



**3**  
YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway



NON  
-isolation

LOW  
Standby  
Power

OCP

OTP

SCP

### PART NUMBER STRUCTURE

ASR01 -

**12**

**S**

**05**

-

**A**

Series Name

Input  
Voltage  
(VDC)

Output  
Quantity

Output  
Voltage  
(VDC)

Assembly Option

12:-7~-32  
-8~-32  
-10.5~-32  
24:-11.5~-32  
-15~-32  
-18~-32

S:Single

05:-5  
5P2:-5.2  
06:-6  
08:-8  
09:-9  
12:-12  
15:-15

Standard  
A: Horizontal type

**TECHNICAL SPECIFICATION** All specifications are typical at nominal input, full load and 25°C unless otherwise noted

Model Number	Input Range VDC	Output Voltage VDC	Output Current		Input Current @ No Load mA	Efficiency		Maximum Capacitor Load μF
			@Min.Load A	@FullLoad A		Min.Vin %	Max.Vin %	
ASR01-12S05	-7 ~ -32	-5	-0.1	-1	-3	91.5	84.5	1600
ASR01-12S5P2	-7 ~ -32	-5.2	-0.1	-1	-3	92.0	85.0	1600
ASR01-12S06	-8 ~ -32	-6	-0.1	-1	-3	92.5	86.5	1000
ASR01-12S08	-10.5 ~ -32	-8	-0.1	-1	-3	94.0	89.0	1000
ASR01-24S09	-11.5 ~ -32	-9	-0.1	-1	-3	94.5	90.5	1000
ASR01-24S12	-15 ~ -32	-12	-0.1	-1	-3	96.0	92.0	470
ASR01-24S15	-18 ~ -32	-15	-0.1	-1	-3	96.0	93.5	470

## INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	ASR01-12S05	-7	-12	-32	VDC
	ASR01-12S5P2	-7	-12	-32	
	ASR01-12S06	-8	-12	-32	
	ASR01-12S08	-10.5	-12	-32	
	ASR01-24S09	-11.5	-24	-32	
	ASR01-24S12	-15	-24	-32	
ASR01-24S15	-18	-24	-32		
Start up time	Constant resistive load Power up		15		ms
Rise time	Time for Vo to rise from 10% to 90% of Vo		10		ms
Maximum input current	Vin=Vin(min); Io=Io(max)			-1	A
Input filter					Capacitor type

## OUTPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Voltage accuracy		-2.0		+2.0	%
Line regulation	Low Line to High Line at Full Load	-1.0		+1.0	%
Load regulation	10% Full Load to Full Load	Standard type		+0.5	%
		Suffix-A		+0.6	
Ripple and noise	Measured by 20MHz bandwidth	-5Vout	50		mVp-p
		-5.2Vout	50		
		-6Vout	75		
		-8Vout	75		
		-9Vout	75		
		-12Vout	75		
Temperature coefficient		-0.015		+0.015	%/°C
Dynamic load response	50% load step change	Peak deviation	5		%Vo
		Recovery time	250		μs
Over load protection	% of Iout rated; Hiccup mode			-2.0	A
Short circuit protection					Continuous, automatic recovery

## GENERAL SPECIFICATIONS

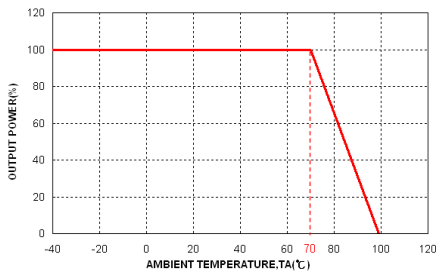
Parameter	Conditions	Min.	Typ.	Max.	Unit
Switching frequency	12S05, 12S5P2	323	380	437	kHz
	Others	425	500	575	
Safety meets					IEC/ UL/ EN60950-1
Case material					Non-conductive black plastic
Potting material					Silicone (UL94 V-0)
Weight					3.1g(0.11oz)
MTBF	MIL-HDBK-217F, Full load				8.475 x 10 <sup>6</sup> hrs

## ENVIRONMENTAL SPECIFICATIONS

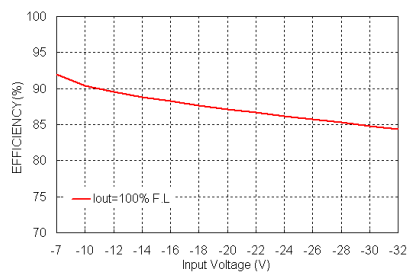
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating temperature range		-40		+85	°C
Over temperature protection	Internal IC junction		+165		°C
Storage temperature range		-55		+125	°C
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

**CAUTION:** This power module is not internally fused. An input line fuse must always be used.

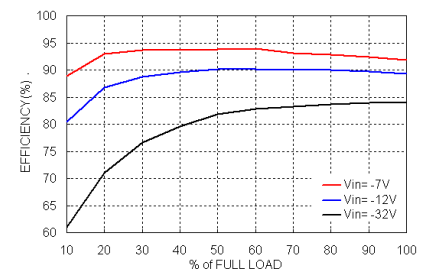
## CHARACTERISTIC CURVE



ASR01-12S05 Derating Curve



ASR01-12S05 Efficiency VS Input Voltage



ASR01-12S05 Efficiency VS Output Load

## FUSE CONSIDERATION

This power module is not internally fused. An input line fuse must always be used.

This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

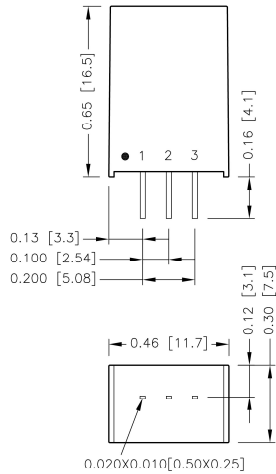
Model	Fuse Rating (A)	Fuse Type
ASR01-12□□□	1.6	Slow-Blow
ASR01-24□□□	1.6	Slow-Blow

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin.

**MECHANICAL DRAWING**

**STARDANDS ASR01-□□S□□**

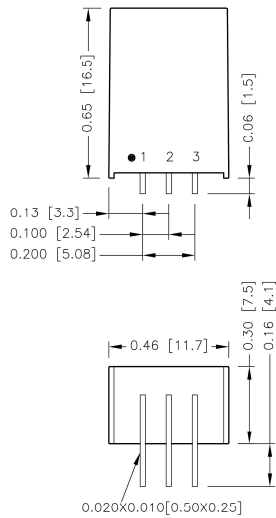
Vertical SIP type



BOTTOM VIEW

**SUFFIX-A ASR01-□□S□□-A**

Horizontal SIP type



BOTTOM VIEW

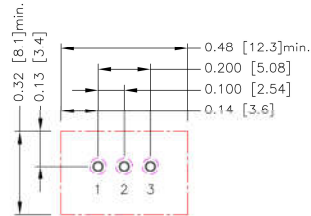
**PIN CONNECTION**

PIN	DEFINE
1	GND
2	-Vin
3	-Vout

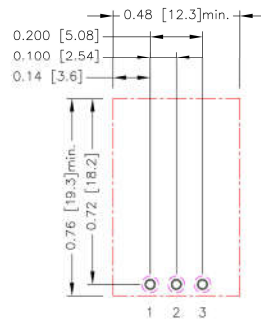
- All dimensions in Inch [mm]  
Tolerance: X.XX±0.02 [X.X±0.5]  
X.XXX±0.01 [X.XX±0.25]
- Pin pitch tolerance ±0.01[0.25]
- Pin dimension tolerance ±0.004 [0.10]

**RECOMMENDED PAD LAYOUT**
**STARDANDS**

ASR01-□□S□□ Vertical SIP type


**SUFFIX-A**

ASR01-□□S□□-A Horizontal SIP type



All dimensions in inch[mm]  
 Pad size(lead free recommended)  
 Through hole 1.2.3:  $\Phi 0.031$ [0.80]  
 Top view pad 1.2.3:  $\Phi 0.039$ [1.00]  
 Bottom view pad 1.2.3:  $\Phi 0.063$ [1.60]

**THERMAL CONSIDERATIONS**

The power module operates in a variety of thermal environments.

However, sufficient cooling should be provided to help ensure reliable operation of the unit.

Heat is removed by conduction, convection, and radiation to the surrounding Environment.

Proper cooling can be verified by measuring the point as the figure below.

The temperature at this location should not exceed 100°C.

When Operating, adequate cooling must be provided to maintain the test point temperature at or below 100°C.

Although the maximum point Temperature of the power modules is 85°C, you can limit this Temperature to a lower value for extremely high reliability.

- Thermal test condition with vertical direction by natural convection (20LFM).

