Series AM40E-Z

40 Watt | DC-DC Converter

FEATURES:

- Wide 2:1 Input Range
- Adjustable Single Output Voltage
- Undervoltage lockout
- High Power Density
- Efficiency up to 92%
- Remote On/Off Function
- Soft start

RoHS CE

Models
Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (A)	Maximum Capacitive load (µF)	Efficiency (%)
AM40E-1203SZ	9-18	3.3	8	21800	90
AM40E-1205SZ	9-18	5	8	13600	91
AM40E-1212SZ	9-18	12	3.33	2300	91
AM40E-1215SZ	9-18	15	2.67	1500	91
AM40E-2403SZ	18-36	3.3	8	21800	91
AM40E-2405SZ	18-36	5	8	13600	92
AM40E-2412SZ	18-36	12	3.33	2300	91
AM40E-2415SZ	18-36	15	2.67	1500	92
AM40E-4803SZ	36-75	3.3	8	21800	91
AM40E-4805SZ	36-75	5	8	13600	92
AM40E-4812SZ	36-75	12	3.33	2300	91
AM40E-4815SZ	36-75	15	2.67	1500	92

Models
Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (A)	Maximum Capacitive load (µF)	Efficiency (%)
AM40E-1212DZ	9-18	±12	±1.67	±1200	91
AM40E-1215DZ	9-18	±15	±1.33	±750	92
AM40E-2412DZ	18-36	±12	±1.67	±1200	91
AM40E-2415DZ	18-36	±15	±1.33	±750	92
AM40E-4812DZ	36-75	±12	±1.67	±1200	92
AM40E-4815DZ	36-75	±15	±1.33	±750	92

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	12	9-18		VDC
	24	18-36		
	48	36-75		
Filter	π (Pi) Network			
Start up time		30		ms
Absolute Maximum Rating	12		25	VDC
	24		50	
	48		100	
Peak Input Voltage time			1	s
On/Off control	ON: 3 ~12VDC or open circuit ; OFF – 0 ~ 1.2VDC or Short circuit between pin 2 and pin 3 (OFF idle current: 5mA Typical)			

Input Specifications (continued)

Parameters	Nominal	Typical	Maximum	Units
Under voltage lockout	12V ON/OFF	8.6 / 7.9		VDC
	24V ON/OFF	17.8 / 16		
	48V ON/OFF	33.5 / 30.5		
Input Reflected Ripple Current		20		mA p-p

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	3 sec		1600	VDC
Case/Input and Output	3 sec	1600		VDC
Resistance		<1000		MOhm
Capacitance		1000		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±1		%
Cross Regulation (Dual Output Models)	25% load on one output 100% load on second load	±5		%
Over voltage protection	Zener diode clamp			
Over load protection		130		% of Iout
Short Circuit protection	Continuous			
Short circuit restart	Auto-Recovery			
Line voltage regulation	HL-LL	±0.5		%
Load voltage regulation (Single)	0% to 100% load	±0.5		%
Load voltage regulation (Dual)	0% to 100% load	±1		%
Temperature coefficient		±0.02		%/°C
Ripple & Noise (20MHz Bandwidth)	3.3Vout/5Vout other models	100 150		mV p-p
Voltage adjustment range (single)			±10	%
Minimum Load Current		0		% of Max

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	270		KHz
Operating temperature	Derating above 55	-40 to +71		°C
Storage temperature	-40 to +125			°C
Maximum case temperature			105	°C
Derating		2.5		%/°C
Cooling	Free Air Convection			
Humidity			95	% RH
Case material	Nickel coated Copper			
Weight	32			g
Dimensions (L x W x H)	2.00 x 1.00 x 0.40 inches 50.80 x 25.40 x 10.16 mm			
MTBF	>328,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25ºC)hours			
Maximum soldering temperature	1.5mm from case for 10 sec		260	°C
Transient recovery time		250		µS
Transient recovery deviation		±3		%

Safety Specifications

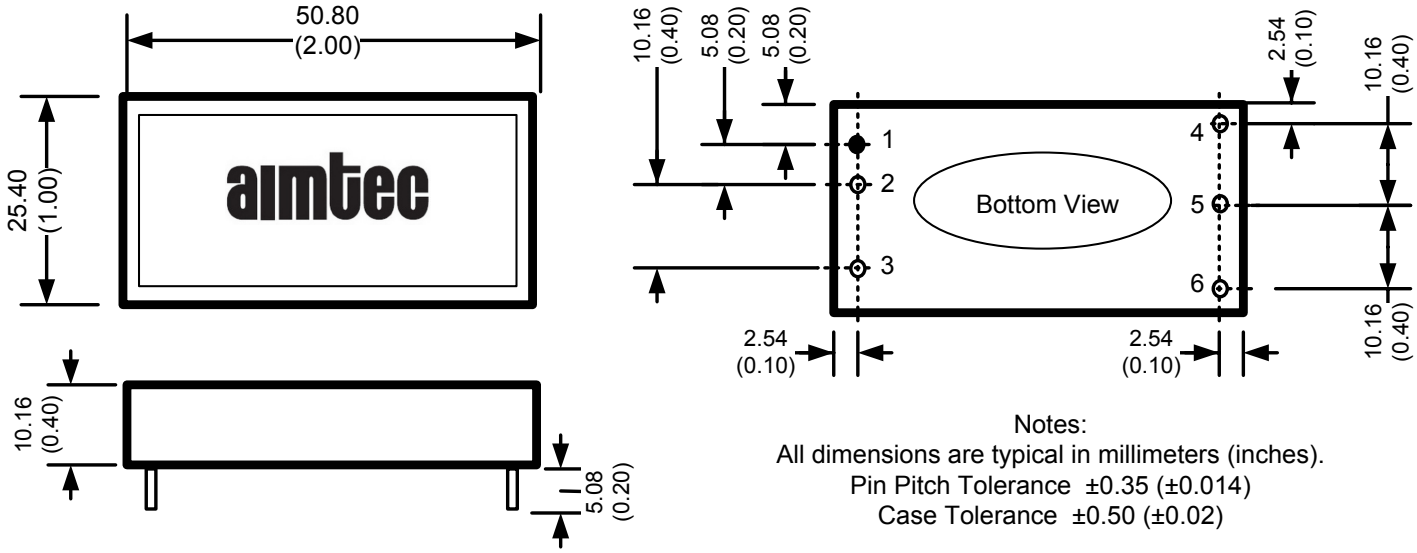
Parameters	
Agency Approval	CE
Safety	EN55022: 2006 + A1:2007, Class B
	IEC61000-3-2:2006+A2:2009
	IEC61000-3-3:2008
	EN55024:1998 + A1:2001 + A2:2003
	IEC61000-4-2: 2008
	IEC61000-4-3:2006+A1: 2007
	IEC61000-4-4:2004
	IEC61000-4-5:2005
	IEC61000-4-6:2008
	IEC61000-4-8:2009
	NOTE: also designed to meet IEC 60950-1:2001

Pin Out Specifications

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

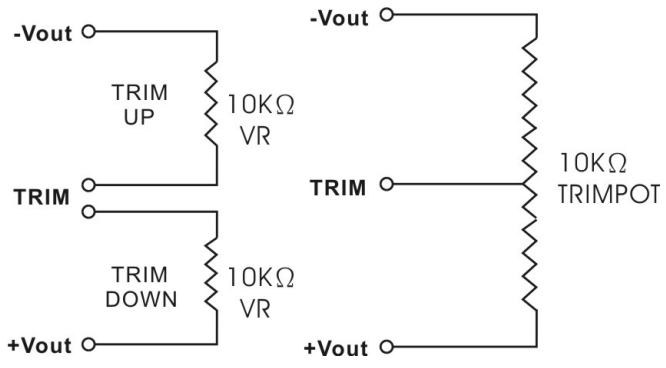
Dimensions

Single and Dual Output Models

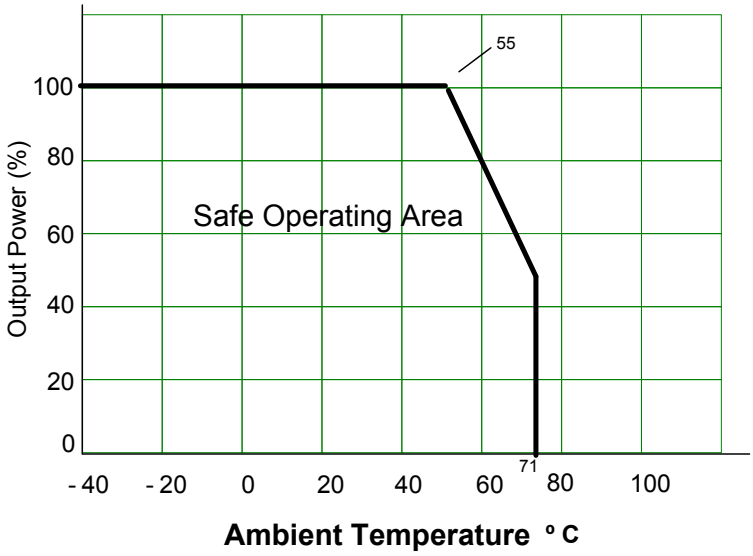


Notes:
All dimensions are typical in millimeters (inches).
Pin Pitch Tolerance ±0.35 (±0.014)
Case Tolerance ±0.50 (±0.02)

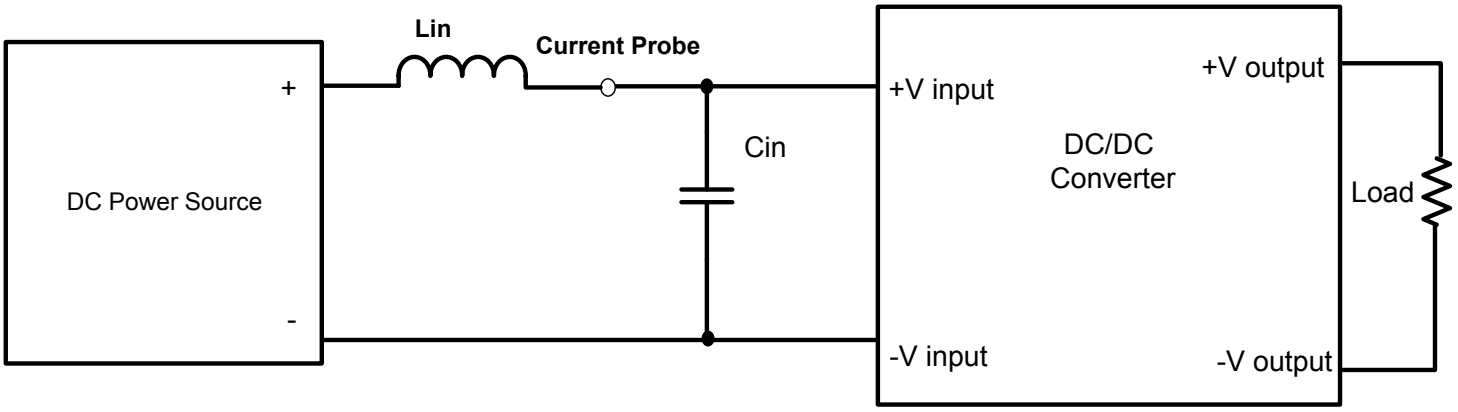
Trimming



Derating

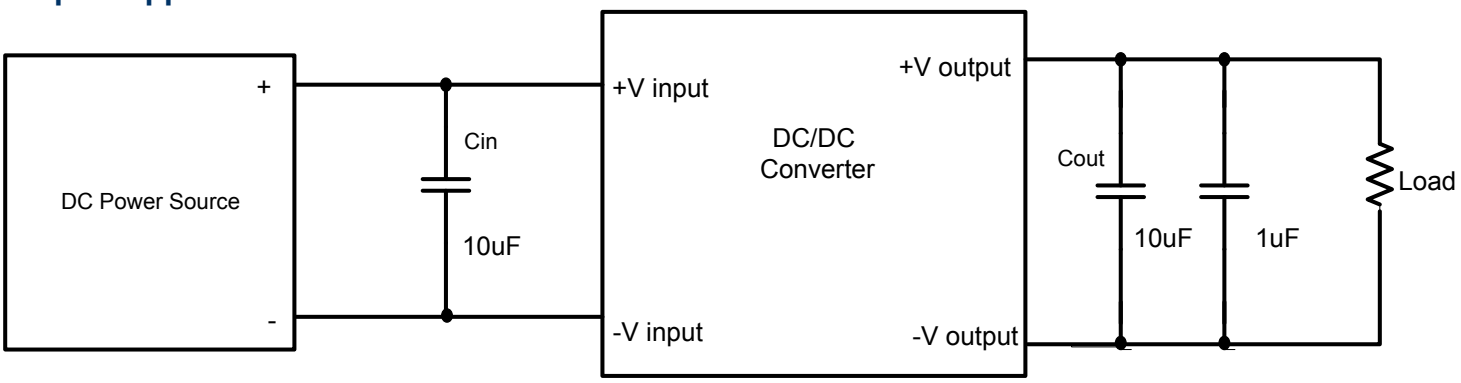


Input Reflected Ripple Current Test Step



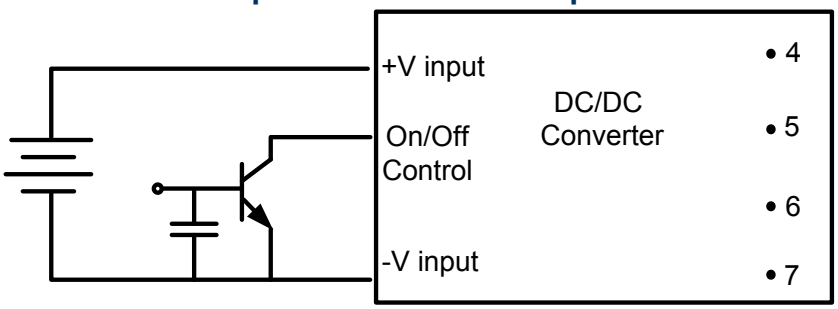
Input reflected ripple current is measured through a source inductor Lin(4.7uH) and a source capacitor Cin (47uF, ESR<1.0ohm at 100KHz) at a nominal input and full load

Output Ripple and noise reduction

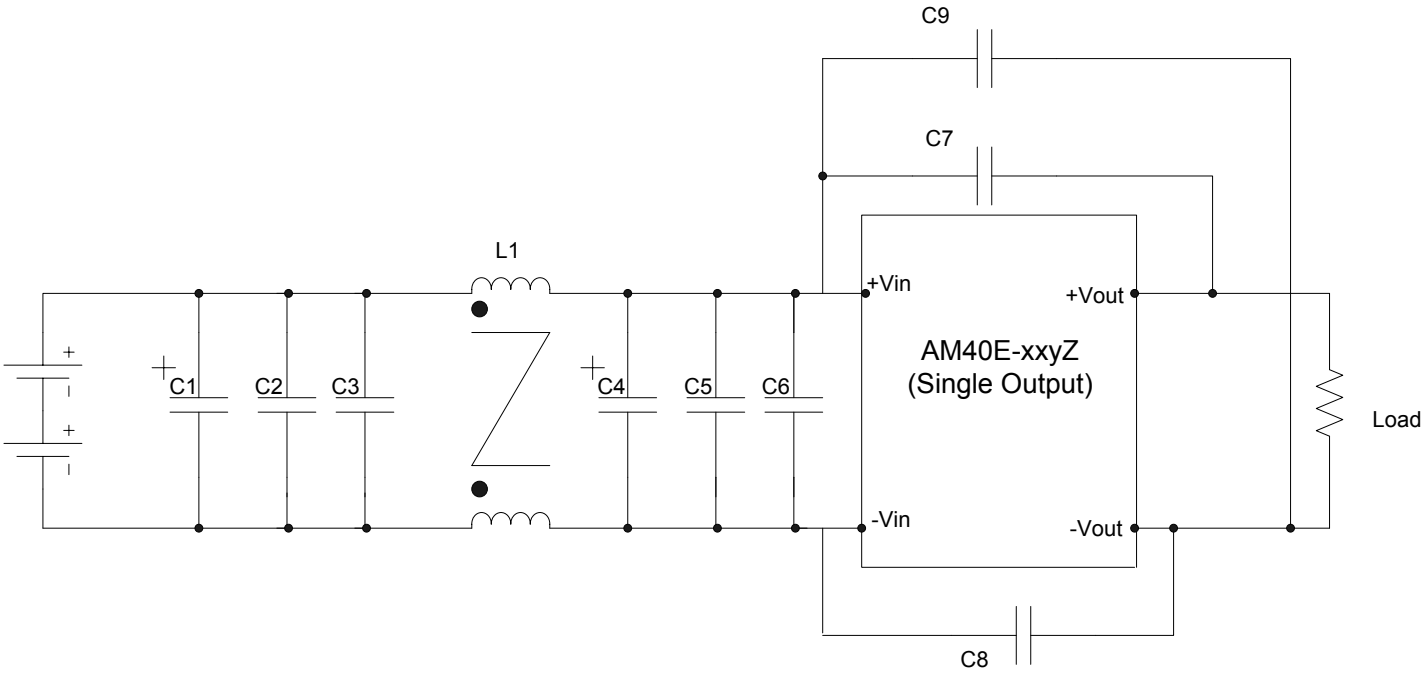


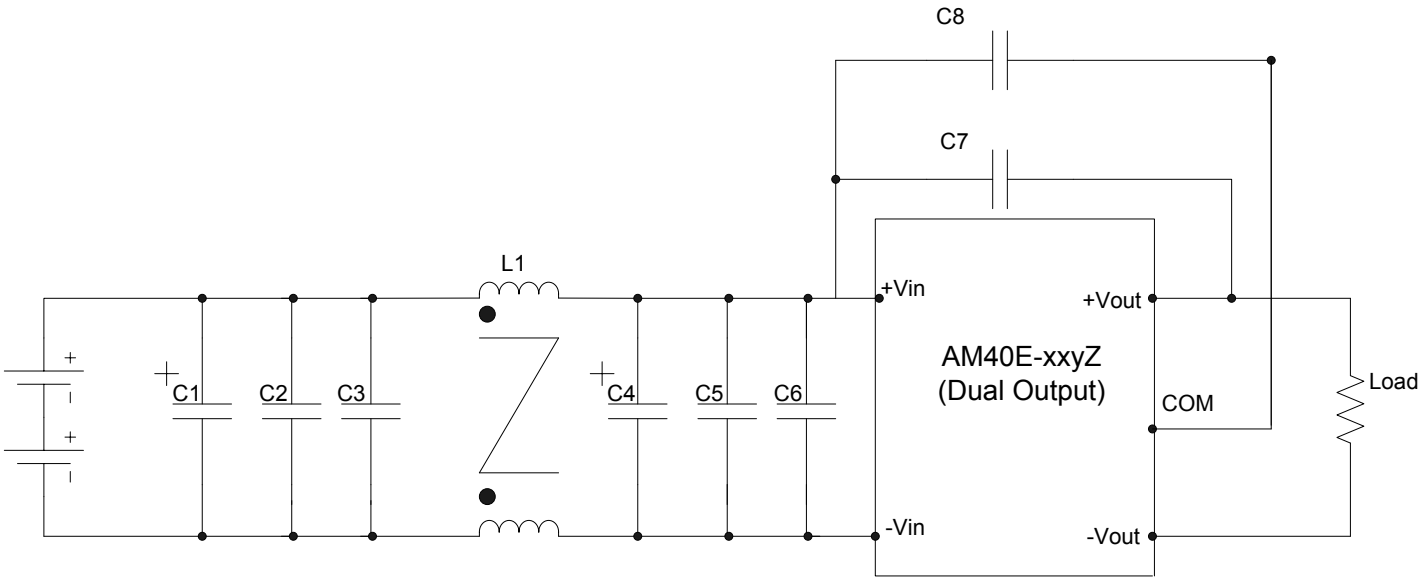
To reduce ripple and noise, it is recommended to use a 1µF ceramic disk capacitor and a 10µF electrolytic

Control ON/OFF pin connection example



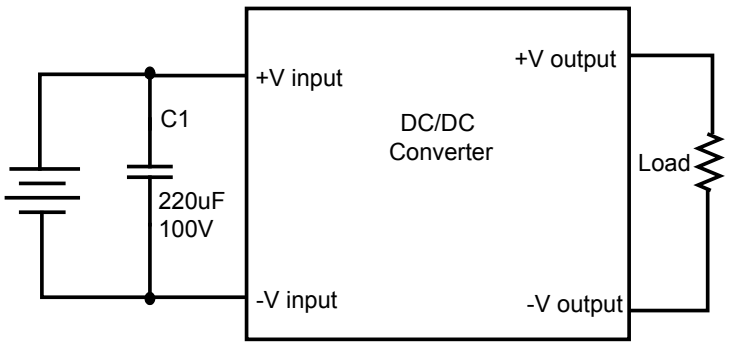
EMI Filter


C9
C7
L1
+Vin
+Vout
AM40E-xxyZ
(Single Output)
Load
C1
C2
C3
C4
C5
C6
-Vin
-Vout
C8


C8
C7
L1
+Vin
+Vout
AM40E-xxyZ
(Dual Output)
COM
Load
C1
C2
C3
C4
C5
C6
-Vin
-Vout

Model	C1	L1	C2/C3/C5/C6	C4	C7	C8	C9
AM40E-12xxSZ (single)	220µF, 100V	Common Choke 68µH	1812,6.8µF, 50V	330µF, 100V			1206,1000pF, 2KV
AM40E-24xxSZ (single)	220µF, 100V	Common Choke 68µH	1812,4.7µF, 50V	220µF, 100V	1206,1000pF, 2KV	1206,1000pF, 2KV	
AM40E-48xxSZ (single)	220µF, 100V	Common Choke 68µH	1812,1.5µF, 50V	220µF, 100V	1206,1000pF, 2KV	1206,1000pF, 2KV	
AM40E-12xxDZ (dual)	220µF, 100V	Common Choke 68µH	1812,6.8µF, 50V	330µF, 100V	1206,1000pF, 2KV	1206,1000pF, 2KV	
AM40E-24xxDZ (dual)	220µF, 100V	Common Choke 68µH	1812,4.7µF, 50V	220µF, 100V	1206,1000pF, 2KV	1206,1000pF, 2KV	
AM40E-48xxDZ (dual)	220µF, 100V	Common Choke 68µH	1812,1.5µF, 50V	220µF, 100V	1206,1000pF, 2KV	1206,1000pF, 2KV	

EFT/Surge



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