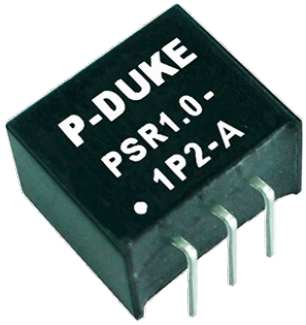
DC – DC

Features

- Operating Temperature Range: -40~100°
- Approved to RoHS & REACH
- Safety Standards to IEC/ EN/ UL62368-1
- Efficiency up to 96%
- Single 15W Output Models



Ideal Power's 43PSR1.0xy 15W Series Pin Connection DC/DC Converters are certified to RoHS, REACH & IEC/UL/EN 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Video & Audio Industries and customised solutions are available upon request.

Part Number Structure

PSR1.0	-	5PO	-	A
Series Name		Output Power (VDC)		Output Voltage (VDC)
		1P2: 1.2 **1P5:** 1.5 **1P8:** 1.8 **2P5:** 2.5 **3P3:** 3.3 **05:** 5 **6P5:** 6.5 **09:** 9 **12:** 12 **15:** 15		□: Vertical Mounting **A:** Horizontal Mounting

AC – DC

Models

Model Number	Input Range VDC	Output Voltage VDC	Output Current @ Full Load A	Input Current @ No Load mA	Efficiency Min. Vin %	Efficiency Max. Vin %	Maximum Capacitor Load µF
43PSR1.0-1P2	4.6 ~ 36	1.2	1	1	74	62	470
43PSR1.0-1P5	4.6 ~ 36	1.5	1	1	78	65	470
43PSR1.0-1P8	4.6 ~ 36	1.8	1	1	82	69	470
43PSR1.0-2P5	4.6 ~ 36	5.2	1	1	87	75	470
43PSR1.0-3P3	4.75 ~ 36	3.3	1	1	91	78	470
43PSR1.0-5P0	6.5 ~ 36	5.0	1	1	94	84	470
43PSR1.0-6P5	9.0 ~ 36	6.5	1	1	93	87	470
43PSR1.0-9P0	12 ~ 36	9.0	1	1	95	90	470
43PSR1.0-012	15 ~ 36	12	1	1	95	92	470
43PSR1.0-015	18 ~ 36	15	1	1	96	94	470

Input Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating input voltage range	*With a C1 (22uF/50V) external input capacitor for input voltage > 32VDC, the input voltage allows 32 to 36 VDC, max.	43PSR1.0-1P2	4.6	9	36	VDC
		43PSR1.0-1P5	4.6	9	36	
		43PSR1.0-1P8	4.6	9	36	
		43PSR1.0-2P5	4.6	9	36	
		43PSR1.0-3P3	4.75	9	36	
		43PSR1.0-5P0	6.5	12	36	
		43PSR1.0-6P5	9.0	12	36	
		43PSR1.0-9P0	12	24	36	
		43PSR1.0-012	15	24	36	
		43PSR1.0-015	18	24	36	
Rise time	Time for Vout rises from 10% to 90% of Vout		--	--	2	Ms
Input filter				Capacitor type		
Input reflected ripple current				150		mAp-p

Output Specifications

Parameter	Conditions		Min	Typ	Max	Unit
voltage accuracy			-2.0	--	+2.0	%
Line regulation	Low Line to High Line at Full Load		-0.2	--	+0.2	%
Load regulation	10% to 100% Of Full Load					
	Vertical mounting	1.2Vout, 1.5Vout	-0.6	--	+0.6	%
		Others	-0.4	--	+0.4	
	Horizontal mounting	1.2Vout, 1.5Vout, 1.8Vout	-1.2	--	+1.2	
		Others	-0.4	--	+0.4	
Ripple and Noise	Measured by 20MHz bandwidth	Vout≤6.5V	--	50	--	mVp-p
		Vout≤9.0V	--	75	--	
Temperature coefficient			-0.015	--	+0.015	%/℃
Dynamic load response	50% load step change	Peak deviation	--	150	200	mV
		Recovery time	--	250	350	µs
Output start-up overshoot			--	--	+1	%
Overload protection			--	2.5	--	A
Short circuit protection			Continuous, automatics recovery			

General Specifications

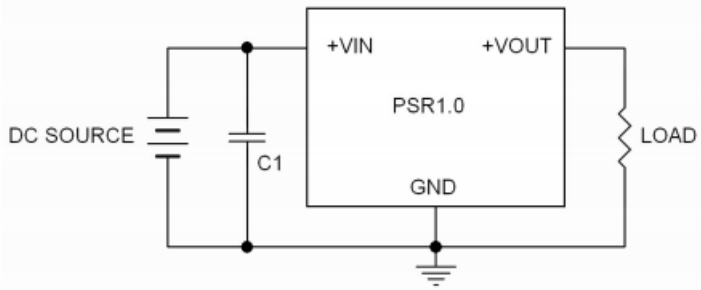
Parameter	Conditions	Min	Typ	Max	Unit
Switching frequency		400	500	600	kHz
Safety meets					IEC/ EN/ UL62368-1
Case material					Non-conductive black plastic
Base material					Silicone (UL94 V-0)
Weight					1.9g(0.067oz)
MTBF	MIL-HDBK-217F, Full load				2.571 x 10^7 hrs

Environmental Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Operating ambient temperature		With derating	-40	--	+100	℃
Over temperature protection		Internal IC junction	--	150	--	℃
Storage temperature range			-55	--	+125	℃
Thermal shock						MIL-STD-810F
Vibration						MIL-STD-810F
Relative humidity	Non-condensing					5% to 95% RH

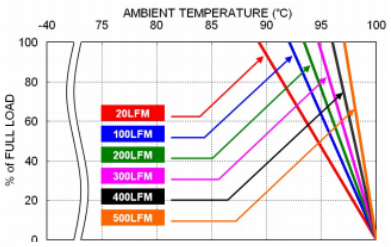
CAUTION: This power module is not internally fused. An input line fuse must always be used.

Application Circuit

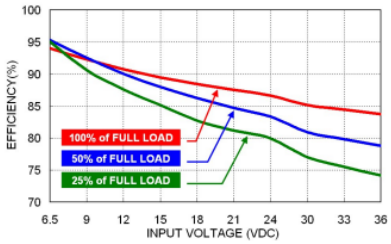


DC – DC

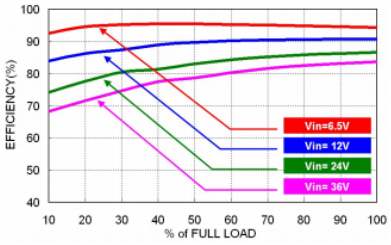
Characteristic Curve



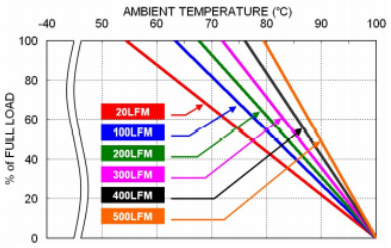
43PSR1.0-5P0 Derating Curve
Low VIN



43PSR1.0-5P0 Efficiency vs. Input Voltage



43PSR1.0-5P0 Efficiency vs. Output Load



43PSR1.0-5P0 Derating Curve
High VIN

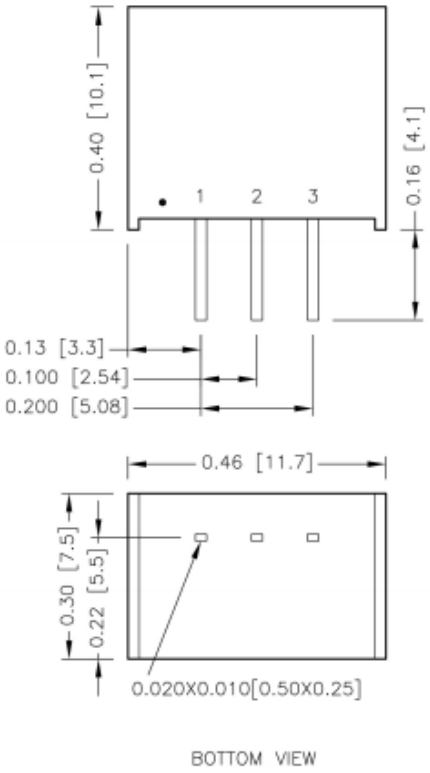
Fuse Considerations

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：

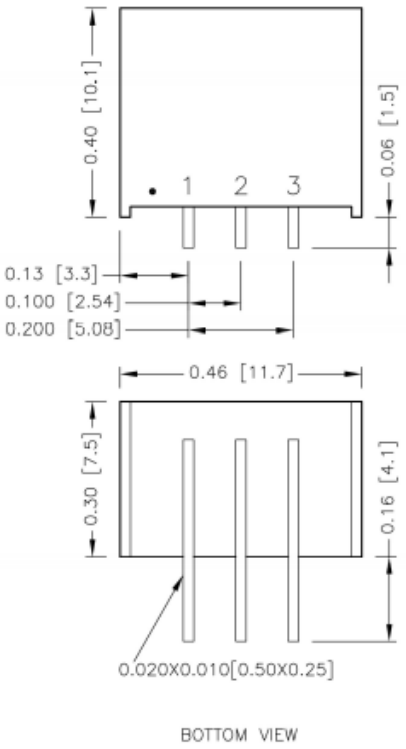
Model	Fuse Rating (A)	Fuse Type
43PSR1.0-1P2	0.63	Slow-Blow
43PSR1.0-1P5, 43PSR1.0-1P8	08	Slow-Blow
43PSR1.0-2P5, 43PSR1.0-3P3, 43PSR1.0-6P5, 43PSR1.0-9P0	1.25	Slow-Blow
43PSR1.0-5P0, 43PSR1.0-012, 43PSR1.0-015	1.6	Slow-Blow

Mechanical Drawing

Standard type: Vertical mounting



Suffix-A: Horizontal mounting



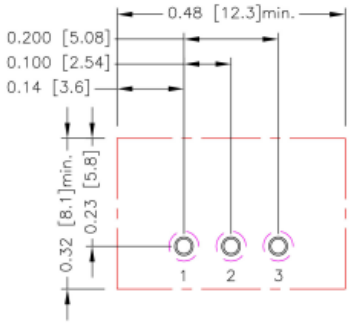
1.All dimensions in inch [mm]
Tolerance : x.xx±0.02 [x.x±0.5]
x.xxx±0.010 [x.xx±0.25]
2. Pin pitch tolerance ±0.010 [0.25]
3. Pin dimension tolerance ±0.004[0.10]

Pin Connection

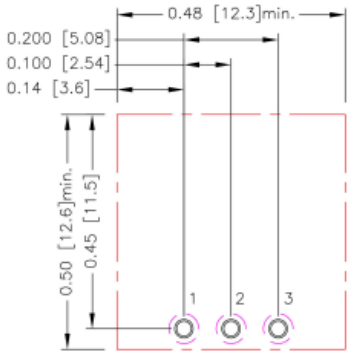
Pin	Single
1	+Vin
2	GND
3	+Vout

Recommended Pad Layout

Standard type: Vertical mounting



Suffix-A: Horizontal mounting



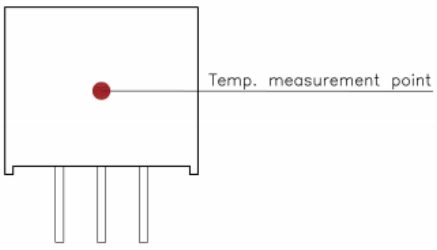
All dimensions in inch[mm]
Pad size(lead free recommended)
Through hole 1.2.3: Ø0.031[0.80]
Top view pad 1.2.3: Ø0.039[1.00]
Bottom view pad 1.2.3: Ø0.063[1.60]

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 “Maximum case temperature”.
When operating, adequate cooling must be provided to maintain the test point temperature at or below “Maximum case temperature”.
You can limit this Temperature to a lower value for extremely high reliability.

The unit will shut down if the internal IC junction exceeds 150℃ (typical), but the thermal shutdown is not intended as a guarantee that the unit will survive temperature beyond its rating. The module will automatically restart after it cools down.

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



BACK VIEW

DC – DC