RO-MIL-2214

Low Power DC-DC Converter
28V Input, 15W Output

Basic Data

Variant	Input	Regulated Output
RO-MIL-2214-A	28V	3.3V 3A
RO-MIL-2214-B	28V	5V 3A
RO-MIL-2214-C	28V	12V 1.25A
RO-MIL-2214-D	28V	15V 1A
W x D x H:	73.9 x 28.3 x 10.2mm (Flanged) 53.3 x 28.3 x 10.2mm (Non-Flanged)	
Weight: 30g max (hermetically sealed unit)		
Operating Temperature: –55°C to +125°C		

Description

RO-MIL-2214 is a compact, high efficiency, low power DC-DC converter. Operating from 28V it has a wide range, 15V to 50V, over the full temperature range without derating. The unit is unconditionally stable and does not require any external components for correct operation.

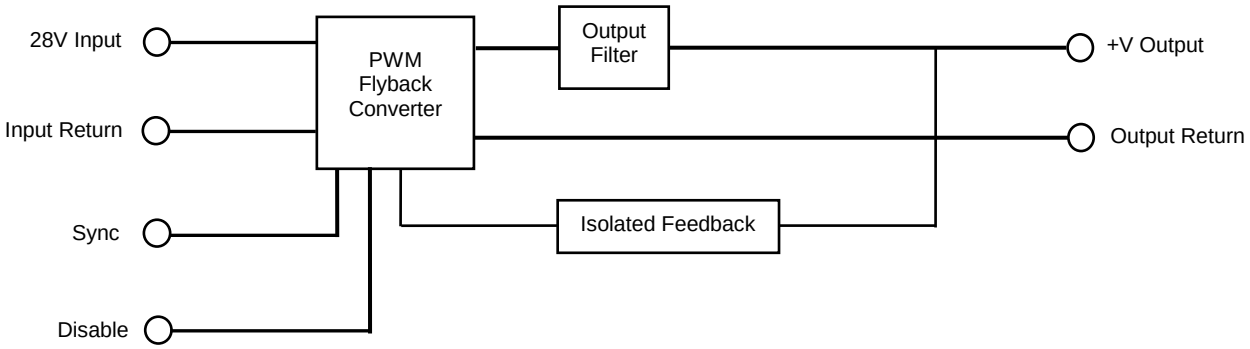
The compact size and high efficiency are achieved by applying innovative design and packaging techniques.

Energy for the output is provided by an isolated high frequency PWM flyback converter. Primary side overload protection and output over voltage protection is included as well as a remote disable facility and the ability to synchronise the unit to an external clock signal. See application notes on page 5. Primary-side overload protection and output over-voltage protection is also included.

The unit is housed in conversion coated machined box.

All units are manufactured on site in accordance with Roband's approved Quality Management System.

Block Diagram



roband
Electronics plc

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Specification

(T_{case} = 25°C, V_{in} = 28V_{dc} ±2%, Load = 100%, unless otherwise specified)

	RO-MIL-2214-A			RO-MIL-2214-B			
PARAMETER							**UNITS**
Input	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	
Nominal Voltage [1]	15	28	50	15	28	50	V_{dc}
Surge Rating (100ms)	–	–	80	–	–	80	V_{dc}
Output							
Output Voltage [2]	3.23	3.3	3.37	4.9	5	5.1	V_{dc}
Output Current	0	–	3.03	0	–	3	A
Output Power	0	–	10	0	–	15	W
Ripple and Noise [3]	–	15	30	–	15	30	mV_{p-p}
Output Regulation							
Line Regulation (15-50V_{in})	–	2	10	–	2	10	mV
Load Regulation [4]	–	25	40	–	25	40	mV
Efficiency	76	–	–	80	–	–	%
Temperature							
T_{case} (Operating)	-55	–	+125	-55	–	+125	°C
T_{case} (Storage)	-55	–	+125	-55	–	+125	°C
Coefficient	–	100	–	–	100	–	ppm per °C
Dynamic Characteristics							
Load Step Transient [5]	–	–	200	–	–	300	mV_{pk}
Load Step Recovery	–	–	350	–	–	300	µs
Line Step Transient [6]	–	–	100	–	–	100	mV_{pk}
Line Step Recovery	–	–	300	–	–	300	µs
Start up Time	–	–	5	–	–	5	ms
Isolation (at 500V)							
Input to Output	100	–	–	100	–	–	MΩ
Input to Chassis	100	–	–	100	–	–	MΩ
Output to Chassis	100	–	–	100	–	–	MΩ

[1] Wider ranges available on request
[2] Measured unit output pins
[3] DC to 20MHz, including spikes
[4] No load to maximum
[5] 50% to 100% or 100% to 50% load change
[6] V_{in} = 15V to 50V or 50V to 15V

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Specification (cont.)

	RO-MIL-2214-C			RO-MIL-2214-D			
PARAMETER							**UNITS**
Input	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	
Nominal Voltage [1]	15	28	50	15	28	50	V_{dc}
Surge Rating (100ms)	–	–	80	–	–	80	V_{dc}
Output							
Output Voltage [2]	11.76	12	12.24	14.7	15	15.3	V_{dc}
Output Current	0	–	1.25	0	–	1	A
Output Power	0	–	15	0	–	15	W
Ripple and Noise [3]	–	15	30	–	15	30	mV_{p-p}
Output Regulation							
Line Regulation (15-50V_{in})	–	2	10	–	2	10	mV
Load Regulation [4]	–	10	20	–	10	20	mV
Efficiency	85	–	–	86	–	–	%
Temperature							
T_{case} (Operating)	-55	–	+125	-55	–	+125	°C
T_{case} (Storage)	-55	–	+125	-55	–	+125	°C
Coefficient	–	100	–	–	100	–	ppm per °C
Dynamic Characteristics							
Load Step Transient [5]	–	–	350	–	–	350	mV_{pk}
Load Step Recovery	–	–	300	–	–	300	µs
Line Step Transient [6]	–	–	100	–	–	100	mV_{pk}
Line Step Recovery	–	–	300	–	–	300	µs
Start up Time	–	–	5	–	–	5	ms
Isolation (at 500V)							
Input to Output	100	–	–	100	–	–	MΩ
Input to Chassis	100	–	–	100	–	–	MΩ
Output to Chassis	100	–	–	100	–	–	MΩ

[1] Wider ranges available on request
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Specification (cont.)
(Applicable to both variants)

Environmental	**Method**	**Procedure**
To MIL-STD-810G		
Temperature Shock	503.5	(-55°C to +85°C)
High Temperature	501.5	(+85°C Operate)
Low Temperature	502.5	(-55°C Operate)
Low Pressure	500.5	(40.000ft Operate)
Vibration	514.6	(10g, 9 Hours)
Humidity	507.5	(95% Operate)
Fungus	508.6	
Salt Fog	509.5	
Sand and Dust	510.5	

Power Dissipation	
Maximum	4 Watts
(Full load & Maximum V_{in})	

Reliability	
To MIL-STD-217F	
Environment	A.I.F. at 70ºC
MTBF	>90,000 Hours

Enclosure	
Size	53.3 x 28.3 x 10.2mm
Weight	30g max Non-hermetic unit
	40g max Hermetically sealed unit
Material Options	Aluminium Alloy
Finish	SurTec 650
Clearance Holes	4.1mm Diameter

Lead Soldering	
Temperature	300°C max for 5 seconds max

Note
For continuous full power operation, base plate temperature must be kept to a maximum of +125°C. Please contact our technical department for advice in this respect.

Caution
Unit must be treated as a static sensitive device.

Regulations
RoHS compliant
REACh compliant

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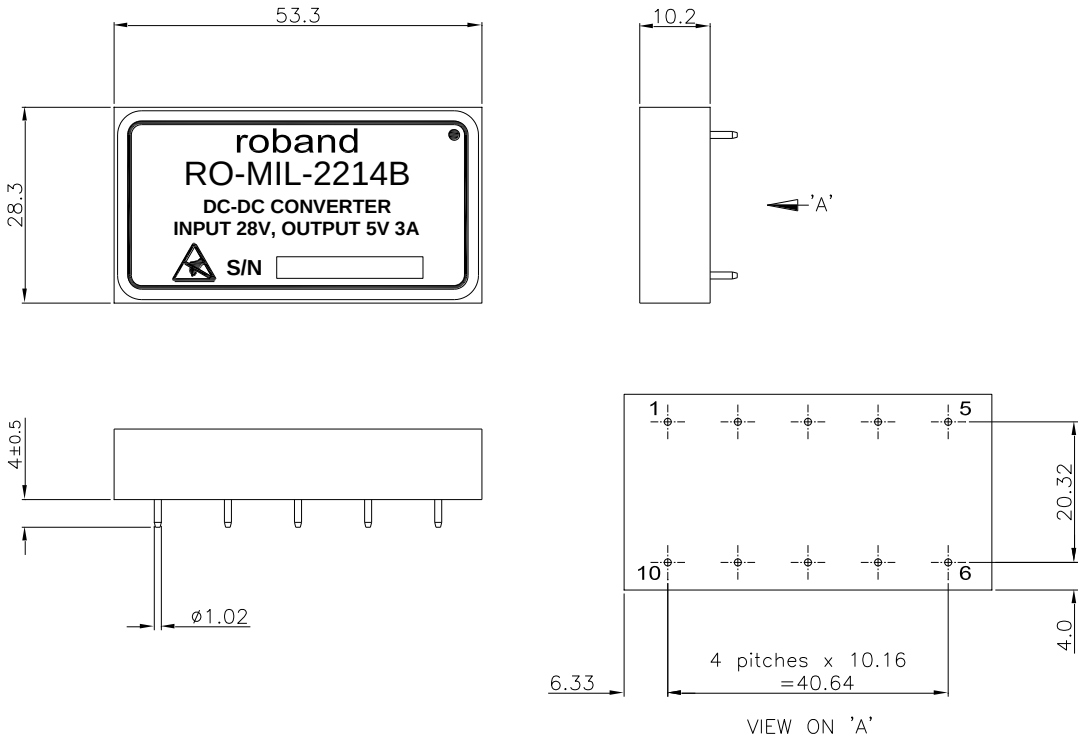
Outline Drawing



Application Notes: Pin Allocation, Disable & Sync Signal

Pin	Function	Pin	Function
1	28V Input	6	Chassis Ground
2	Disable Signal	7	Chassis Ground
3	NC	8	Chassis Ground
4	Output Return	9	Sync In
5	+V Output	10	Input Return

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