SVR05 Series

DC-DC Converter

XP Power

0.5 Amp

- Non Isolated 0.5A Switching Regulator
- Regulated Single Outputs from 1.5 to 15VDC
- Output Voltage Adjustment
- Wide Input Range to 36V
- SMD Package
- High Efficiency to 95%
- Class B Conducted & Radiated Emissions
- Remote On/Off Control
- Low 100µA Standby Current
- -40°C to +85°C Operation
- MTBF >2MHrs
- 3 Year Warranty

Dimensions:

SVR05:
0.6 x 0.335 x 0.315" (15.24 x 8.5 x 8.25mm)

The SVR05 provides a cost effective switching regulator solution operating from a wide range DC input range with adjustable output voltages from 1.5V to 15V DC. The SVR05 is designed with size and efficiency in mind with features such as low stand by current of less than 100µA with remote on/off control. Applications can include embedded computing, instrumentation and process control systems.

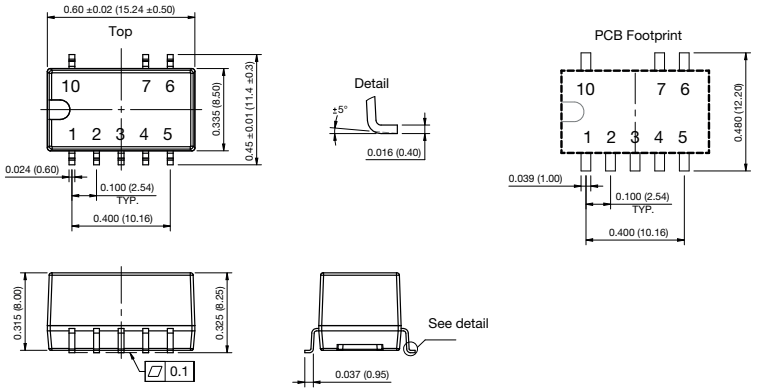
Models & Ratings

Input Voltage	Output Voltage	Output Current	Input Current(1)		Max. Capacitive Load	Efficiency(2)		Model Number
			No Load	Full Load		Vin Min.	Vin Max.	
4.75 - 28V	1.5V	500mA	1.5mA	208mA	680uF	76%	67%	SVR05S1V5
4.75 - 28V	1.8V	500mA	1.5mA	246mA	680uF	76%	69%	SVR05S1V8
4.75 - 32V	2.5V	500mA	1.5mA	330mA	680uF	81%	74%	SVR05S2V5
4.75 - 36V	3.3V	500mA	1.5mA	416mA	680uF	86%	80%	SVR05S3V3
6.5 - 36V	5.0V	500mA	0.2mA	446mA	680uF	90%	84%	SVR05S05
8 - 36V	6.5V	500mA	0.2mA	458mA	680uF	92%	87%	SVR05S6V5
12 - 36V	9.0V	500mA	0.2mA	412mA	680uF	93%	90%	SVR05S09
15 - 36V	12V	500mA	0.2mA	436mA	680uF	94%	91%	SVR05S12
19 - 36V	15V	500mA	0.2mA	422mA	680uF	95%	93%	SVR05S15

Notes

1. Input current measured at minimum input voltage.
2. Efficiency measured at full load.
3. Standard tube quantity 32 pcs.
4. Optional tape and reel packaging. Pack size 300pcs. Add suffix “-TR”

Mechanical Details



Pin-Out	
Pin	Function
1	+Vin
2	+Vin
3	GND
4	+Vout
5	+Vout
6	Trim
7	GND
10	Remote On/Off

Notes

1. All dimensions are in inches (mm)
2. Weight: 0.0033lbs (1.5g) approx.
3. Pin tolerance: ±0.004 (±0.1)
4. Case tolerance: ±0.010 (±0.25)

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	4.75		36	VDC	See Models and Ratings table.
Input Filter	Internal capacitor				
Input Reflected Ripple			20	mA pk-pk	
Input Surge			45	VDC	For max. 100ms.
Remote On/Off	Module on if pin 10 is open circuit or logic high. See Application Notes.				
Standby input current		30	100	µA	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	1.5		15	VDC	See Models and Ratings table.
Trim Range		±10		%	See Applications Notes.
Initial Set Accuracy		±2.0	±4.0/±3.0	%	3.3V output or below/others. (At full load)
Minimum Load	0			mA	No minimum load required.
Line Regulation		±0.2	±0.4	%	Full load over input voltage range.
Load Regulation		±0.3	±0.6	%	Maximum variation applies to 5V output models and below.
Transient Response			±1	%	For 50% load change. Recovery in 200µs.
Ripple & Noise			75	mV pk-pk	20 MHz bandwidth.
Short Circuit Protection	Continuous, with auto recovery.				
Maximum Capacitive Load	See Models and Ratings table.				
Temperature Coefficient			±0.03	%/°C	
Overload Protection		1.0		A	
Start-up Time		20		ms	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency				%	See models and ratings table.
Isolation: Input to Output	0			VDC	Non isolated.
Switching Frequency		370 / 700		kHz	SVR05S1V5 / other models at full load
Mean Time Between Failure	2			MHrs	MIL-HDBK-217F.
Weight		0.0033 (1.5)		lb (g)	
Case Material	Non-conductive black plastic UL94V-0, unpotted.				
Pin Material	Solder coated phosphor bronze C5191R-1/2H.				
Water Wash	Not suitable for water washing.				
Solder Profile	IPC/JEDEC J-STD-020D.1. Peak temperature ≤245°C, duration ≤60s max. over 217°C.				

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	°C	See derating curves.
Storage Temperature	-55		+125	°C	
Case Temperature			+120	°C	
Humidity			95	%RH	Non-condensing.
Cooling	Natural convection.				

Safety Approvals

Agency	Standard	Test Level	Notes & Conditions
CE	Meets all applicable directives		
UKCA	Meets all applicable legislation		

EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN55032	Class B	See Application Notes
Radiated	EN55032	Class B	

EMC: Immunity

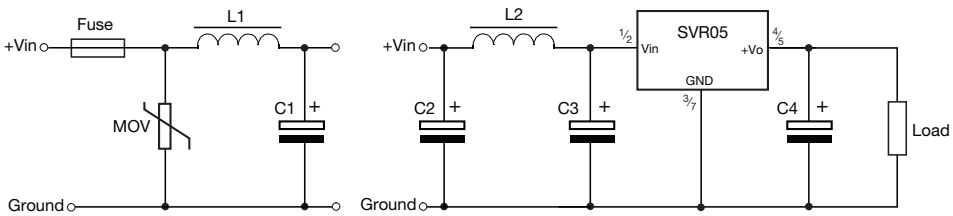
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN61000-4-2	±4kV	B	Contact discharge.
Radiated Immunity	EN61000-4-3	10V/m	A	
EFT/Burst	EN61000-4-4	±1.0kV	B	See Application Notes
Surges	EN61000-4-5	±1.0kV	B	
Conducted Immunity	EN61000-4-6	3Vrms	A	

Application Notes

Input Filter

Immunity Compliance Filter

Class B Conducted Emission Filter

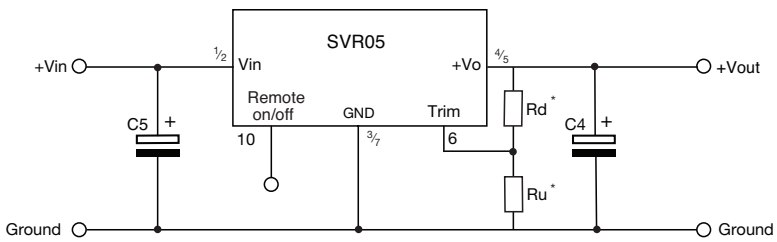


MOV	L1	L2	C1	C2	C3/C4	C5
S20K30	82µH	12µH	680µF /50V	4.7µF /50V	Refer to table below	22µF /25V

Notes

1. Select fuse rating based on application input current.
2. MOV, L1 and C1 apply to immunity compliance.

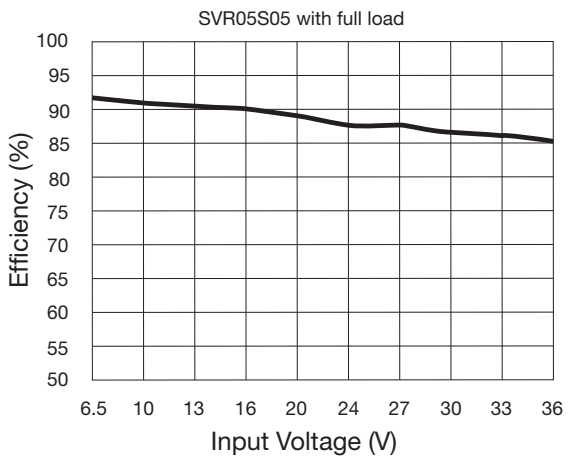
Typical Application

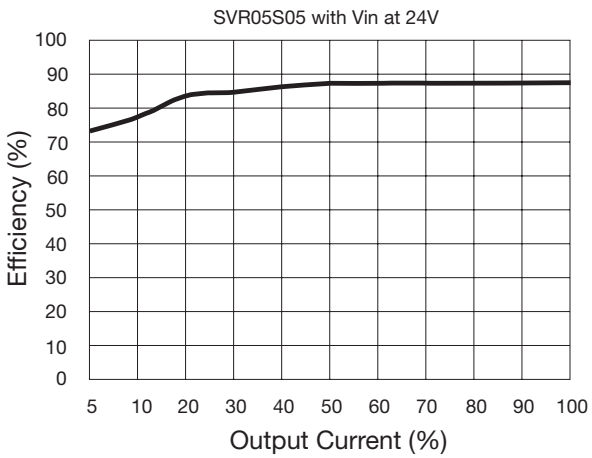


Remote On / Off - Output on if pin 10 is open circuit or logic high of 3.5 to 5.5VDC.
Output off if pin 10 is connected to ground or logic low of 0 to 0.8VDC.

Part Number	C3	C4
SVR05S1V5	10µF/50V	22µF/10V
SVR05S1V8		22µF/10V
SVR05S2V5		22µF/10V
SVR05S3V3		22µF/10V
SVR05S05		22µF/16V
SVR05S6V5		16uF/16V
SVR05S09		16µF/25V
SVR05S12		22µF/25V
SVR05S15		22uF/25V

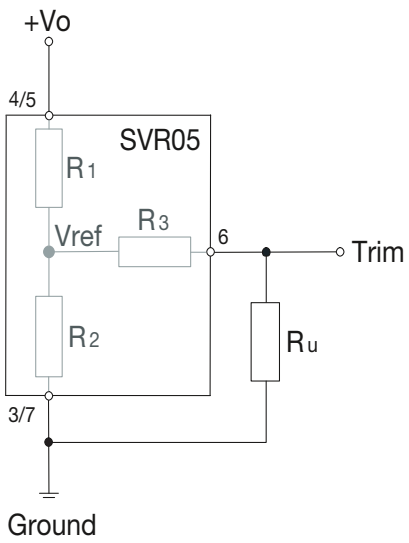
Efficiency Curves



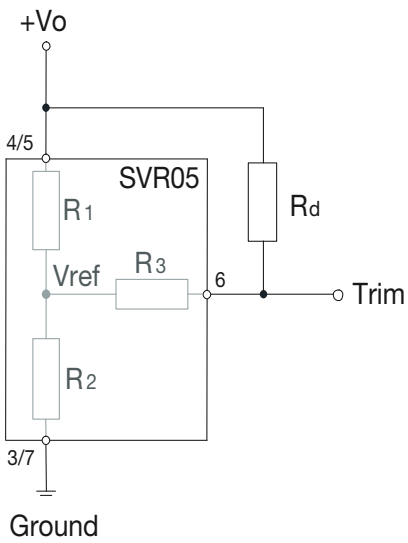


Output Voltage Adjustment

Trim Up



Trim Down



Calculating Trim Resistor values:

Up: $Ru = \left(\frac{aR_2}{R2-a}\right)-R3$ $a = \left(\frac{Vref}{Vo-Vref}\right) R1$

Down: $Rd = \left(\frac{aR_1}{R1-a}\right)-R3$ $a = \left(\frac{Vo-Vref}{Vref}\right) R2$

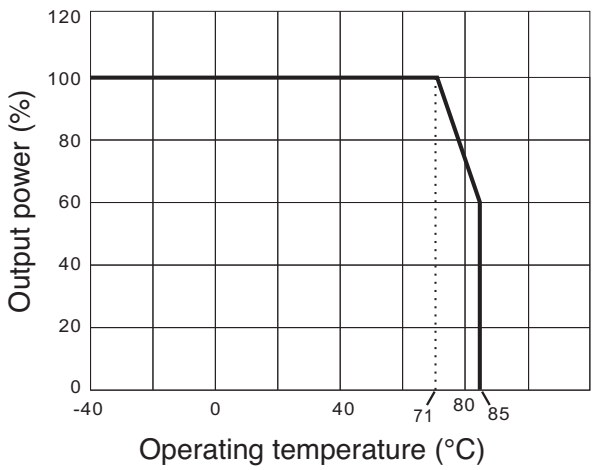
Notes

1. R1, R2 and R3 are internal to SVR05.
2. Rd, Ru = Trim Resistor value.
3. Only fit one trim resistor Ru* or Rd*.
4. a = calculated parameter.
5. Vo = desired output voltage.
6. SVR05S1V5 model can be trimmed up only.

Reference Values

Vout (V)	R1 (KΩ)	R2 (KΩ)	R3 (KΩ)	Vref (V)
1.5	7.5	7.5	15	0.75
1.8	35.7	26.29	100	0.765
2.5	27	11.858	51	0.765
3.3	33	9.9	47	0.765
5	75	13.5	75	0.765
6.5	75	10	51	0.765
9	51	4.7	27	0.765
12	75	5.1	27	0.765
15	82	4.423	27	0.765

Temperature Derating Curve



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

XP Power:

SVR05S05 SVR05S05-TR SVR05S12 SVR05S12-TR SVR05S3V3 SVR05S3V3-TR