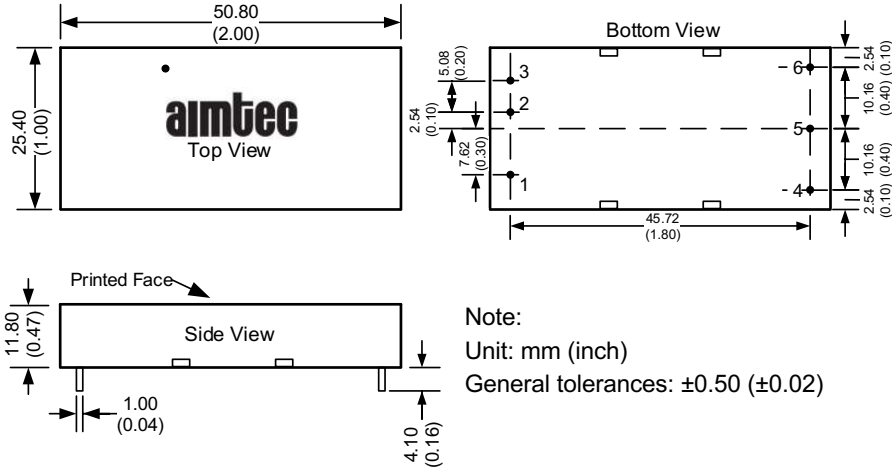
Environmental Specifications

Parameters		
Vibration	Test mode	10-55Hz
	Acceleration	10G, 30min one cycle, every axis tested
	Converter operation	Before and after test, body mounted (on chassis)

Safety Specifications

Parameters		
Approval	UL (AM50E-4812S-NZ only)	UL60950-1
Standards	Information Technology Equipment	CISPR32/EN55032 Class B, with the EMC recommended circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2, Contact ± 4 KV, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, 10V/m, Criteria A
	Electrical Fast Transient / Burst Immunity	IEC 61000-4-4, ± 2 KV, Criteria B, with the EMC recommended circuit
	Surge Immunity	IEC 61000-4-5, L-L ± 2 KV, Criteria B, with the EMC recommended circuit
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 3 Vrms, Criteria A

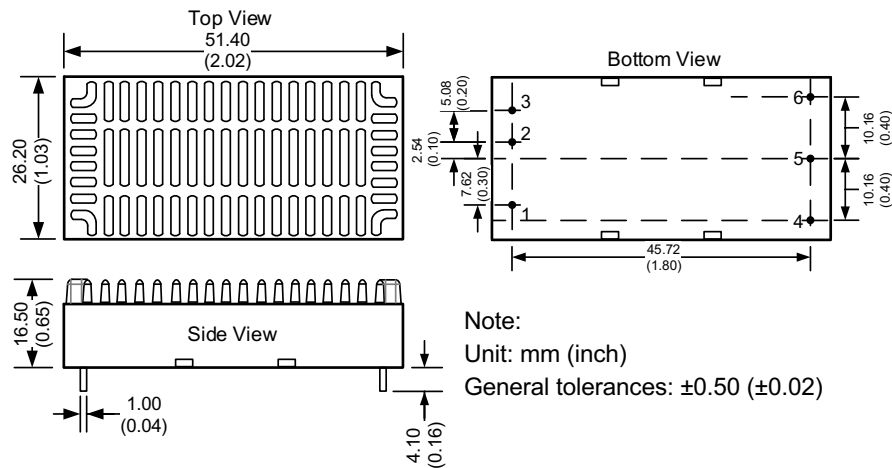
Dimensions



Pin Out Specifications

Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	Trim
5	-Vout
6	+Vout

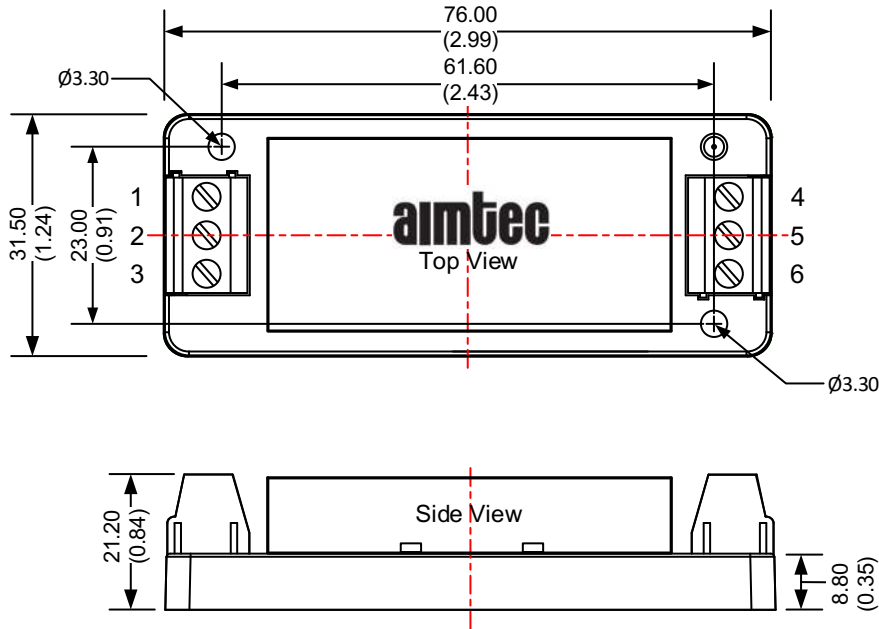
Heatsink Option: AM50E-NZ-K



Screw Terminal Option: AM50E-NZ-ST

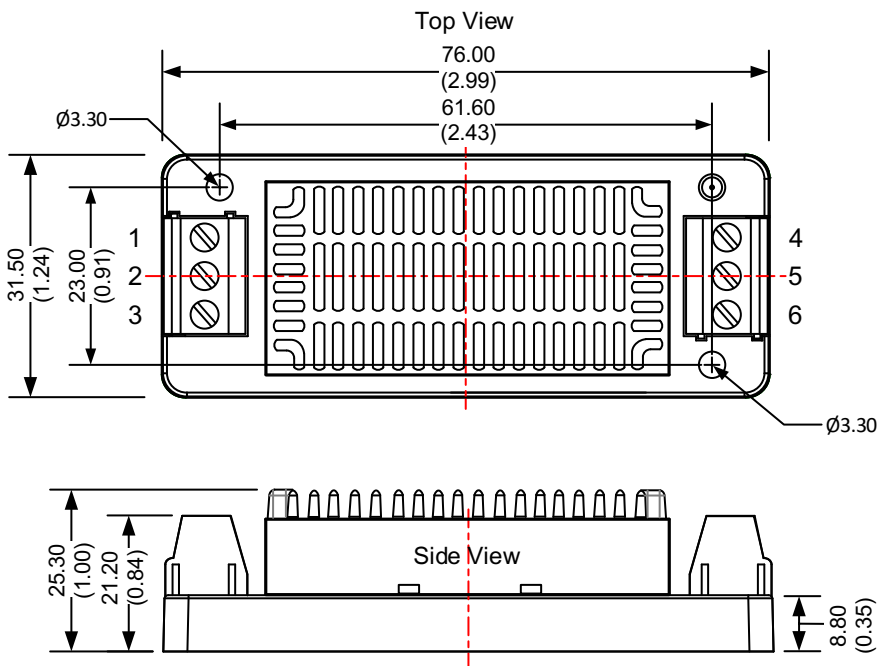
Pin Out Specifications

Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	Trim
5	-Vout
6	+Vout



Note:
Unit: mm (inch)
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N*m
General tolerances: ± 0.50 (± 0.02)

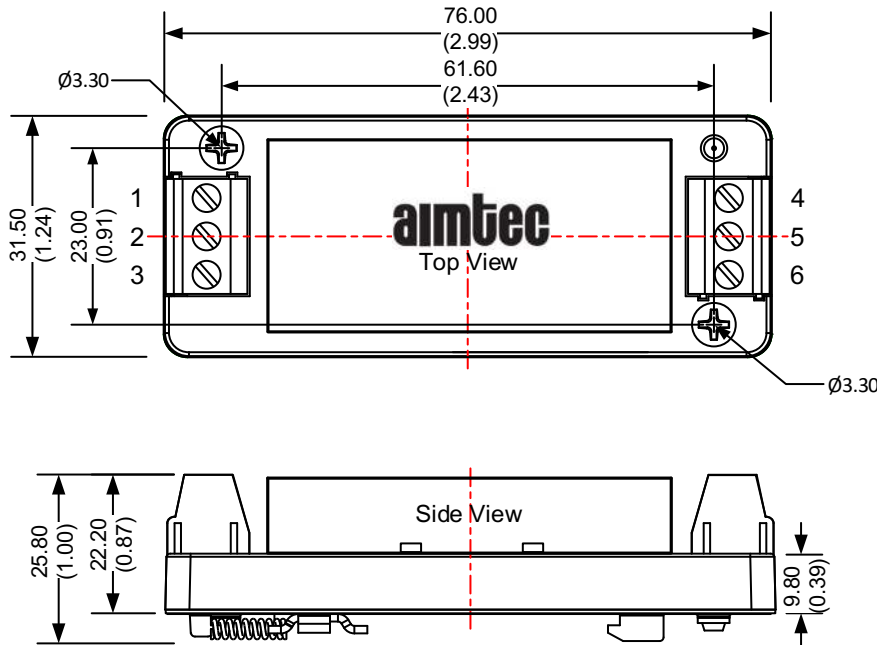
Screw Terminal with Heatsink Option: AM50E-NZ-K-ST



Note:
Unit: mm (inch)
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N*m
General tolerances: ± 0.50 (± 0.02)

DIN-RAIL Option: AM50E-NZ-K-STD

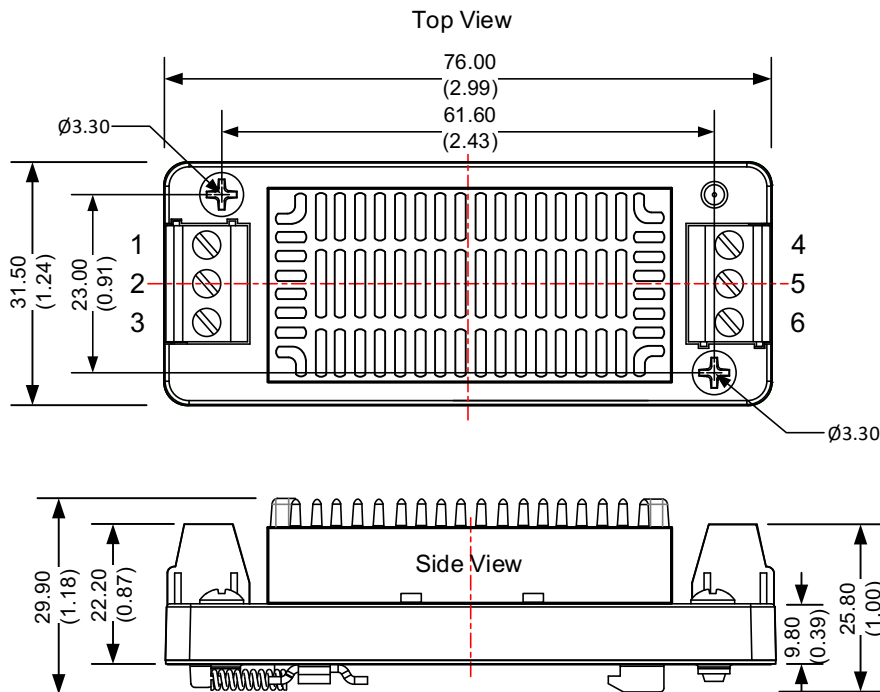
Pin Out Specifications



Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	Trim
5	- Vout
6	+ Vout

Note:
Unit: mm (inch)
Mounting rail: TS35
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N*m
General tolerances: ± 0.50 (± 0.02)

DIN-RAIL with heatsink Option: AM50E-NZ-K-STD

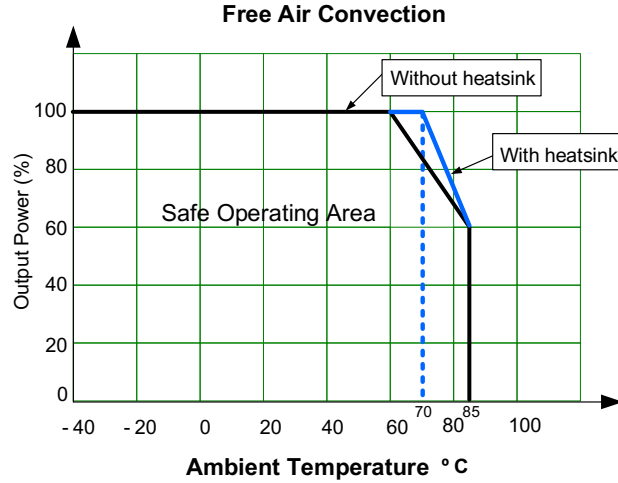
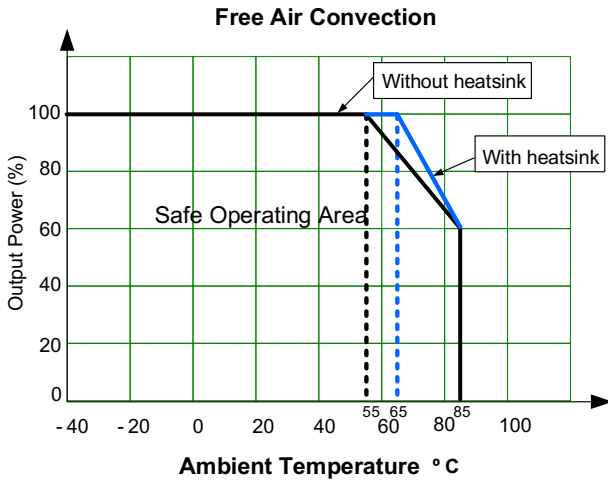


Note:
Unit: mm (inch)
Mounting rail: TS35
Wire range: 24-12 AWG
Tightening torque: Max 0.4 N*m
General tolerances: ± 0.50 (± 0.02)

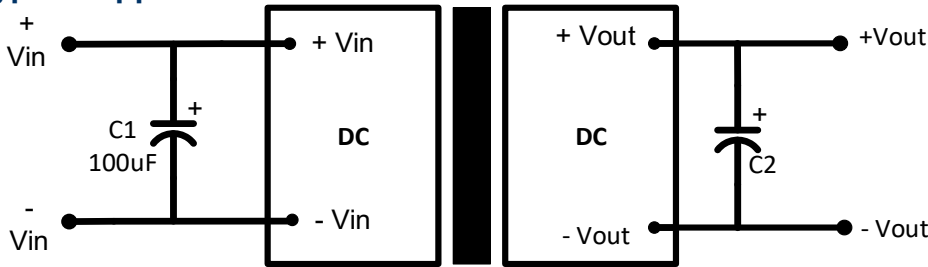
Derating

For 3.3 & 5V output models

For 12, 15 & 24V output models

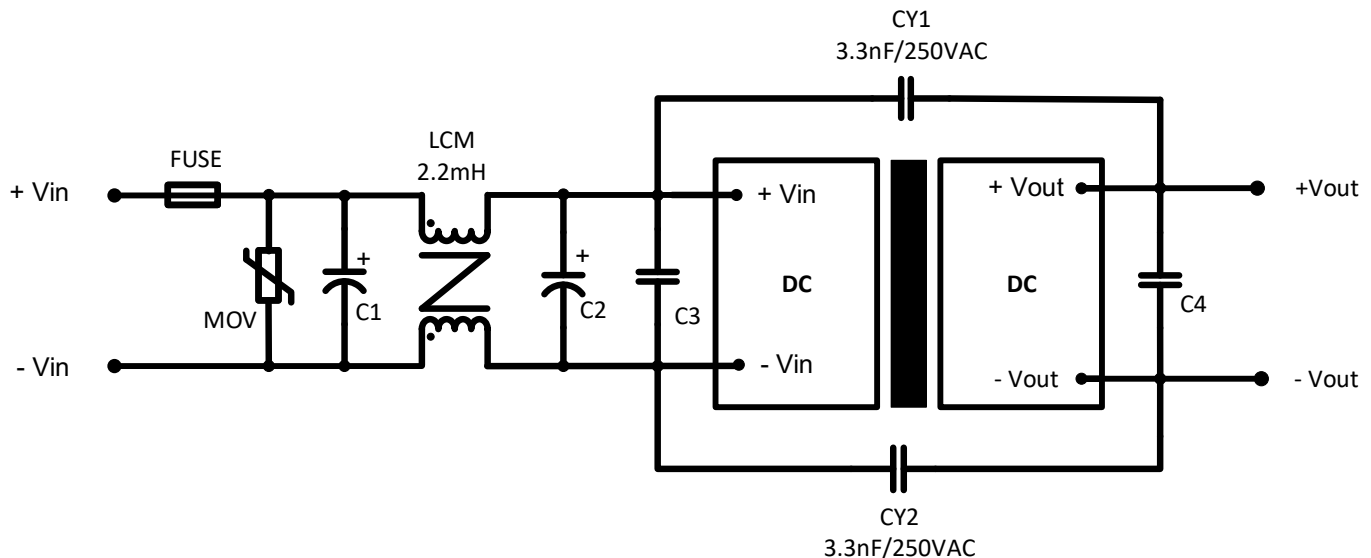


Typical Application Circuit



Model	Single output models		
	3.3V/5V Vout	12V/15V Vout	24V Vout
C2	470µF	100µF	47µF

EMC Recommended Circuit

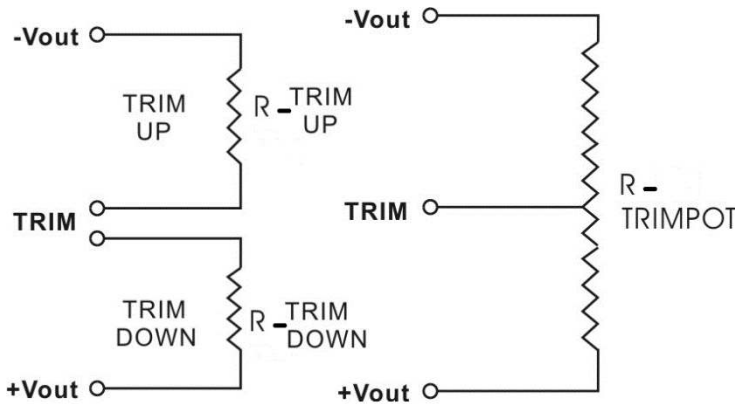


Model	24V Vin	48V Vin
FUSE	Choose based on actual input current	
MOV	S20K30	S14K60
C1	680μF/50V	330μF/100V
C2	330μF/50V	330μF /100V
C3	4.7μF/50V	2.2μF/100V
C4	Refer to the C2 in typical application circuit	

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor Variable Potentiometer



Leave open if not used.

AM50E-xx03S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.27	3.23	3.20	3.17	3.14	3.10	3.07	3.04	3.00	2.97
Rt down (KΩ)	236.27	106.095	71.347	51.633	38.931	27.676	21.71	17.076	12.299	9.457
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.33	3.37	3.40	3.43	3.47	3.50	3.53	3.56	3.60	3.63
Rt up (KΩ)	263.512	81.826	50.017	33.939	21.804	16.033	11.826	8.624	5.38	3.447

AM50E-xx05S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.95	4.9	4.85	4.8	4.75	4.7	4.65	4.6	4.55	4.5
Rt down (KΩ)	128.53	56.78	32.863	20.905	13.73	8.947	5.53	2.968	0.974	-0.62
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.05	5.1	5.15	5.2	5.25	5.3	5.35	5.4	5.45	5.5
Rt up (KΩ)	131.399	59.65	35.733	23.775	16.6	11.817	8.4	5.838	3.844	2.25

AM50E-xx12S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.88	11.76	11.64	11.52	11.4	11.28	11.16	11.04	10.92	10.8
Rt down (KΩ)	489.091	294.452	205.527	154.585	121.573	98.442	81.332	68.164	57.716	49.223
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.12	12.24	12.36	12.48	12.6	12.72	12.84	12.96	13.08	13.2
Rt up (KΩ)	699.444	151.922	76.879	47.075	31.077	21.095	14.274	9.317	5.552	2.595

AM50E-xx15S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.85	14.7	14.55	14.4	14.25	14.1	13.95	13.8	13.65	13.5
Rt down (KΩ)	1213	588	379.667	275.5	213	171.333	141.571	119.25	101.889	88
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	228	103.001	61.333	40.5	28	19.667	13.714	9.25	5.778	3

AM50E-xx24S-NZ

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1038.04	638.01	455.25	350.55	282.70	235.15	199.99	172.92	151.45	133.99
	8	5	6	3	2	9	3	8	3	9
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	640.98	143.11	74.892	47.797	33.252	24.178	17.977	13.47	10.047	7.359
		6								

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