

# RSP250-40M $\diamond$ Surge Protector

250W  $\diamond$  4:1 Input

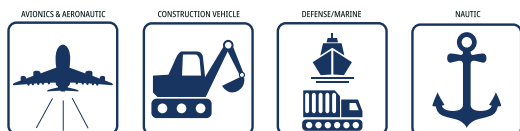
## FEATURES

- MIL-STD-461G, MIL-STD-1275E compliant
- 4:1 Wide input voltage range (9-36VDC)
- CTRL ON/OFF
- Inrush current limiter
- Reverse polarity protection
- Protections: SCP, OCP, OVP, OTP, UVP
- 3 year warranty



Dimensions (LxWxH): 57.9 x 36.8 x 12.7mm (2.28 x 1.45 x 0.50 inch)  
64g (0.14 lbs)

## APPLICATIONS



## SAFETY & EMC



## DESCRIPTION

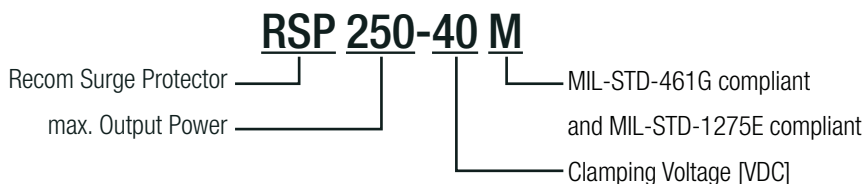
Introducing the RSP250-40M series, the ultimate surge protector for enhancing the performance and compliance of Recom's isolated DC/DC converters. Designed to meet MIL-STD-461G and MIL-STD-1275E standards, it ensures reliable, military-grade power solutions. With a 4:1 input voltage range of 9-36VDC and capable of handling up to 250W of power, the RSP250-40M offers versatility across various rugged applications. Features include CTRL ON/OFF for remote control, an inrush current limiter for smooth power-up, and reverse polarity protection for longevity. Comprehensive protections such as SCP, OCP, OVP, OTP, and UVP ensure robust device safety. Ideal for military and aerospace applications, the RSP250-40M series is the perfect addition to Recom's isolated DC/DC converters, providing compliance and enhanced system protection.

## SELECTION GUIDE

Part Number	Input Voltage Range [VDC]	Output Voltage nom. [VDC]	Clamping Voltage [VDC]	Output Current max. [A]	Output Power max. [W]	Efficiency typ. <sup>(1)</sup> [%]	Max. Capacitive Load <sup>(1)</sup> [ $\mu$ F]
RSP250-40M	9-36	$V_{IN} - 1$	40	15	250	98	1000

Note1: Tested at nominal input (28VDC) and full load at +25°C ambient

## MODEL NUMBERING



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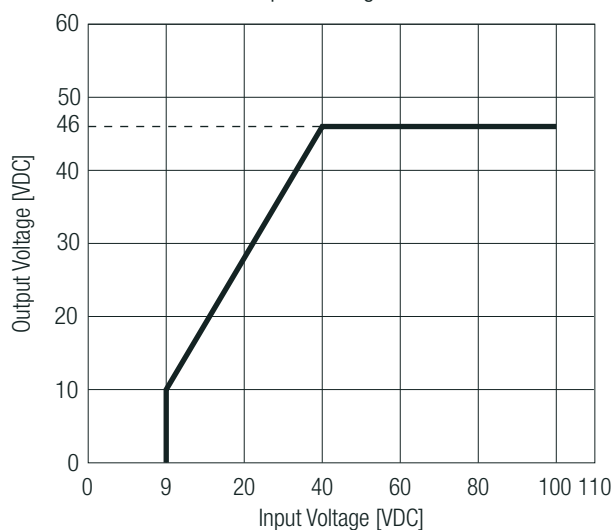
### ACCESSIBLE PART

Part Number	Description	Datasheet Link
RP240H-24xxSRW	240W, Half Brick, DC-DC converter	<a href="#">Datasheet</a>

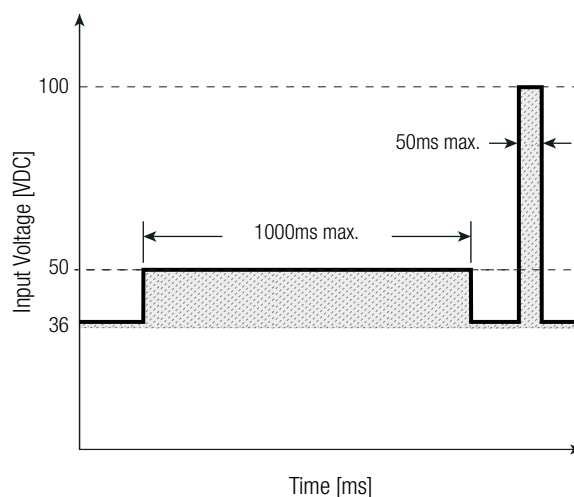
### BASIC CHARACTERISTICS (measured @ $T_{AMB} = 25^{\circ}\text{C}$ , nom. $V_{IN}$ , full load and after warm-up unless otherwise stated)

Parameter	Condition	Min.	Typ.	Max.
Input Voltage Range	nom. $V_{IN} = 28\text{VDC}$	9VDC	28VDC	36VDC
Under Voltage Lockout (UVLO)	DC-DC ON			9VDC
	DC-DC OFF	5.5VDC	6VDC	6.5VDC
Transient Voltage	1 second max.			50VDC
	50ms max.			100VDC
Spikes	70 $\mu\text{s}$ , 2mJ	-250VDC		250VDC
Clamping Voltage	input transient voltage mode, refer to „Dropout Voltage“		46VDC	
ON/OFF CTRL	referenced to -Vin pin	DC-DC ON	open or short or 0-1.2VDC	
		DC-DC OFF	4VDC < $V_{CTRL}$ < 12VDC	

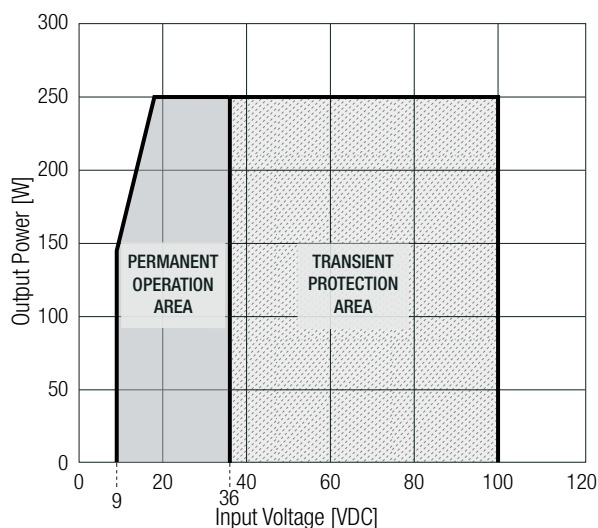
Dropout Voltage



Transient Limitation



Output Power vs. Input Voltage



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## PROTECTIONS

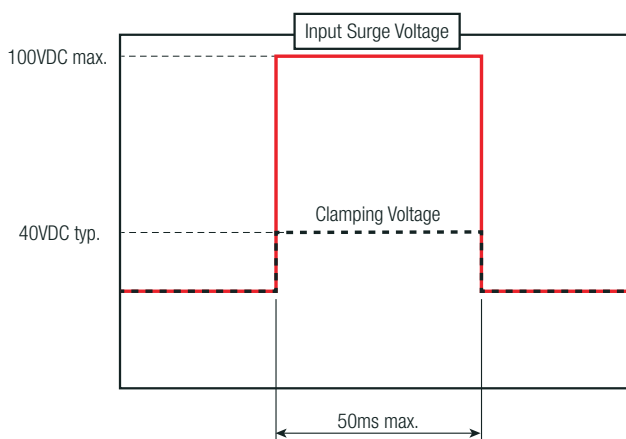
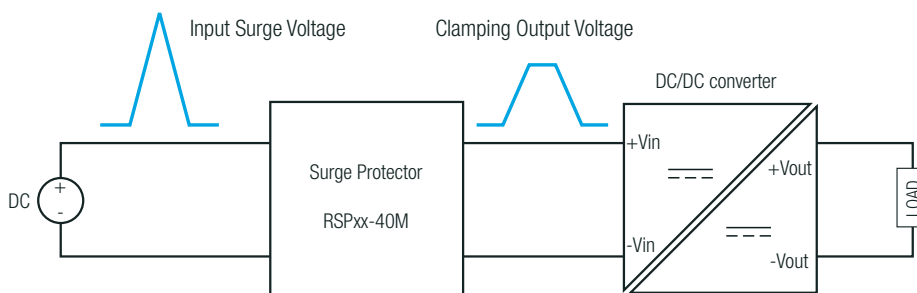
Parameter	Condition		Value
Reverse Polarity Protection <sup>(2)</sup>			-36VDC max.
Short Circuit Protection (SCP) <sup>(3)</sup>			continuous, auto recovery
Over Load Protection (OLP)			35A, hiccup mode
Over Temperature Protection (OTP)	T <sub>CASE</sub>		115°C typ.
Isolation Voltage <sup>(4)</sup>	I/P and O/P to Case	1 minute	2250VDC

Note2: MOSEFET is held in an off state to avoid reverse current flow

Note3: Refer to local safety regulations if input over-current protections is also required.

Note4: For repeat Hi-Pot testing, reduce the time and/or the test voltage

## PROTECTION FUNCTION



Standard	Input Voltage	Permanent Operating Input Range	Transient	Spike
MIL-STD-1275E	28VDC	23-33VDC	40V/500ms 100V/50ms	±250V/70µs
MIL-STD-704F		22-29VDC	50V/50ms	N/A
RTCA DO-160G Cat. A/Z		20.5-32.2VDC	80V/100ms	±600A/10µs

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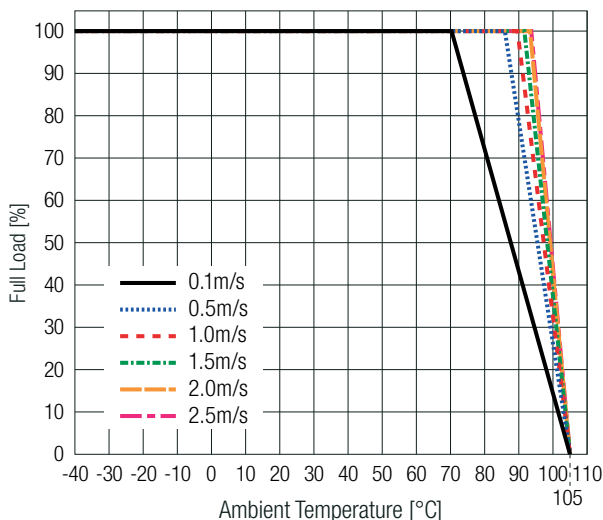
## 250W $\diamond$ 4:1 Input

### ENVIRONMENTAL

Parameter	Condition		Value
Operating Temperature Range	with derating, refer to „Derating Graph“		-40°C to +105°C
Maximum Case Temperature			+105°C
Operating Humidity	non-condensing		5% - 95% RH max.
Thermal Shock			MIL-STD-810F
Vibration			MIL-STD-810F
MTBF	according to MIL-HDBK-217F, G.B.	full load, $T_{AMB} = +25^{\circ}\text{C}$	$609.5 \times 10^3$ hours

### Derating Graph

(@ Chamber and natural convection 0.1m/s)



### SAFETY AND CERTIFICATIONS

Certificate Type (Safety)		Standard	
RoHS2		RoHS 2011/65/EU + AM2015/863	
EMC Compliance	Condition	Standard /Criterion	
Electromagnetic Immunity (EMI)	with external components	CE101-4 Curve #2	MIL-STD-461G
		CE102-1 Basic curve	
		RE101-2 Navy	
		RE102-3 Fixed Wing internal, $\geq 25$ Meters Nose to Tail	
Electromagnetic Susceptibility (EMS)	with external components	CS101-1 Curve #2	MIL-STD-461G
		CS114-1 Curve #5	
		CS115-1 Basic waveform	
		CS116-2 $I_{max} = 10\text{A}$	
Standard meets	Compliance with standards voltage transient immunity	MIL-STD-1275E Surge Susceptibility MIL-STD-704F Surge Susceptibility RTCA DO-160G Surge Susceptibility	

### DIMENSION & PHYSICAL CHARACTERISTICS

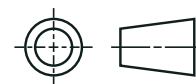
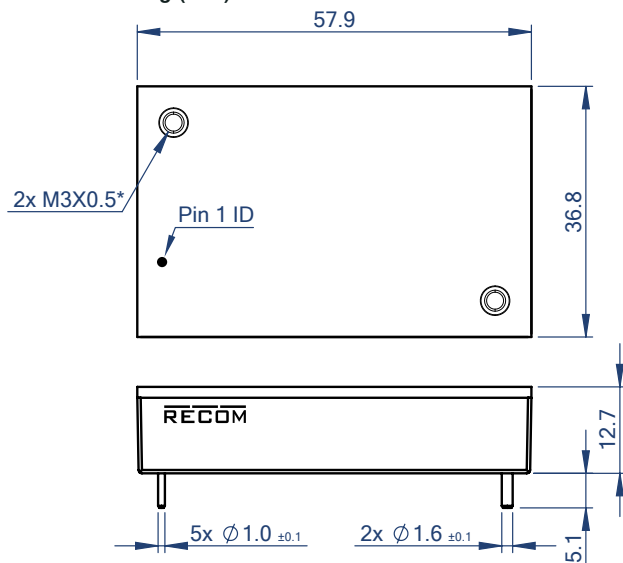
Parameter	Type	Value
Materials	case/baseplate	non conductive black plastic, (UL94 V-0)
	baseplate	aluminum
	potting	silicone, (UL94 V-0)
Dimension (LxWxH)		57.9 x 36.8 x 12.7mm 2.28 x 1.45 x 0.50 inch
Weight		64g 0.14 lbs

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### DIMENSION & PHYSICAL CHARACTERISTICS

Dimension Drawing (mm)



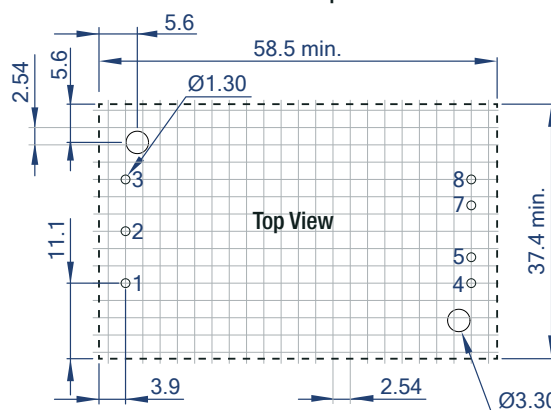
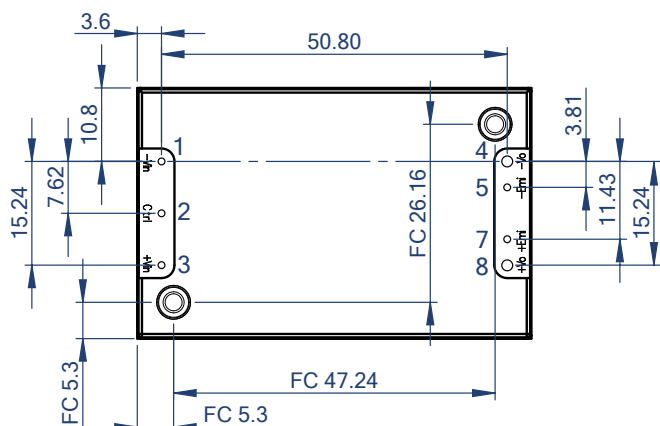
Pinning information

Pin #	Single
1	-Vin
2	CTRL
3	+Vin
4	-Vout
5	-Emi
7	+Emi
8	+Vout

FC= fixing centers

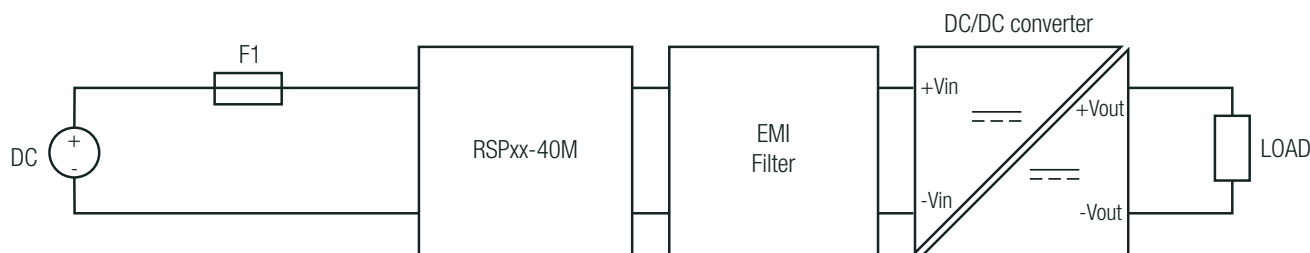
\* The screw locked torque:  
MAX 3.5kgf-cm [0.34N-m]

Recommended Footprint Details



Tolerances:  
x.x= ±0.5mm  
x.xx= ±0.25mm

### INSTALLATION AND APPLICATION



F1: An input fuse is required if the supply is not current-limited

### PACKAGING INFORMATION

Parameter	Type	Value
Packaging Dimension (LxWxH)	tray	157.0 x 88.0 x 23.0mm
Packaging Quantity		2pcs
Storage Temperature Range		-55°C to +125°C
Storage Humidity	non-condensing	5-95% RH max.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.