

### FEATURES:

- Wide Input 4:1 Range
- No Minimum Load Required
- Soft Start
- Efficiency up to 93%
- 1600 VDC Isolation
- Adjustable Output Voltage
- Remote ON/OFF Function
- Operating temperature -40°C to +75°C
- Over Current, Over Voltage, Over Temperature & Continuous Short Circuit Protection

### Models Single output



Model	Input Voltage (V)	Input Current No load/Full load (mA)	Output Voltage (V)	Output Current max (A)	Max Capacitive load (μF)	Efficiency (%)
AM60EW-2405SZ	9-36	25/2703	5	12	30,000	92.5
AM60EW-2412SZ	9-36	25/2703	12	5	5850	92.5
AM60EW-2415SZ	9-36	25/2688	15	4	3900	93
AM60EW-4805SZ	18-75	25/1344	5	12	30,000	93
AM60EW-4812SZ	18-75	25/1351	12	5	5850	92.5
AM60EW-4815SZ	18-75	25/1344	15	4	3900	93

### Models Dual output

Model	Input Voltage (V)	Input Current No load/Full load (mA)	Output Voltage (V)	Output Current max (A)	Max Capacitive load (μF)	Efficiency (%)
AM60EW-2412DZ	9-36	40/2747	±12	±2.5	±3900	91
AM60EW-2415DZ	9-36	50/2747	±15	±2	±2400	91
AM60EW-4812DZ	18-75	40/1373	±12	±2.5	±3900	91
AM60EW-4815DZ	18-75	50/1373	±15	±2	±2400	91

Add suffix "-K" for optional heatsink

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	9-36		VDC
	48	18-75		
Filter	π(Pi) Network			
Start up time		60		ms
Absolute Maximum Rating	24		50	VDC
	48		100	
Peak Input Voltage time			100	ms
Input reflected ripple current	Measured with the referenced circuit		20	mA p-p
Under Voltage Lockout (On/Off)	(24V model)	8.6/7.9		VDC
	(48V model)	17.8/16		
Remote On / OFF Control	ON: 3 ~12Vdc or Open Circuit OFF: 0 ~ 1.2Vdc or Short pin 2 & 3 (idle current 5mA typical)			VDC

### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60s		1600	VDC
Case/ Input & Output	60s		1600	VDC
Resistance		>1000		MOhm
Capacitance		2200		pF

## Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			±1	%
Over voltage protection	Zener Diode Clamp, 5V output	6.2		V
	Zener Diode Clamp, 12V output	15		
	Zener Diode Clamp, 15V output	20		
Over current protection		140		% of Iout
Short circuit protection	Hiccup, continuous			
Short circuit restart	Auto-recovery			
Thermal shutdown	On Case	115		°C
Line voltage regulation			±0.5	% of Vin
Load voltage regulation	0% to 100%, Single output		±0.5	%
	0% to 100%, Dual output		±1	
Cross regulation*			±5	%
Temperature coefficient		±0.02		%/°C
Ripple & Noise**	20MHz Bandwidth		100	mV p-p
Transient Response Deviation	25% load step change		±3	% of Max
Transient Recovery	25% load step change	250		µsec
Voltage adjustment range			±10	%

\* One of the outputs is at 100% load while the other output is at 25% to 100% load.

\*\* Measured at 20MHz bandwidth with a 1µF ceramic capacitor. Please refer to the application note for specific details.

## General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	225		KHz
Operating temperature	With derating (see graph below)	-40 to +75		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			110	°C
Cooling	Free Air Convection (30-60LFM)			
Humidity			95	% RH
Case material	Non-conductive Black Plastic (UL94V-0 rated)			
Weight	Pin mountable	45		g
	With optional -K heatsink	56.3		
Dimensions (L x W x H)	Pin mountable	2.00 x 1.00 x 0.45 inches 50.8 x 25.4 x 11.50 mm		
	With optional -K heatsink	2.00 x 1.00 x 0.69 inches 50.8 x 25.4 x 17.60 mm		
MTBF	>210 000 hrs (MIL-HDBK-217 F at +25°C)			
Maximum soldering temperature	1.5mm from case for 10 sec		260	°C

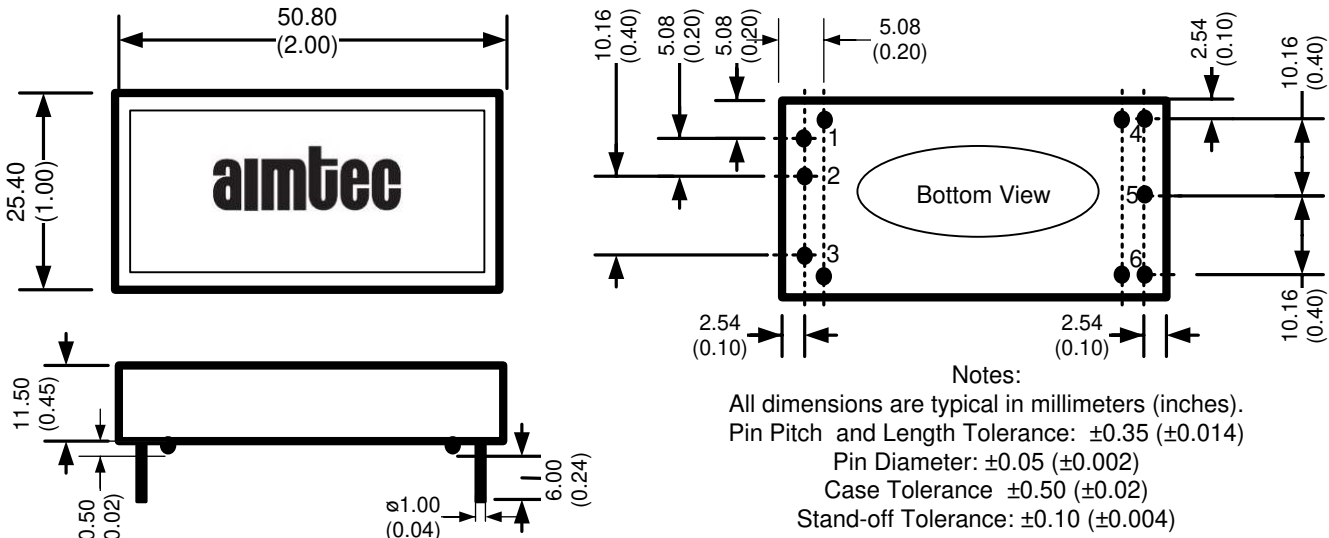
## Safety Specifications

Parameters		
Agency approvals	UL	
Standards	Information Technology Equipment	UL62368-1
	EMI - Conducted and radiated emission	EN55032, class A (with the recommended EMI circuit)
	Electrostatic Discharge Immunity	IEC 61000-4-2, Criteria A
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4, Criteria A, (with the recommended EMC circuit)
	Surge Immunity	IEC 61000-4-5, Criteria A, (with the recommended EMC circuit)
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, Criteria A
	Power frequency Magnetic Field Immunity	IEC 61000-4-8, Criteria A

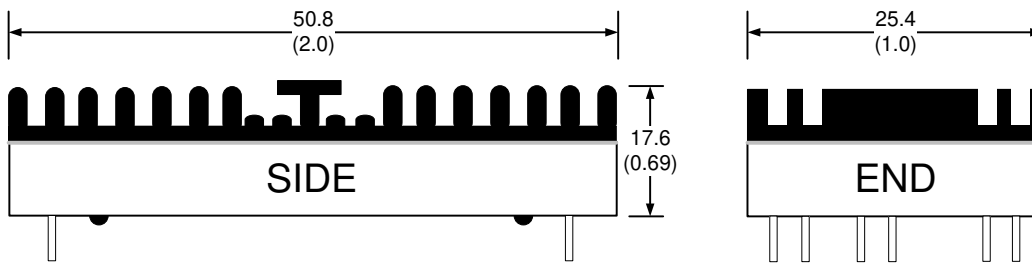
## Pin Out Specifications

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**

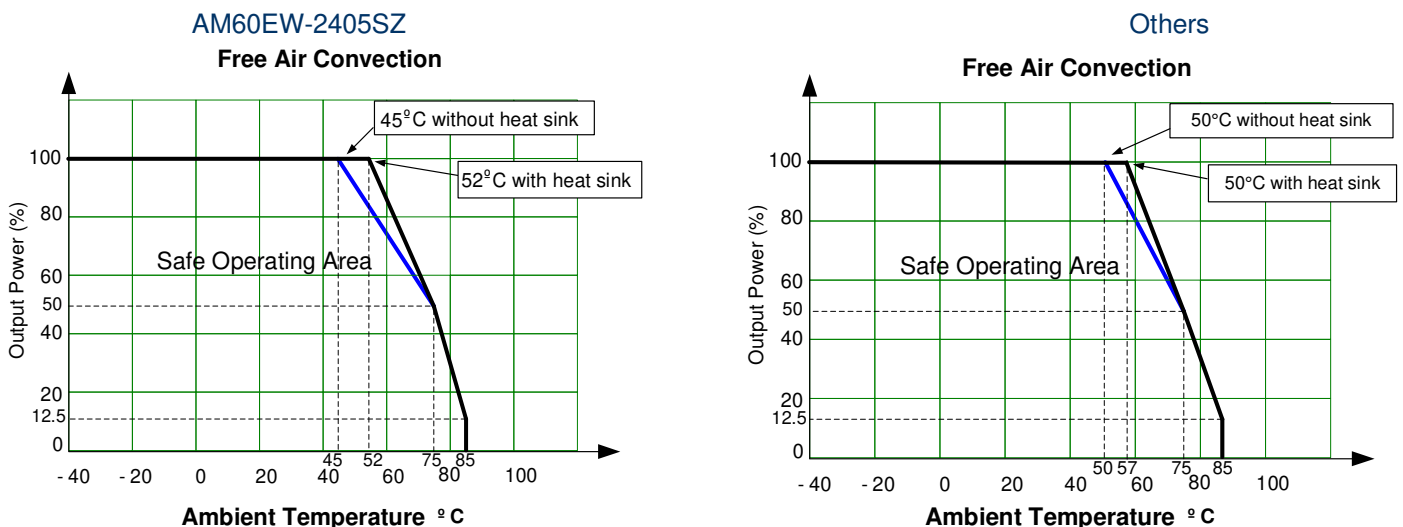


**Dimensions with Optional Heatsink**



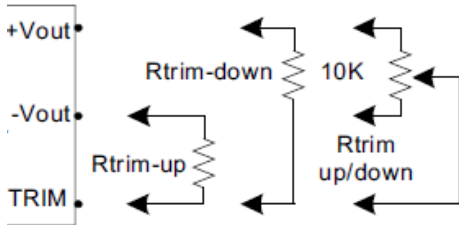
Notes: Add “-K” suffix for ordering, heatsink is affixed with thermally dissipative adhesive tape. See derating graph for temperature performance. Heatsink material is anodized (black) aluminum, adds weight 11g to total mass (56g). Thermal impedance of converter is: without heatsink 9.5°C/W and 8.5°C/W with heatsink.

**Derating**



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

## Trimming



Leave open if not used.

### AM60EW-xx05SZ

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)	151.46	133.91	83.26	59.01	44.79	35.44	28.82	23.89	20.08	17.04
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)	256.85	37.9	23.95	16.71	12.27	9.27	7.11	5.48	4.21	3.18

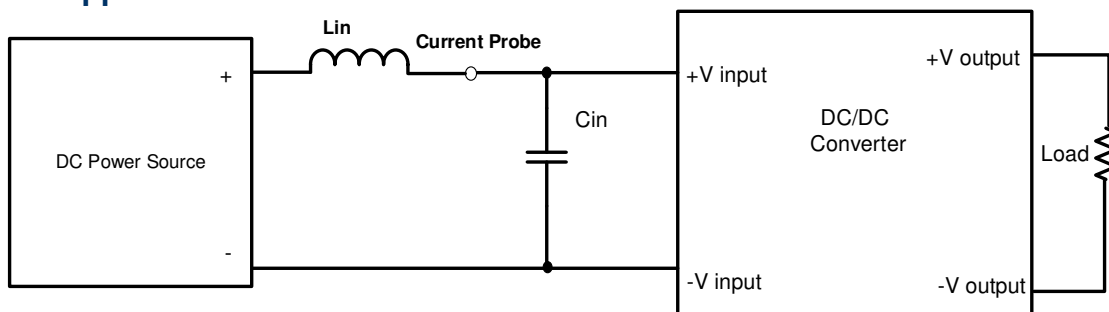
### AM60EW-xx12SZ

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)	638.7	309.72	198.29	142.24	108.49	85.95	69.83	57.73	48.31	40.76
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)	215.45	97.18	58.4	39.13	27.61	19.94	14.48	10.38	7.2	4.65

### AM60EW-xx15SZ

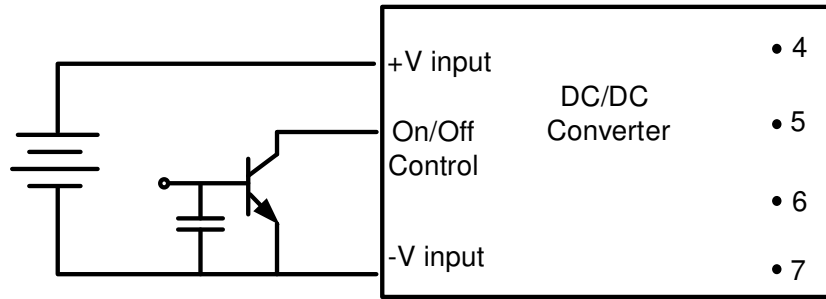
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.85	14.7	14.55	14.4	14.25	14.1	13.95	13.8	13.65	13.5
Rt down (KΩ)	842.92	431.72	283.82	207.67	161.24	129.97	107.49	90.54	77.31	66.69
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	233.53	99.39	58.51	38.73	27.05	19.35	13.89	9.82	6.66	4.14

## Input reflected ripple current test circuit

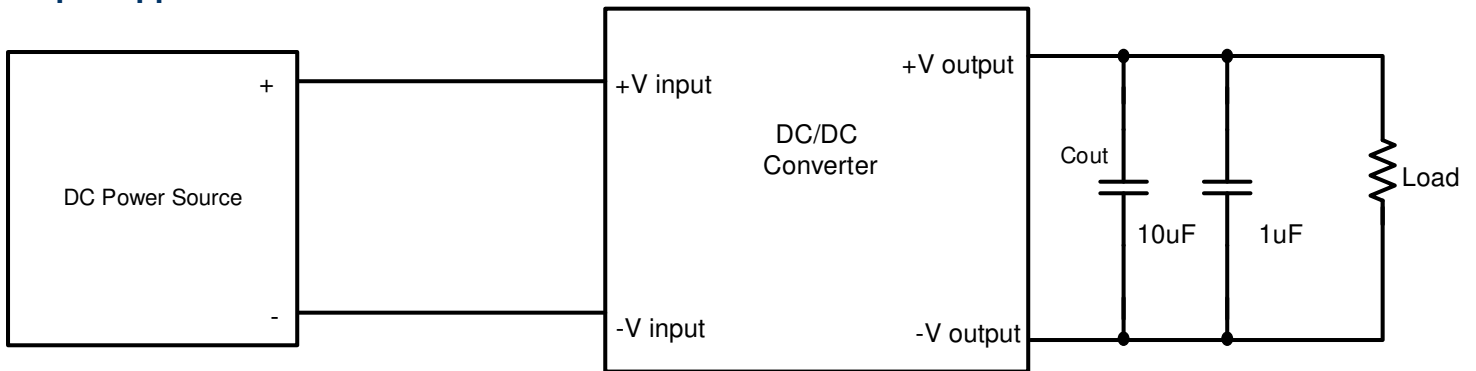


Input reflected ripple current is measured through a source inductor  $L_{in}$  (1μH) and a source capacitor  $C_{in}$  (22μF, ESR<1.0ohm at 100KHz) at a nominal input and full load

### Control ON/OFF pin connection example



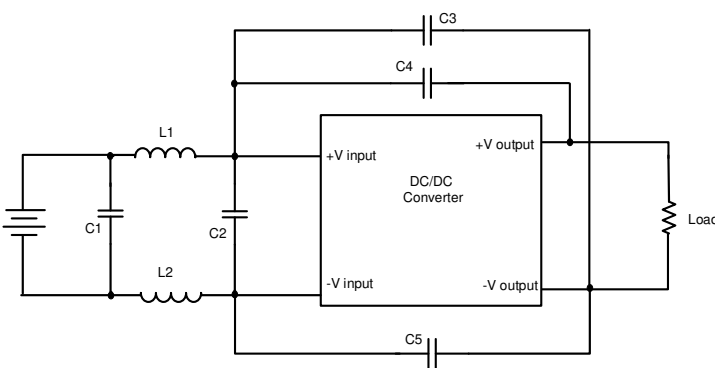
### Output ripple and noise reduction circuit



It is recommended to use a 1µF ceramic disk capacitor and a 10µF electrolytic capacitor to reduce the ripple and noise.

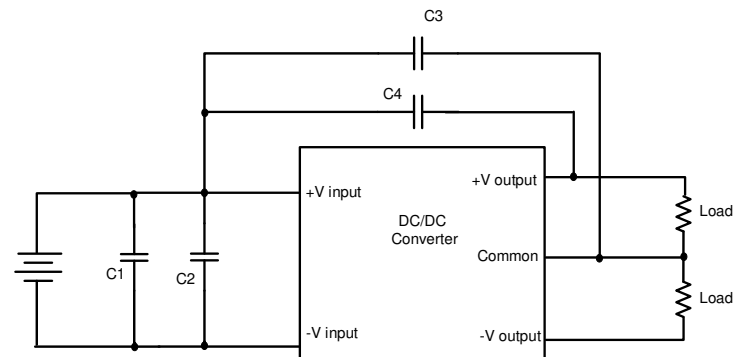
### EMI recommended circuit

#### Single output models



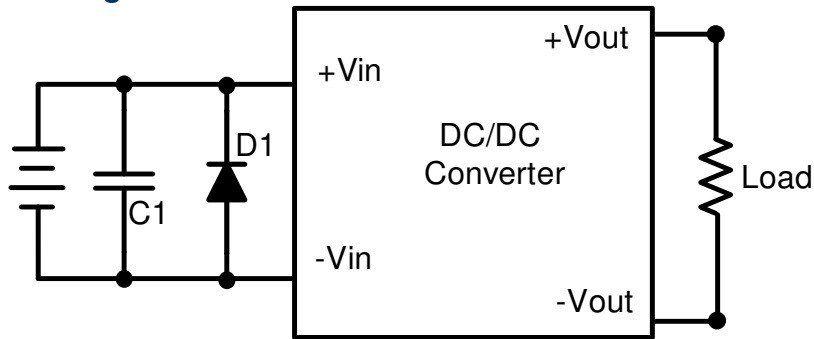
Vin	C1, C2	L1, L2	C3	C4, C5
24V	4.7 µF / 50V	12 µH	470 pF / 2KV	1 nF / 2KV
48V	1.5 µF / 100V			

#### Dual output models



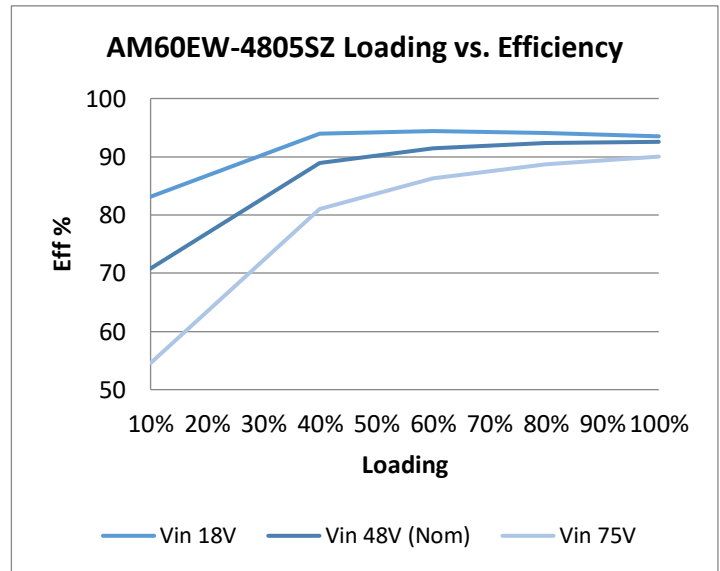
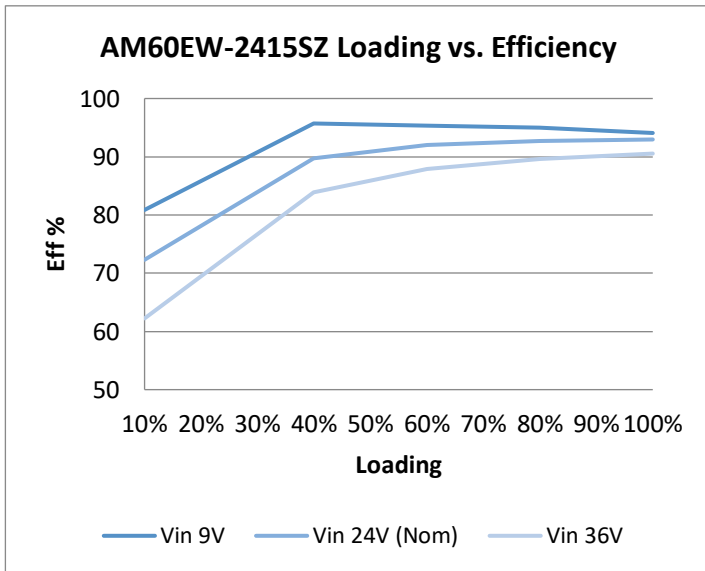
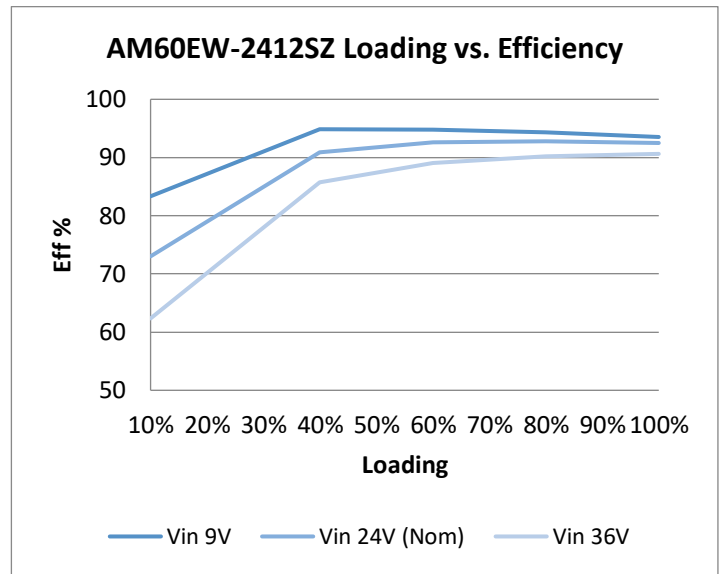
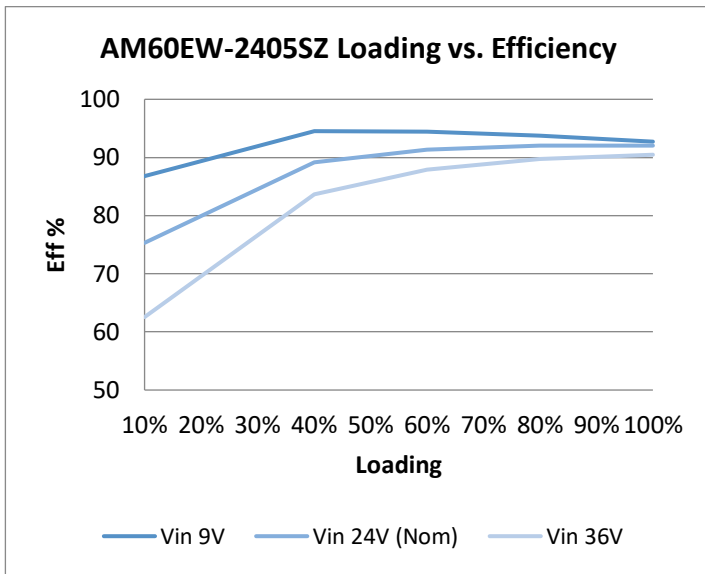
Vin	C1, C2	C3	C4
24V	4.7 µF / 50V	220 pF / 2KV	1.5 nF / 2KV
48V	1.5 µF / 100V		

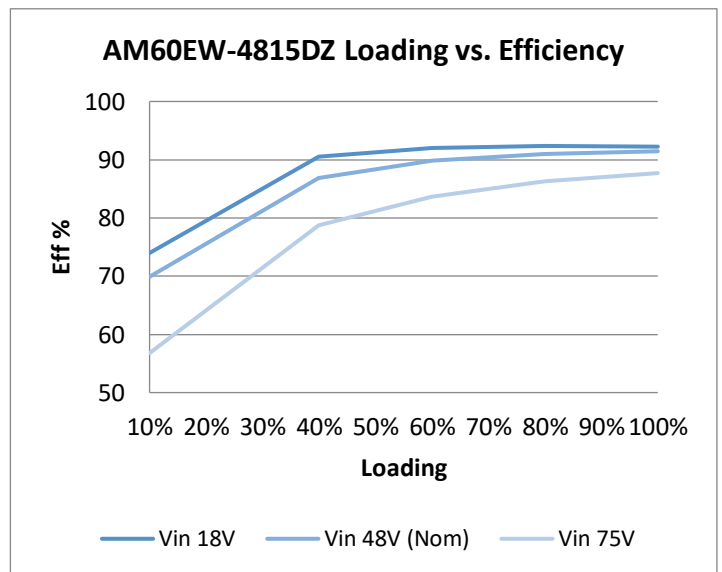
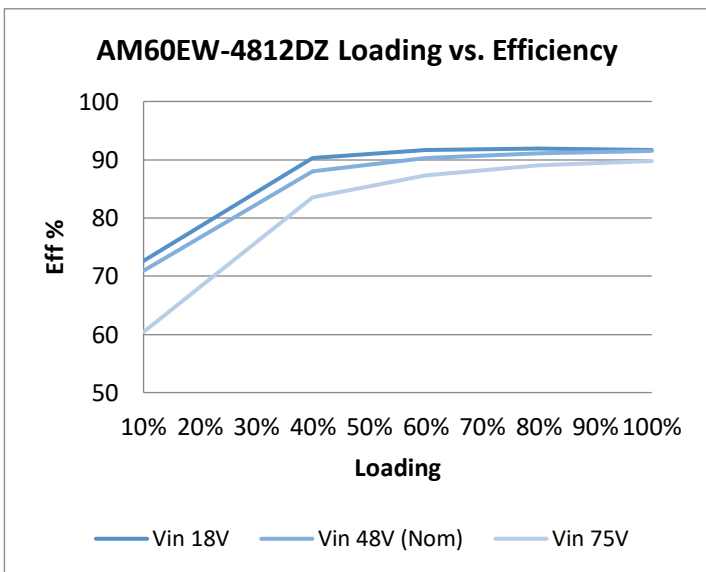
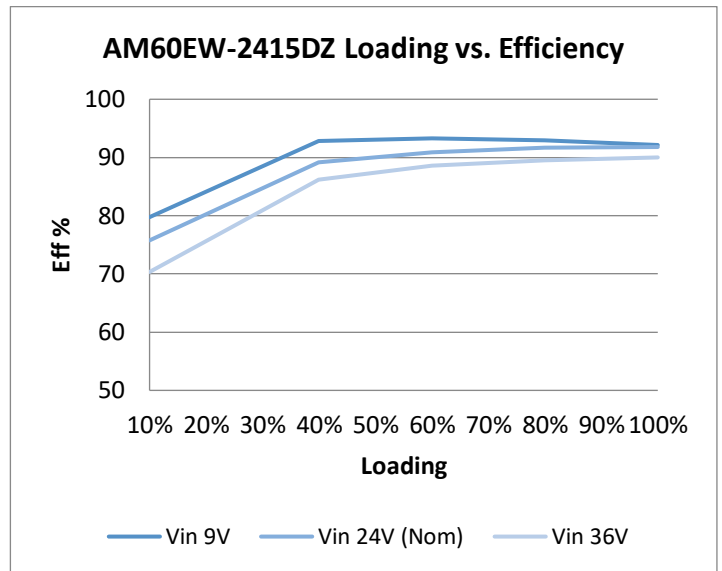
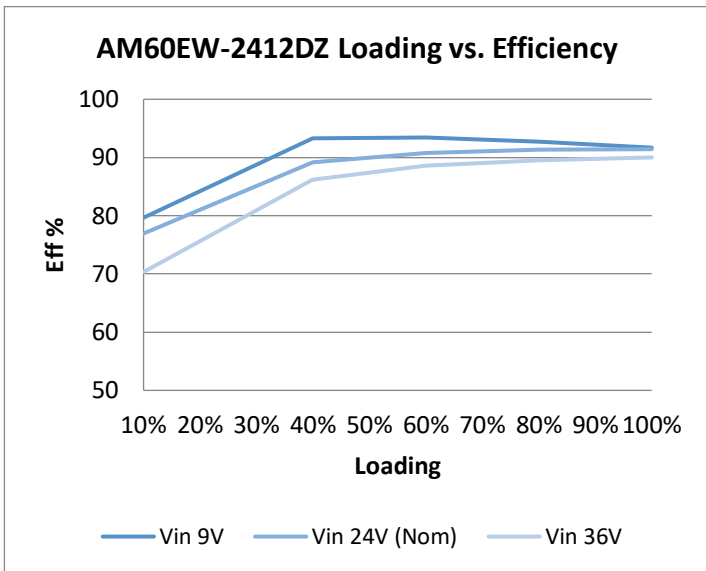
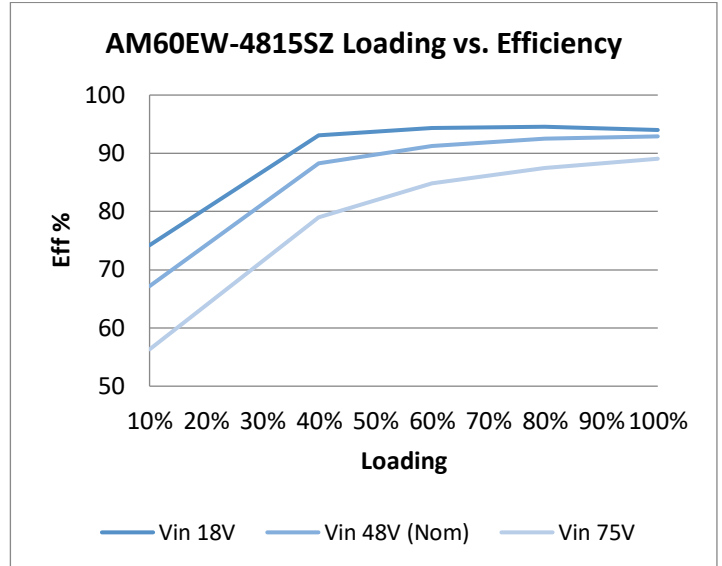
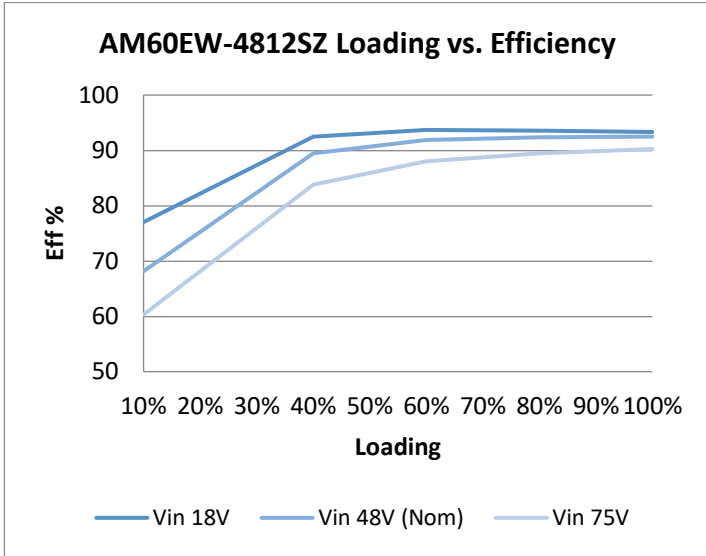
**EFT/Surge circuit recommendation**



Vin	C1	D1
24V	330 $\mu$ F / 100V	TVS 58V, 3KW
48V		TVS 120V, 3KW

**Typical efficiency chart**





**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](http://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](http://www.aimtec.com).