

# ASX02 SERIES

## 2W DC to DC Converter

### Description:

This series of DC to DC Converter module provide 2 Watts of continues output power. They are suited for use in Data communication, Telecommunication and other Industry equipment.

### Features:

- 2 : 1 Wide Input Range Voltage
- Efficiency up to 82%
- Regulated Output
- Single or Dual Output
- Size : 13.7W x 23.8L x 7.7Hmm
- 1500VDC Isolation
- Potting Material : Epoxy(Flammability to UL94V-0)
- Case Material : Non-Conductive Black Plastic(Flammability to UL94V-0)
- EMI Meets to EN55022 Class A
- Industrial Standard Pin-out
- 3 year warranty



16Pin SMD Package

### Electrical Characteristics:

Sym.	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Vin	Input Voltage for ASA02		4.5	5	5.5	VDC
	Input Voltage for ASB02		9	12	18	VDC
	Input Voltage for ASC02		18	24	36	VDC
	Input Voltage for ASD02		36	48	75	VDC
Fs	Switching Frequency			250		kHz
Po	Output Power Range		0		2	W
Vo	Output Voltage Range		See Rating Chart			V
Io	Output Current Range		See Rating Chart			A
Acc	Output Voltage Accuracy	Io=Full load, Vin=Typ., at 25°C		±0.5	±1.0	%
Eff	Efficiency	Io=Full load, Vin=Typ., at 25°C	72	80	82	%
REG-i	Line Regulation	Io=Full load, Vin=Vmax to Vmin, at 25°C		±0.1	±0.3	%
REG-o	Load Regulation	Io=20% to 100%, Vin=Typ., at 25°C		±0.3	±0.5	%
Vp-p	Ripple & Noise (Peak to Peak)	Each Output, 20MHz		30	50	mV
Vio	Isolation Voltage	Input to Output	1500			VDC
Ris	Isolation Resistance	Input to Output	1000			MΩ
Cis	Isolation Capacitance	Input to Output			470	pF
TC	Temperature Coefficient	All Output		±0.01	±0.02	%/°C
Br	Balance Regulation	Io=Full load, Vin=Typ., Dual Output		±0.5	±2.0	%
Trp	Time of Transient Response	Vin=Typ., 25% load step change		100	300	μS
Trd	Transient Response Deviation			±2.0	±5.0	%/Vo
Osc	Output Short Circuit	Continuous				

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### Environmental:

Sym.	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Toper	Operating Temperature Range		-40		71	°C
Tcase	Maximum Case Temperature		-40		90	°C
Tstg	Storage Temperature		-40		125	°C
Hr	Relative Humidity		0		95	%
MTBF	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F		1M			Hrs
Scip	Short Circuit Input Power				1500	mW
Cool	The Cooling Condition is Free					
Filter	Internal Capacitor					

### Selection Chart :

Model Number	Input Voltage	Output Voltage	Output Current		Efficiency (Typ.)	Cap.Load <sup>(8)</sup>
			Min.	Max.		
ASA02-101	4.5~9VDC (Nominal:5V)	3.3VDC	50mA	500mA	72%	3300μF
ASA02-102		5VDC	40mA	400mA	74%	2200μF
ASA02-105		12VDC	16.7mA	167mA	78%	470μF
ASA02-106		15VDC	13.4mA	134mA	78%	470μF
ASA02-202		±5VDC	±20mA	±200mA	74%	1000μF
ASA02-205		±12VDC	±8.4mA	±84mA	77%	220μF
ASA02-206	±15VDC	±6.7mA	±67mA	77%	220μF	
ASB02-101	9~18VDC (Nominal:12V)	3.3VDC	50mA	500mA	75%	3300μF
ASB02-102		5VDC	40mA	400mA	76%	2200μF
ASB02-105		12VDC	16.7mA	167mA	81%	470μF
ASB02-106		15VDC	13.4mA	134mA	81%	470μF
ASB02-202		±5VDC	±20mA	±200mA	76%	1000μF
ASB02-205		±12VDC	±8.4mA	±84mA	80%	220μF
ASB02-206	±15VDC	±6.7mA	±67mA	80%	220μF	
ASC02-101	18~36VDC (Nominal:24V)	3.3VDC	50mA	500mA	76%	3300μF
ASC02-102		5VDC	40mA	400mA	77%	2200μF
ASC02-105		12VDC	16.7mA	167mA	82%	470μF
ASC02-106		15VDC	13.4mA	134mA	82%	470μF
ASC02-202		±5VDC	±20mA	±200mA	76%	1000μF
ASC02-205		±12VDC	±8.4mA	±84mA	81%	220μF
ASC02-206	±15VDC	±6.7mA	±67mA	81%	220μF	
ASD02-101	36~75VDC (Nominal:48V)	3.3VDC	50mA	500mA	76%	3300μF
ASD02-102		5VDC	40mA	400mA	78%	2200μF
ASD02-105		12VDC	16.7mA	167mA	82%	470μF
ASD02-106		15VDC	13.4mA	134mA	82%	470μF
ASD02-202		±5VDC	±20mA	±200mA	78%	1000μF
ASD02-205		±12VDC	±8.4mA	±84mA	82%	220μF
ASD02-206	±15VDC	±6.7mA	±67mA	82%	220μF	

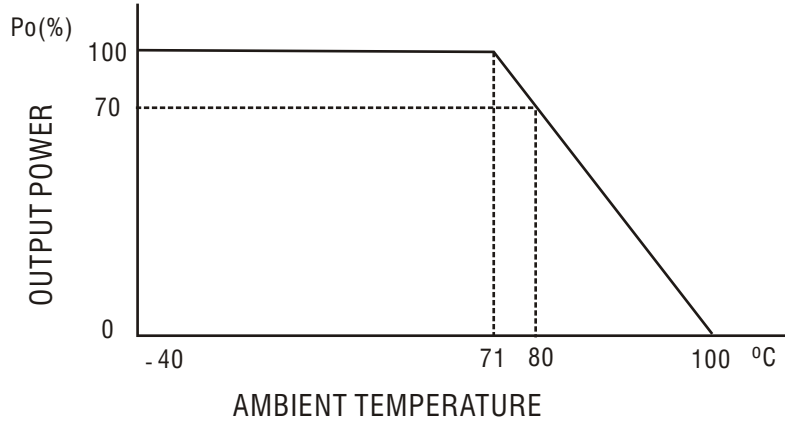
#### Note :

- (1) All specifications are measured at nominal input voltage, constant resistive load between Min. and Max. Output current, and probe bandwidth should be under 20MHz, Ta = +25°C.
- (2) When Load is lower than Min. output current or under no-load, it will not damage the devices; however, it may not meets all specifications.
- (3) Output Ripple & Noise Test please refers to Sinpro Electronics Co., Ltd. proposed test-method.
- (4) Load Regulation and Line Regulation calculating please refers to Sinpro Electronics Co., Ltd. proposed formula.
- (5) An external fuse is needed at the front end of DC/DC converters for protection and base on surge current and maximum input current when settle it in recommended.
- (6) "Vin-L" means "Vin-Min.", "Vin-N" means "Vin-Typ.", "Vin-H" means "Vin-Max."
- (7) "Reflected Ripple" "Reflected Ripple of Input Current".
- (8) Total Capacitive Loads of output should be lower than this value.

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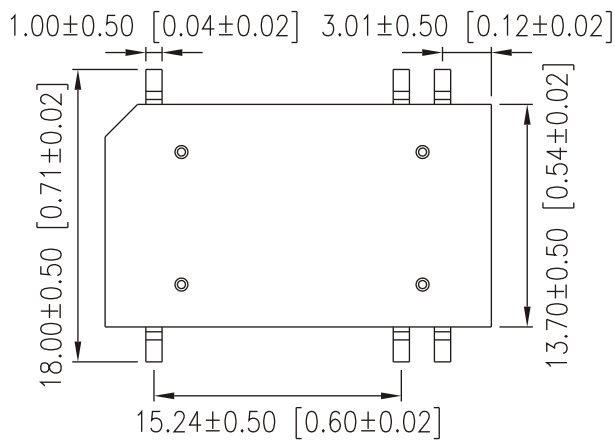
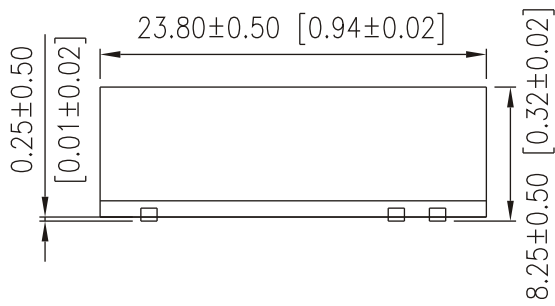
## 2W DC to DC Converter

### Derating Curve :



Note: At nominal input, Full load and cooling is natural convection.

### Mechanical Specifications :



### Pin Connections:

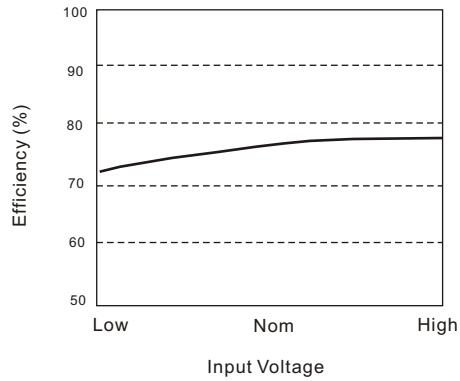
Pin	Single	Dual
1	- Vin	- Vin
7	NC	NC
8	NC	Com
9	+Vout	+Vout
10	- Vout	- Vout
16	+Vin	+Vin

- Note:
1. Dimensions are shown in mm.
  2. Weight: 5gs .
  3. NC: No Connect

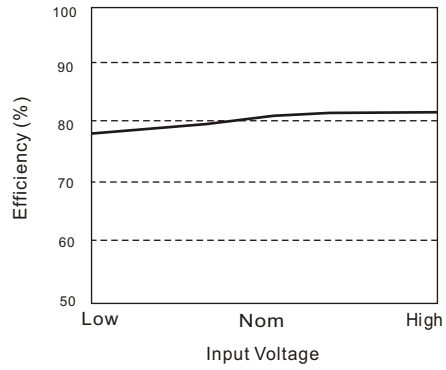
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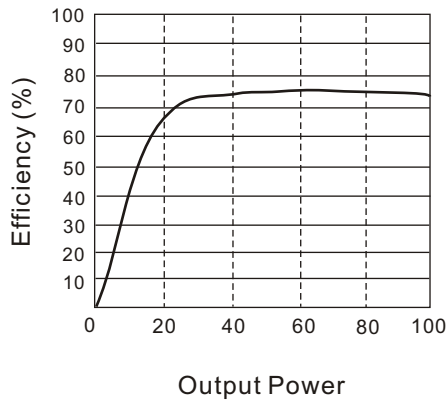
### Efficiency-Curve :



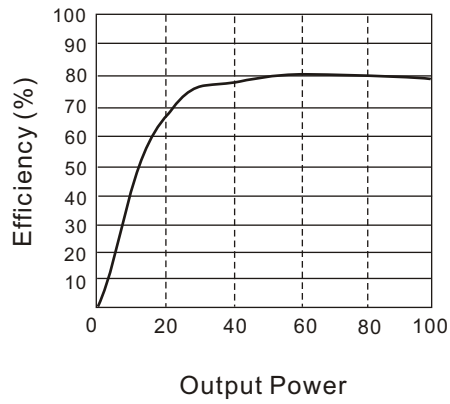
Input Voltage vs. Efficiency, Vo=3.3V, 5V & ±5V



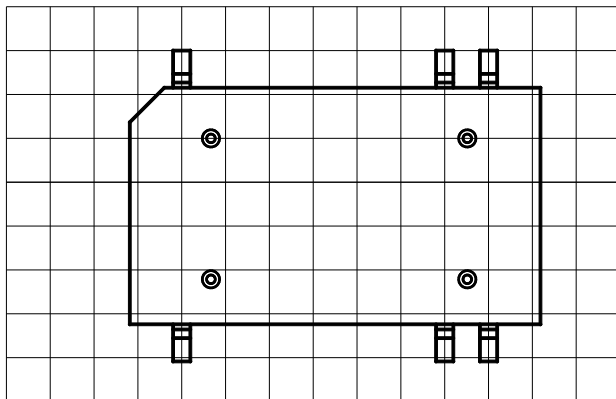
Input Voltage vs. Efficiency, Other Output Voltages



Output Power vs. Efficiency, Vo=3.3V, 5V & ±5V



Output Power vs. Efficiency, Other Output Voltages



Tolerance	Millimeters	Inches
	XX.X ±0.25	XX.X ±0.01
	XX.XX ±0.13	XX.XX ±0.005
Pin	±0.1	±0.004