

Series AM3G-NZ

3 Watt | DC-DC Converter

FEATURES:



- 1500 and 3000VDC I/O Isolation
- Very low no load consumption
- Remote On/Off Control
- 8 pin SIP package
- Operating temperature -40°C to 85°C
- Continuous Short circuit protection
- Wide 2:1 input range
- High efficiency up to 84%



Models

Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Capacitive Load (µF)	Efficiency (%)	Ripple & Noise Typ. / Max. (mVp-p)
AM3G-0503S-NZ	4.5-9	3.3	758	1500	1800	68	40 / 75
AM3G-0505S-NZ	4.5-9	5	500	1500	2200	73	40 / 75
AM3G-0509S-NZ	4.5-9	9	278	1500	1000	74	40 / 75
AM3G-0512S-NZ	4.5-9	12	208	1500	680	77	40 / 75
AM3G-0515S-NZ	4.5-9	15	167	1500	470	74	40 / 75
AM3G-0524S-NZ	4.5-9	24	125	1500	330	76	40 / 75
AM3G-1203S-NZ	9-18	3.3	758	1500	2700	75	40 / 75
AM3G-1205S-NZ	9-18	5	600	1500	2200	76	40 / 75
AM3G-1209S-NZ	9-18	9	333	1500	1000	79	40 / 75
AM3G-1212S-NZ	9-18	12	250	1500	680	82	70 / 100
AM3G-1215S-NZ	9-18	15	200	1500	470	83	70 / 100
AM3G-1224S-NZ	9-18	24	125	1500	330	81	100 / 150
AM3G-2403S-NZ	18-36	3.3	758	1500	2700	74	40 / 75
AM3G-2405S-NZ	18-36	5	600	1500	2200	81	40 / 75
AM3G-2409S-NZ	18-36	9	333	1500	1000	83	40 / 75
AM3G-2412S-NZ	18-36	12	250	1500	680	83	40 / 75
AM3G-2415S-NZ	18-36	15	200	1500	470	83	100 / 150
AM3G-2424S-NZ	18-36	24	125	1500	330	83	100 / 150
AM3G-4803S-NZ	36-75	3.3	758	1500	2700	75	100 / 150
AM3G-4805S-NZ	36-75	5	600	1500	2200	76	40 / 75
AM3G-4812S-NZ	36-75	12	250	1500	680	80	40 / 75
AM3G-4815S-NZ	36-75	15	200	1500	470	84	40 / 75
AM3G-4824S-NZ	36-75	24	125	1500	330	82	70 / 100
AM3G-0505SH30-NZ	4.5-9	5	500	3000	2200	73	40 / 75
AM3G-0509SH30-NZ	4.5-9	9	278	3000	1000	74	40 / 75
AM3G-0512SH30-NZ	4.5-9	12	208	3000	680	77	40 / 75
AM3G-0515SH30-NZ	4.5-9	15	167	3000	470	74	40 / 75
AM3G-1203SH30-NZ	9-18	3.3	758	3000	2700	75	40 / 75
AM3G-1205SH30-NZ	9-18	5	600	3000	2200	76	40 / 75
AM3G-1209SH30-NZ	9-18	9	333	3000	1000	79	70 / 100
AM3G-1212SH30-NZ	9-18	12	250	3000	680	82	100 / 150
AM3G-1215SH30-NZ	9-18	15	200	3000	470	83	100 / 150
AM3G-1224SH30-NZ	9-18	24	125	3000	330	81	100 / 150
AM3G-2403SH30-NZ #	18-36	3.3	758	3000	2700	74	40 / 75
AM3G-2405SH30-NZ #	18-36	5	600	3000	2200	81	40 / 75
AM3G-2409SH30-NZ #	18-36	9	333	3000	1000	83	40 / 75
AM3G-2412SH30-NZ #	18-36	12	250	3000	680	83	40 / 75
AM3G-2415SH30-NZ #	18-36	15	200	3000	470	83	100 / 150
AM3G-2424SH30-NZ #	18-36	24	125	3000	330	83	100 / 150
AM3G-4803SH30-NZ	36-75	3.3	758	3000	2700	75	100 / 150
AM3G-4805SH30-NZ	36-75	5	600	3000	2000	76	40 / 75
AM3G-4812SH30-NZ	36-75	12	250	3000	680	80	40 / 75
AM3G-4815SH30-NZ	36-75	15	200	3000	470	84	70 / 100

Models
Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Capacitive Load (µF)	Efficiency (%)	Ripple & Noise Typ. / Max. (mV)
AM3G-0505D-NZ	4.5-9	±5	±250	1500	±1000	74	40 / 75
AM3G-0512D-NZ	4.5-9	±12	±104	1500	±470	77	40 / 75
AM3G-0515D-NZ	4.5-9	±15	±83	1500	±330	77	40 / 75
AM3G-1205D-NZ	9-18	±5	±300	1500	±1000	78	40 / 75
AM3G-1209D-NZ*	9-18	±9	±167	1500	±680	79	40 / 75
AM3G-1212D-NZ	9-18	±12	±125	1500	±470	80	40 / 75
AM3G-1215D-NZ	9-18	±15	±100	1500	±330	80	40 / 75
AM3G-2405D-NZ*	18-36	±5	±300	1500	±1000	78	40 / 75
AM3G-2409D-NZ	18-36	±9	±167	1500	±680	81	40 / 75
AM3G-2412D-NZ	18-36	±12	±125	1500	±470	83	40 / 75
AM3G-2415D-NZ*	18-36	±15	±100	1500	±330	83	40 / 75
AM3G-4805D-NZ	36-75	±5	±300	1500	±680	80	100 / 150
AM3G-4812D-NZ	36-75	±12	±125	1500	±470	82	40 / 75
AM3G-4815D-NZ	36-75	±15	±100	1500	±330	82	40 / 75
AM3G-0505DH30-NZ	4.5-9	±5	±250	3000	±1000	74	40 / 75
AM3G-0512DH30-NZ	4.5-9	±12	±104	3000	±470	77	40 / 75
AM3G-0515DH30-NZ	4.5-9	±15	±83	3000	±330	77	40 / 75
AM3G-1205DH30-NZ	9-18	±5	±300	3000	±1000	78	40 / 75
AM3G-1212DH30-NZ	9-18	±12	±125	3000	±470	79	40 / 75
AM3G-1215DH30-NZ	9-18	±15	±100	3000	±330	80	40 / 75
AM3G-2405DH30-NZ*	18-36	±5	±300	3000	±1000	79	40 / 75
AM3G-2409DH30-NZ	18-36	±9	±167	3000	±680	81	40 / 75
AM3G-2412DH30-NZ	18-36	±12	±125	3000	±470	83	40 / 75
AM3G-2415DH30-NZ	18-36	±15	±100	3000	±330	83	40 / 75
AM3G-4805DH30-NZ	36-75	±5	±300	3000	±1000	79	40 / 75
AM3G-4812DH30-NZ	36-75	±12	±125	3000	±470	82	40 / 75
AM3G-4815DH30-NZ	36-75	±15	±100	3000	±330	82	40 / 75

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	5	4.5-9		VDC
	12	9-18		
	24	18-36		
	48	36-75		
Filter	Capacitor			
Maximum Rating	5 Vin	12		VDC
	12 Vin	25		
	24 Vin	50		
	48 Vin	100		
Peak Input Voltage time			1	sec
No load input current	5 Vin	60		mA
	12 Vin	25		
	24 Vin	20		
	48 Vin	5		
Input Reflected Ripple Current	5 Vin	20		mA
	12 Vin	20		
	24 Vin	55		
	48 Vin	55		
On/Off Control*	ON – open or Isolated; OFF – high (current 5-10mA)			

*Note: Exceeding 20mA of control current will permanently damage the converter.

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60sec, <1mA		1500, 3000	VDC
Resistance		> 1000		MOhm
Capacitance	100kHz, 1V, 1500VDC models	120		pF
	100kHz, 1V, 3000VDC models	50		

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	5 to 100% load	±3		%
	5 to 100% load (For models marked with *)	±4		%
No Load Voltage accuracy		±5		
Voltage balance	Dual Output balanced load	±1		%
Short Circuit Protection		Continuous		
Short Circuit Restart		Auto-recovery		
Line voltage regulation	LL~HL	±0.5		%
	LL~HL (For models marked with *)	±1		%
Load voltage regulation	load 5~100%	±0.6		%
Temperature coefficient		±0.02		%/°C
Transient Recovery Time	25% load step	2		msec
Transient Response Deviation	25% load step	±5		%
Ripple & Noise	At 20MHz Bandwidth	See model list		

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	250		KHz
Operating temperature	With derating above 85°C	-40 to +85		°C
Storage temperature		-55 to +125		°C
Case Temperature		105		°C
Lead Temperature	1.5mm from case for 10 Seconds	300		°C
Cooling		Free air convection		
Humidity			95	%
Case material	Plastic (UL94V-0 rated)			
Weight		4.9		g
Dimensions (L x Wx H)	0.87 x 0.37 x 0.47 inch, 22 x 9.5 x 12 mm			
MTBF	>1 000 000 hrs (MIL-HDBK -217F, Ground Benign, t=+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.

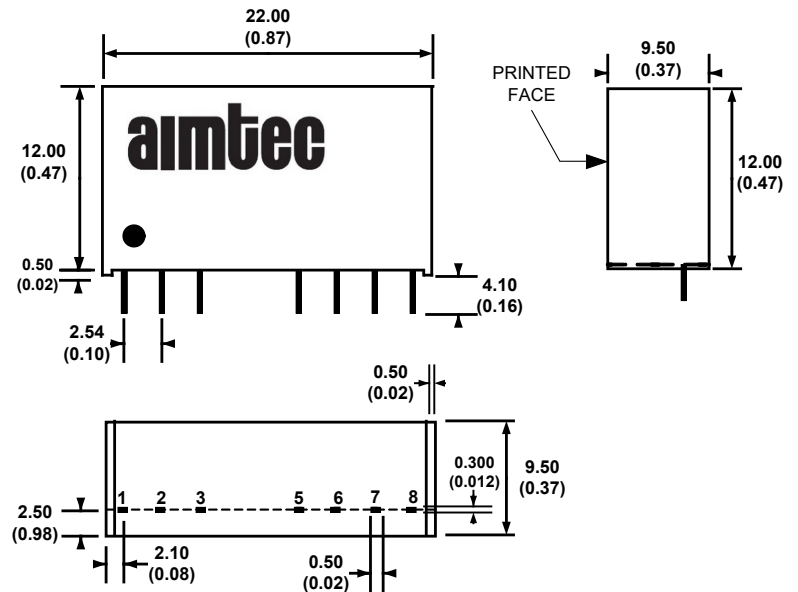
Safety Specifications

Parameters	
Standards	Designed to meet UL62368-1(For models marked with # only)
	IEC/EN60950-1 compliant
	EN 55032/CISPR32, Class B, with EMI recommended circuit
	IEC 61000-4-2, Contact ±4KV, Criteria B
	IEC 61000-4-3, 10V/m, Criteria A
	IEC 61000-4-4, ±2KV, Criteria B, with EMS recommended circuit
	IEC 61000-4-5, L-L ±2KV, Criteria B, with EMS recommended circuit
	IEC 61000-4-6, 3Vrms, Criteria A
IEC 61000-4-29, 0-70%, Criteria B	

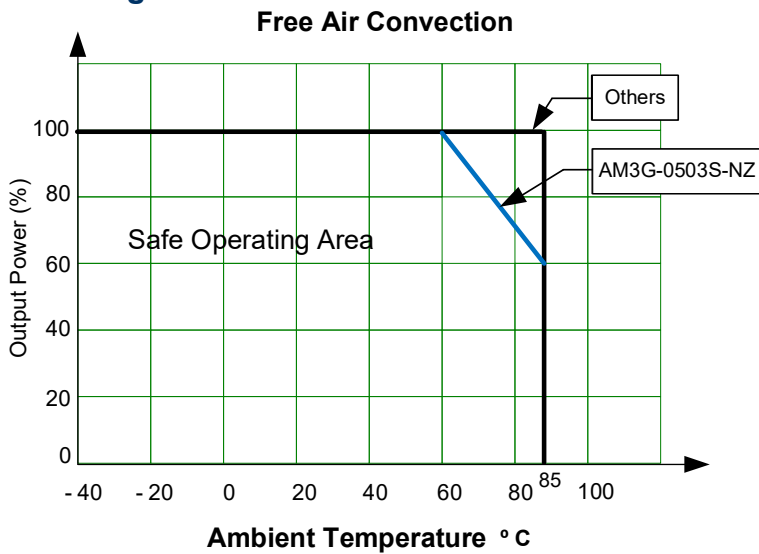
Pin Out Specifications

Pin	Single	Dual
1	- V Input	- V Input
2	+ V Input	+ V Input
3	On/Off Control	On/Off Control
5	N.C.	N.C.
6	+ V Output	+ V Output
7	- V Output	Common
8	CS	- V Output

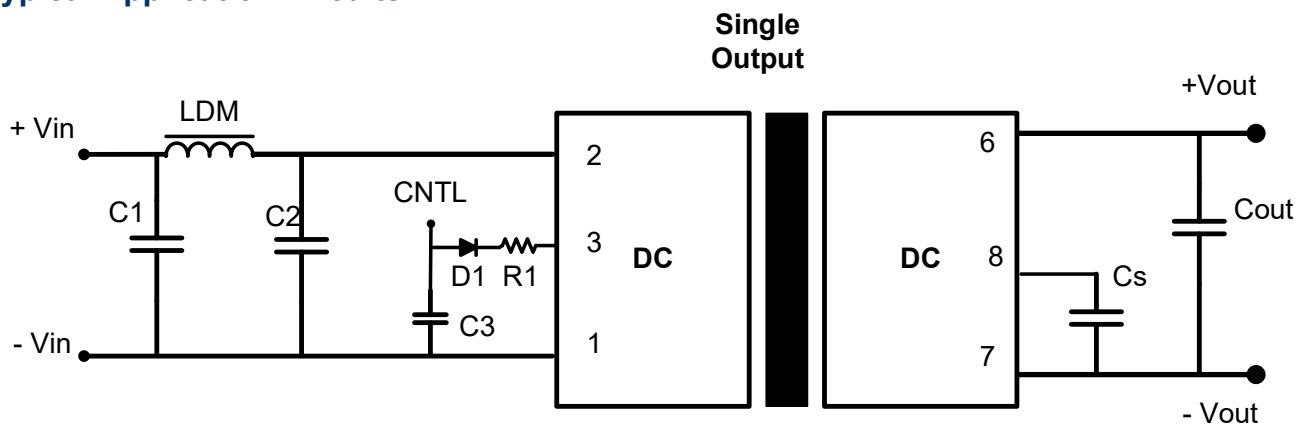
Dimensions



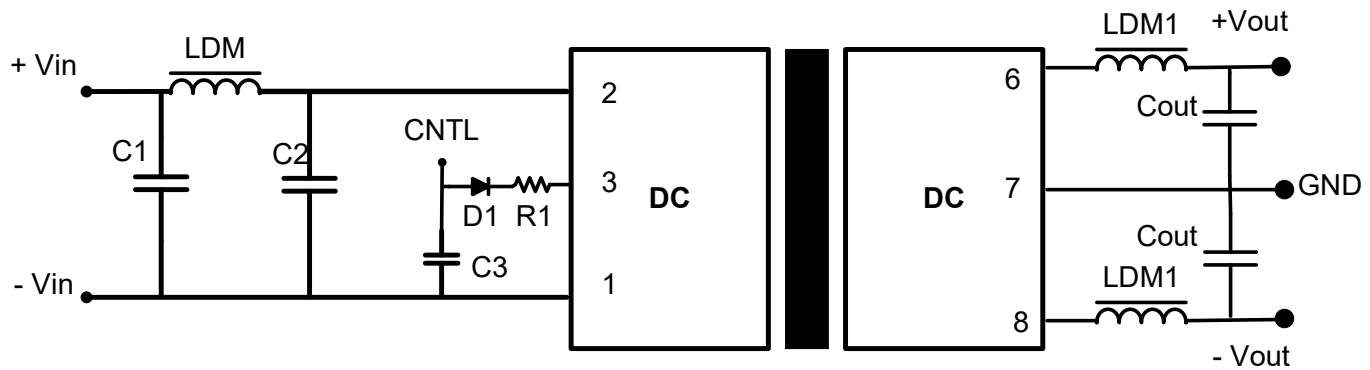
Derating



Typical Application Circuits



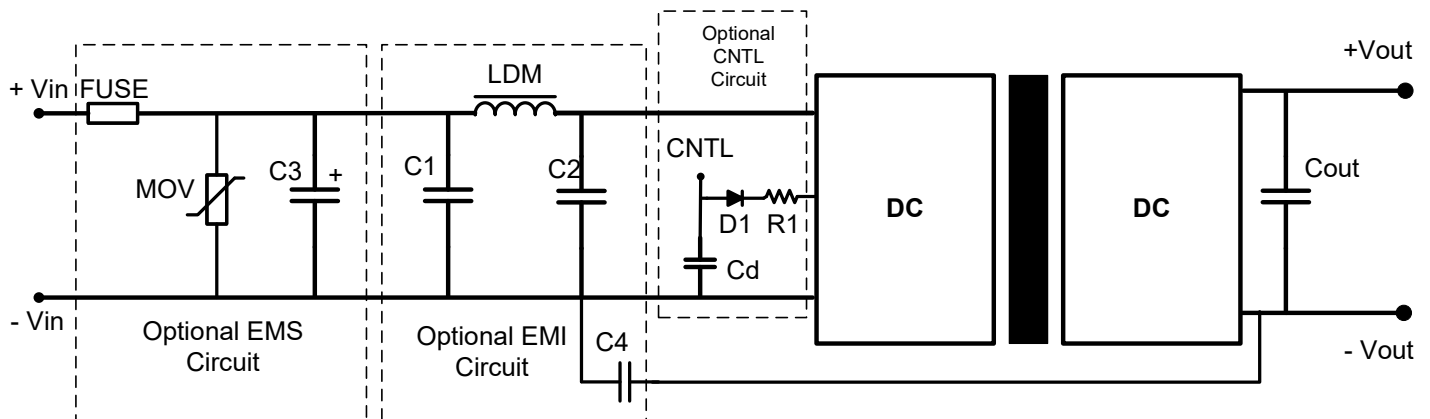
Dual Output



Model	C1	C2	LDM	C3	D1	R1	LDM1	CS	Cout
5 Vin	100µF	47µF	4.7 - 12 µH	47nF / 100V	RB160M-60/1A	See Formula	2.2 - 10 µH	10 - 22µF	100µF
12 Vin	100µF	47µF	4.7 - 12 µH	47nF / 100V	RB160M-60/1A	See Formula	2.2 - 10 µH	10 - 22µF	100µF
24 Vin	10µF	1µF	4.7 - 12 µH	47nF / 100V	RB160M-60/1A	See Formula	2.2 - 10µH	10 - 22µF	100µF
48 Vin	10µF	1µF	4.7 - 12 µH	47nF / 100V	RB160M-60/1A	See Formula	2.2 - 10 µH	10 - 22µF	100µF

- $R1 = ((V_{cd} - V_{d1} - 1.0) / I_{cntl}) - 300$
- Cs is for ripple & noise reduction, leave it opened if there is no ripple & noise reduction requirement.

EMC Recommended Circuit



Model	C1, C2	C4	LDM	MOV	TVS	C3	Cd	D1	R1	Cout
5 Vin	4.7µF / 50V	1nF / 3KV	12 µH	-	SMCJ13A	680µF / 25V	47nF / 100V	RB160M-60V/1A	See Formula	100µF
12 Vin	4.7µF / 50V	1nF / 3KV	12 µH	S14K20	SMCJ28A	680µF / 25V	47nF / 100V	RB160M-60V/1A	See Formula	100µF
24 Vin	4.7µF / 50V	1nF / 3KV	12 µH	S20K30	SMCJ48A	330µF / 50V	47nF / 100V	RB160M-60V/1A	See Formula	100µF
48 Vin	4.7µF / 100V	1nF / 3KV	12 µH	S14K60	SMCJ90A	330µF / 100V	47nF / 100V	RB160M-60V/1A	See Formula	100µF

Note: Fuse is user selectable, slow blow type
 $R1 = ((V_{cd} - V_{d1} - 1.0) / I_{cntl}) - 300$

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