ETA-POWER EUROPE LTD.

# SVM-SC/SD 15W

## DC/DC Converter
## Single output

POWER SOURCE®

The ideal miniarization should be followed with the raisement on efficiency. The SV-series have been developed standing on this basic designing idea. These series are realized with super-small size, high efficiency, high performance and high reliabilities. For example the introduction of “double side printed PCB with through” and the latest design eliminating capacitors from input circuit enable to improve reliability and longgevity of them.

**Features**
Wide input voltage range (9.2-140Vdc)
High efficiency & reliability
Output voltage +/-10%
Switching frequency: Data sheet page 2 to 5
MTBF: Data sheet page 2 to 5
Warranty: 2 years

**Possibly applications**
Process control
Office equipment
Computer peripherals
Telecommunications
Industrial electronics&machines

**Mechanical features**
Dimension (WxLxH): 60x83x20mm
Weight: 120g
Connector: Screw terminal
Closed type

**Control features**
Over voltage protection: Output shutdown
Over current protection: Current limiting, aut. recovery
Input polarity protection

| Specifications<DC/DC> | Model | | | | |
|---|---|---|---|---|---|
| **SVM-**SC12 15WATTS/ 1 OUTPUT** | SVM-05SC12 | SVM-12SC12 | SVM-15SC12 | SVM-24SC12 | SVM-48SC12 |
| **Input Characteristic** | | | | | |
| Input Voltage | DC12V | | | | |
| Input Range | DC9.2-16V | | | | |
| Inrush Current | not specified | | | | |
| Efficiency [%] (typical) *1 | 79 | 80 | 82 | 83 | 83 |
| **Output Characteristic** | | | | | |
| Output Voltage [V] | 5 | 12 | 15 | 24 | 48 |
| Output Current [A] | 3.0 | 1.3 | 1 | 0.7 | 0.35 |
| Voltage Adjust Range | +/- 10% of Rated Output Voltage (at no load within the input range) | | | | |
| Ripple and Noise [mVp-p](maximum) *2 | 100 | 170 | 200 | 290 | 530 |
| Regulation | | | | | |
| a.Statistic Line Regulation [mV](maximum) | 40 | 96 | 120 | 192 | 384 |
| b.Statistic Load Regulation [mV](maximum) | 45 | 108 | 135 | 216 | 432 |
| c.Temperature Coefficient *3 | 0.03%/°C | | | | |
| d.Drift[mV](maximum) *4 | 40 | 75 | 90 | 135 | 255 |
| e.Dynamic Load Regulation [mV](typical) *5 | 150 | 360 | 450 | 720 | 1440 |
| f.Recovery Time *5 | 0.5mS(typical) | | | | |
| Rise up time | 100mS(maximum) at 25°C and rated input/output | | | | |
| Hold up time | not specified | | | | |
| **Functions** | | | | | |
| Over current Protection | Current limiting with automatic recovery | | | | |
| ≥110% of Rated Output [A] | 3.30 | 1.43 | 1.10 | 0.77 | 0.39 |
| Over voltage Protection | Output shutdown(to reset, leave 1minute after shutdown) | | | | |
| ≥110% of Rated Output [V] | 5.50 | 13.2 | 16.5 | 26.4 | 52.8 |
| Remote Sense | not available | | | | |
| Remote On/Off | not available | | | | |
| Reverse voltage protection | by internal fuse | | | | |
| **Environmental** | | | | | |
| Operating Temperature | 0 to +50°C | | | | |
| Operating Humidity | 85%RH(non-condensing) | | | | |
| Storage Temperature | -20 to +85°C | | | | |
| Storage Humidity | 85%RH(non-condensing) | | | | |
| Withstanding Voltage | Primary-Secondary AC2,000V for 1minute | | | | |
| | Primary-Frame Ground AC2,000V for 1minute | | | | |
| | Secondary-Frame Ground AC500V for 1minute | | | | |
| Isolation Resistance Primary-Secondary-Frame Ground | 50MΩ(minimum) by DC500V insulation tester | | | | |
| Vibration | 5-10Hz:10mm double amplitude,10-55Hz:19.6m/s$^2$,20minutes, period for 60minutes each along X,Y,Z axes(non-operating) | | | | |
| Shock | 294m/s$^2$ | | | | |
| Cooling | Convection | | | | |
| Line conduction noise | not specified | | | | |
| Safety | - | | | | |
| Weight (typical) | 120g | | | | |
| MTBF [H] | 660,000 | | | | |
| Switching Frequency[kHz](typical) | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. |

Conditions:
*1 At DC12V input and rated output
*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth
*3 At -5 to +50°C
*4 For 7hour period after 1hour warm-up at 25°C and rated input/output
*5 When output current changed between 25% and 75% of rated output current rapidly at DC12V input

| Specifications<DC/DC> | Model | | | | |
|---|---|---|---|---|---|
| **SVM-**SC24 15WATTS/ 1 OUTPUT** | SVM-05SC24 | SVM-12SC24 | SVM-15SC24 | SVM-24SC24 | SVM-48SC24 |
| **Input Characteristic** | | | | | |
| Input Voltage | DC24V | | | | |
| Input Range | DC19-32V | | | | |
| Inrush Current | not specified | | | | |
| Efficiency [%] (typical) *1 | 79 | 81 | 82 | 84 | 85 |
| **Output Characteristic** | | | | | |
| Output Voltage [V] | 5 | 12 | 15 | 24 | 48 |
| Output Current [A] | 3.0 | 1.3 | 1.0 | 0.7 | 0.35 |
| Voltage Adjust Range | +/- 10% of Rated Output Voltage (at no load within the input range) | | | | |
| Ripple and Noise [mVp-p](maximum) *2 | 150 | 220 | 250 | 340 | 580 |
| Regulation | | | | | |
| a.Statistic Line Regulation [mV](maximum) | 40 | 96 | 120 | 192 | 384 |
| b.Statistic Load Regulation [mV](maximum) | 45 | 108 | 135 | 216 | 432 |
| c.Temperature Coefficient *3 | 0.03%/°C | | | | |
| d.Drift[mV](maximum) *4 | 40 | 75 | 90 | 135 | 255 |
| e.Dynamic Load Regulation [mV](typical) *5 | 150 | 360 | 450 | 720 | 1440 |
| f.Recovery Time *5 | 0.5mS(typical) | | | | |
| Rise up time | 100mS(maximum) at 25°C and rated input/output | | | | |
| Hold up time | not specified | | | | |
| **Functions** | | | | | |
| Over current Protection | Current limiting with automatic recovery | | | | |
| ≥110% of Rated Output [A] | 3.30 | 1.43 | 1.10 | 0.77 | 0.39 |
| Over voltage Protection | Output shutdown(to reset, leave 1minute after shutdown) | | | | |
| ≥110% of Rated Output [V] | 5.50 | 13.2 | 16.5 | 26.4 | 52.8 |
| Remote Sense | not available | | | | |
| Remote On/Off | not available | | | | |
| Reverse voltage protection | by internal fuse | | | | |
| **Environmental** | | | | | |
| Operating Temperature | 0 to +50°C | | | | |
| Operating Humidity | 85%RH(non-condensing) | | | | |
| Storage Temperature | -20 to +85°C | | | | |
| Storage Humidity | 85%RH(non-condensing) | | | | |
| Withstanding Voltage | Primary-Secondary AC2,000V for 1minute | | | | |
| | Primary-Frame Ground AC2,000V for 1minute | | | | |
| | Secondary-Frame Ground AC500V for 1minute | | | | |
| Isolation Resistance Primary-Secondary-Frame Ground | 50MΩ(minimum) by DC500V insulation tester | | | | |
| Vibration | 5-10Hz:10mm double amplitude,10-55Hz:19.6m/s$^2$,20minutes, period for 60minutes each along X,Y,Z axes(non-operating) | | | | |
| Shock | 294m/s$^2$ | | | | |
| Cooling | Convection | | | | |
| Line conduction noise | not specified | | | | |
| Safety | - | | | | |
| Weight (typical) | 120g | | | | |
| MTBF [H] | 750,000 | | | | |
| Switching Frequency[kHz](typical) | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. |

Conditions:
*1 At DC24V input and rated output
*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth
*3 At -5 to +50°C
*4 For 7hour period after 1hour warm-up at 25°C and rated input/output
*5 When output current changed between 25% and 75% of rated output current rapidly at DC24V input

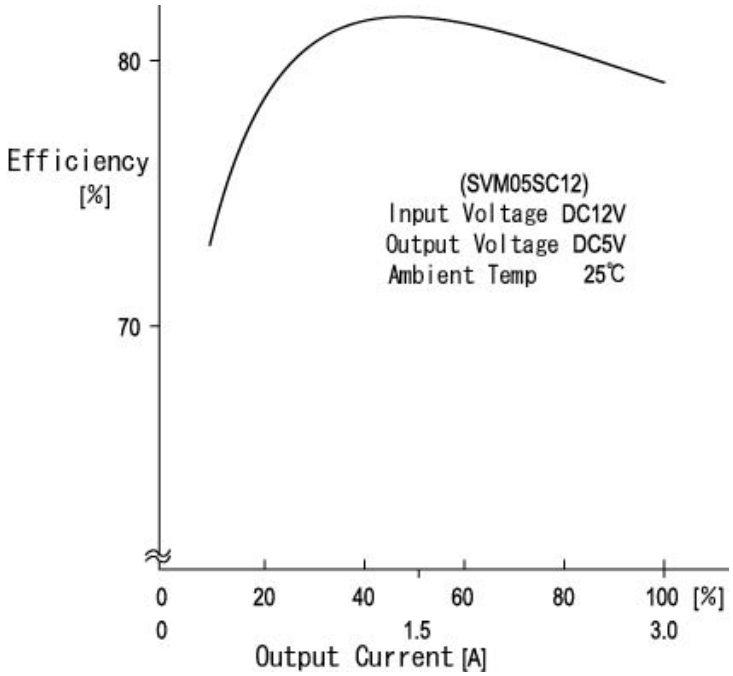
| Specifications<DC/DC> | Model | | | | |
|---|---|---|---|---|---|
| **SVM-**SC48 15WATTS/ 1 OUTPUT** | SVM-05SC48 | SVM-12SC48 | SVM-15SC48 | SVM-24SC48 | SVM-48SC48 |
| **Input Characteristic** | | | | | |
| Input Voltage | DC48V | | | | |
| Input Range | DC38-64V | | | | |
| Inrush Current | not specified | | | | |
| Efficiency [%] (typical) *1 | 81 | 83 | 84 | 86 | 86 |
| **Output Characteristic** | | | | | |
| Output Voltage [V] | 5 | 12 | 15 | 24 | 48 |
| Output Current [A] | 3.0 | 1.3 | 1.0 | 0.7 | 0.35 |
| Voltage Adjust Range | +/- 10% of Rated Output Voltage (at no load within the input range) | | | | |
| Ripple and Noise [mVp-p](maximum) *2 | 150 | 220 | 250 | 340 | 580 |
| Regulation | | | | | |
| a.Statistic Line Regulation [mV](maximum) | 40 | 96 | 120 | 192 | 384 |
| b.Statistic Load Regulation [mV](maximum) | 45 | 108 | 135 | 216 | 432 |
| c.Temperature Coefficient *3 | 0.03%/°C | | | | |
| d.Drift[mV](maximum) *4 | 40 | 75 | 90 | 135 | 255 |
| e.Dynamic Load Regulation [mV](typical) *5 | 150 | 360 | 450 | 720 | 1440 |
| f.Recovery Time *5 | 0.3mS(typical) | | | | |
| Rise up time | 500mS(maximum) at 25°C and rated input/output | | | | |
| Hold up time | not specified | | | | |
| **Functions** | | | | | |
| Over current Protection | Current limiting with automatic recovery | | | | |
| ≥110% of Rated Output [A] | 3.30 | 1.43 | 1.10 | 0.77 | 0.39 |
| Over voltage Protection | Output shutdown(to reset, leave 1minute after shutdown) | | | | |
| ≥110% of Rated Output [V] | 5.50 | 13.2 | 16.5 | 26.4 | 52.8 |
| Remote Sense | not available | | | | |
| Remote On/Off | not available | | | | |
| Reverse voltage protection | by internal fuse | | | | |
| **Environmental** | | | | | |
| Operating Temperature | 0 to +50°C | | | | |
| Operating Humidity | 85%RH(non-condensing) | | | | |
| Storage Temperature | -20 to +85°C | | | | |
| Storage Humidity | 85%RH(non-condensing) | | | | |
| Withstanding Voltage | Primary-Secondary AC2,000V for 1minute | | | | |
| | Primary-Frame Ground AC2,000V for 1minute | | | | |
| | Secondary-Frame Ground AC500V for 1minute | | | | |
| Isolation Resistance Primary-Secondary-Frame Ground | 50MΩ(minimum) by DC500V insulation tester | | | | |
| Vibration | 5-10Hz:10mm double amplitude,10-55Hz:19.6m/s$^2$,20minutes, period for 60minutes each along X,Y,Z axes(non-operating) | | | | |
| Shock | 294m/s$^2$ | | | | |
| Cooling | Convection | | | | |
| Line conduction noise | not specified | | | | |
| Safety | - | | | | |
| Weight (typical) | 120g | | | | |
| MTBF [H] | 750,000 | | | | |
| Switching Frequency[kHz](typical) | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. |

Conditions:
*1 At DC48V input and rated output
*2 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth
*3 At -5 to +50°C
*4 For 7hour period after 1hour warm-up at 25°C and rated input/output
*5 When output current changed between 25% and 75% of rated output current rapidly at DC48V input

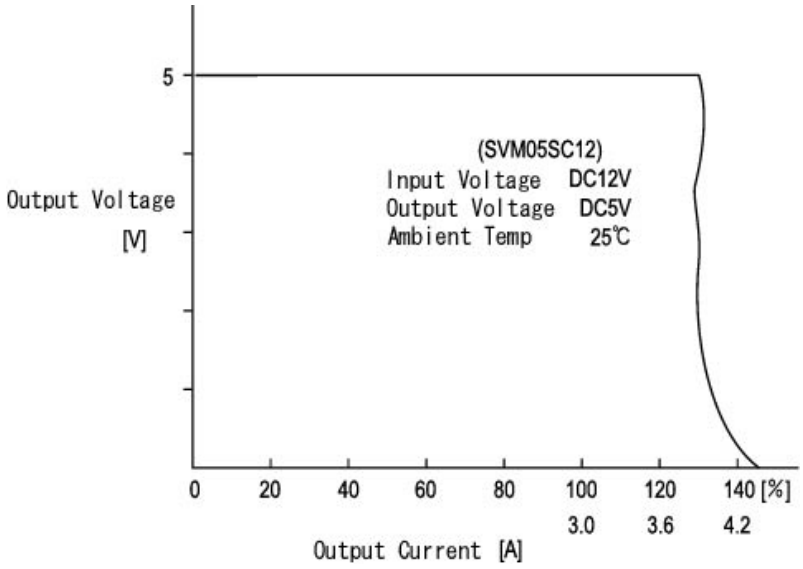
| Specifications<DC/DC> | Model | | | | |
|---|---|---|---|---|---|
| SVM-**SD 15WATTS/ 1 OUTPUT | SVM-05SD | SVM-12SD | SVM-15SD | SVM-24SD | SVM-48SD |
| **Input Characteristic** | | | | | |
| Input Voltage | DC110V | | | | |
| Input Range | DC85-140V | | | | |
| Inrush Current *1 | 20A(maximum) at DC110V | | | | |
| Efficiency [%] (typical) *2 | 81 | 83 | 84 | 86 | 86 |
| **Output Characteristic** | | | | | |
| Output Voltage [V] | 5 | 12 | 15 | 24 | 48 |
| Output Current [A] | 3.0 | 1.3 | 1.0 | 0.7 | 0.35 |
| Voltage Adjust Range | +/- 10% of Rated Output Voltage (at no load within the input range) | | | | |
| Ripple and Noise [mVp-p](maximum) *3 | 150 | 220 | 250 | 340 | 580 |
| Regulation | | | | | |
| a.Statistic Line Regulation [mV](maximum) | 40 | 96 | 120 | 192 | 384 |
| b.Statistic Load Regulation [mV](maximum) | 45 | 108 | 135 | 216 | 432 |
| c.Temperature Coefficient *4 | 0.03%/°C | | | | |
| d.Drift[mV](maximum) *5 | 40 | 75 | 90 | 135 | 255 |
| e.Dynamic Load Regulation [mV](typical) *6 | 150 | 360 | 450 | 720 | 1440 |
| f.Recovery Time *6 | 0.3mS(typical) | | | | |
| Rise up time | 500mS(maximum) at 25°C and rated input/output | | | | |
| Hold up time | not specified | | | | |
| **Functions** | | | | | |
| Over current Protection | Current limiting with automatic recovery | | | | |
| ≥110% of Rated Output [A] | 3.30 | 1.43 | 1.10 | 0.77 | 0.39 |
| Over voltage Protection | Output shutdown(to reset, leave 1minute after shutdown) | | | | |
| ≥110% of Rated Output [V] | 5.50 | 13.2 | 16.5 | 26.4 | 52.8 |
| Remote Sense | not available | | | | |
| Remote On/Off | not available | | | | |
| Reverse voltage protection | by internal fuse | | | | |
| **Environmental** | | | | | |
| Operating Temperature | 0 to +50°C | | | | |
| Operating Humidity | 85%RH(non-condensing) | | | | |
| Storage Temperature | -20 to +85°C | | | | |
| Storage Humidity | 85%RH(non-condensing) | | | | |
| Withstanding Voltage | Primary-Secondary AC2,000V for 1minute | | | | |
| | Primary-Frame Ground AC2,000V for 1minute | | | | |
| | Secondary-Frame Ground AC500V for 1minute | | | | |
| Isolation Resistance Primary-Secondary-Frame Ground | 50MΩ(minimum) by DC500V insulation tester | | | | |
| Vibration | 5-10Hz:10mm double amplitude,10-55Hz:19.6m/s$^2$,20minutes, period for 60minutes each along X,Y,Z axes(non-operating) | | | | |
| Shock | 294m/s$^2$ | | | | |
| Cooling | Convection | | | | |
| Line conduction noise | not specified | | | | |
| Safety | - | | | | |
| Weight (typical) | 120g | | | | |
| MTBF [H] | 600,000 | | | | |
| Switching Frequency[kHz](typical) | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. | 90 Fix. |

Conditions:
*1 At cold start
*2 At DC110V and rated output
*3 Measured by a bayonet probe at the output connector at a 0 to 100MHz bandwidth
*4 At -5 to +50°C
*5 For 7hour period after 1hour warm-up at 25°C and rated input/output
*6 When output current changed between 25% and 75% of rated output current rapidly at DC110V input

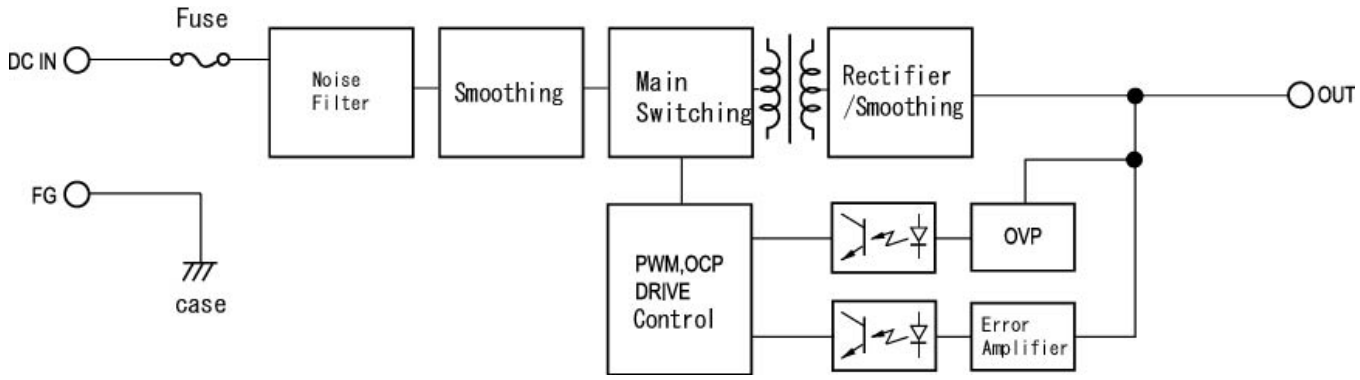
## Efficiency:




## OCP:



## Block diagram:




## Dimension