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Features

Unregulated Converters

- 1kVDC and 3kVDC Isolation Options
- Approved for Medical Applications
- Suitable for Automated Assembly
- High Power Density
- Optional Continuous Short Circuit Protection
- Efficiency to 85 %
- RoHS 5/6 Conform

Description

Compared to standard 2 Watt packages, space savings of 80% and 77% respectively are achieved by these RTS & RTD 2 Watts SMD-Miniature DC/DC Converters. They have been specifically designed for applications where board space is at a premium since these 2 Watt converters have only a slightly larger foot print than conventional 1 Watt converters.

With efficiencies up to 85%, external cooling is not needed, as the full output power is available over the operating temperature range -40°C to +85°C. All converters have an I/O-Isolation of 1kVDC, or optionally 3kV, making them suitable for many industrial and medical applications.

Selection Guide

Part Number SMD	(3kV)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)	Max Capacitive Load[1]
RTS**-xx3.3	(H)	5, 12, 15, 24	3.3	606	70-75	3300µF
RTS**-xx05	(H)	5, 12, 15, 24	5	400	80-85	1200µF
RTS**-xx09	(H)	5, 12, 15, 24	9	222	80-85	1200µF
RTS**-xx12	(H)	5, 12, 15, 24	12	167	80-85	680µF
RTS**-xx15	(H)	5, 12, 15, 24	15	133	80-85	680µF
RTS**-xx24	(H)	5, 12, 15, 24	24	83	80-85	220µF
RTD**-xx05	(H)	5, 12, 15, 24	±5	±200	70-75	±470µF
RTD**-xx09	(H)	5, 12, 15, 24	±9	±111	75-78	±470µF
RTD**-xx12	(H)	5, 12, 15, 24	±12	±83	75-83	±220µF
RTD**-xx15	(H)	5, 12, 15, 24	±15	±66	75-85	±220µF
RTD**-xx24	(H)	5, 12, 15, 24	±24	±42	78-85	±100µF

xx = Input Voltage. Other input and output voltage combinations available on request.

* add Suffix "P" for Continuous Short Circuit Protection, e.g. RTS-0505/P, RTD-0505/HP

* add suffix -R for tape&reel packing e.g. RTS-0505-R. For more details see Tapes Section.

Case and Pinning Options (note restrictions on /H option)

RTS** : ** without marking denotes 5 pins out of 8 fitted (includes /H option)
** with marking **8** denotes 8 pins out of 8 fitted (/H option not available)

RTD** : ** without marking denotes 6 pins out of 10 fitted (includes /H option)
** with marking **10** denotes with 10 pins out of 10 fitted (/H option not available)

Specifications (measured at T_A = 25°C, nominal input voltage, full load and after warm-up)

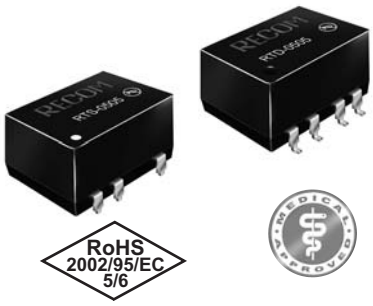
Input Voltage Range		±10%
Output Voltage Accuracy		±5%
Line Voltage Regulation		1.2%/1% of Vin max.
Load Voltage Regulation (10% to 100% full load)	3.3V output types	20% max.
	5V output type	15% max.
	9V, 12V, 15V, 24V output types	10% max.
Output Ripple and Noise (20MHz limited)		150mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 85kHz max.
Efficiency at Full Load		70% min. / 80% typ.
Minimum Load = 0%		Specifications valid for 10% minimum load only.

cont.

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

2 Watt SMD Single & Dual Output



EN-60950-1 Certified (All Suffixes)
EN-60601-1 Certified (Suffix H3)

RTS-RTD

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END OF LIFE: Please do not use for new design, replace with new SMD converter R2S (single output) and/or R2D (dual output).

Refer to Application Notes

Refer to Application Notes

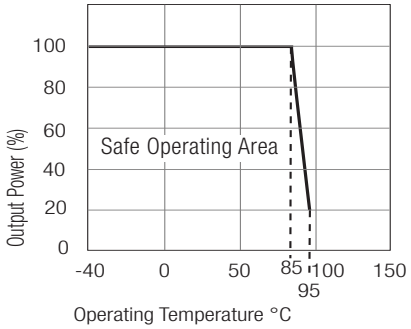
ECONOLINE
DC/DC-Converter

RTS & RTD Series

Specifications - Continued

Isolation Voltage		(tested for 1 second)	1000VDC min.
	H-Suffix	(tested for 1 second)	3000VDC min.
Rated Working Voltage		(long term isolation)	see Application Notes
Isolation Capacitance			40pF min. / 115pF max.
Isolation Resistance			10 GΩ min.
Short Circuit Protection			1 Second
P-Suffix			Continuous
Operating Temperature Range (free air convection)			-40°C to +85°C (see Graph)
Storage Temperature Range			-55°C to +125°C
Reflow Temperature	ROHS compliant		245°C (30 sec) max.
Vapour Phase Process	(for more details see Application Notes)		230°C (90 sec) max.
Relative Humidity			95% RH
Package Weight		RTS types	2.1g
		RTD types	2.5g
Packing Quantity		RTS, RTS8	40 pcs per Tube
		RTS12, RTD	33 pcs per tube
		All Types	500 pcs per Reel
MTBF (+25°C) } *Detailed Information see*		using MIL-HDBK 217F	886 x 10^3 hours
(+85°C) } *Application Notes chapter "MTBF"*		using MIL-HDBK 217F	128 x 10^3 hours

Derating-Graph
(Ambient Temperature)

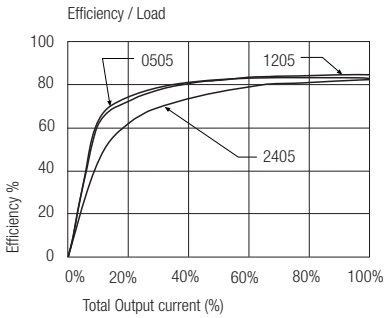


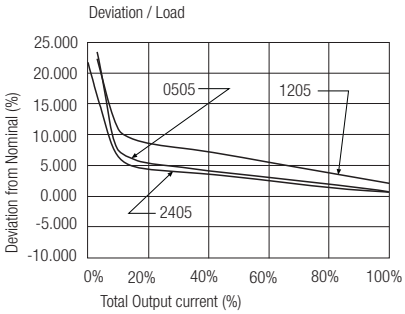
Notes

Note 1 Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

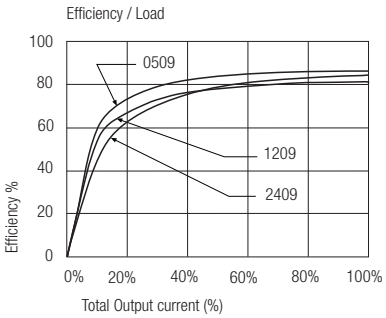
Typical Characteristics

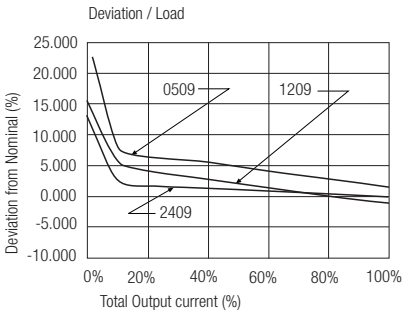
RTS-xx05





RTS-xx09





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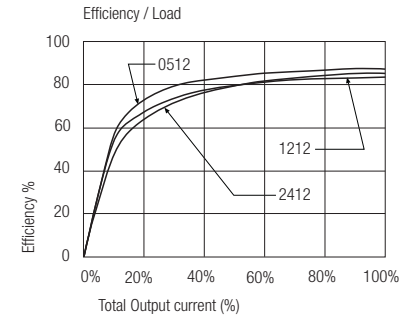
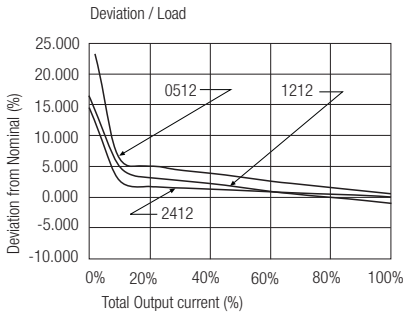
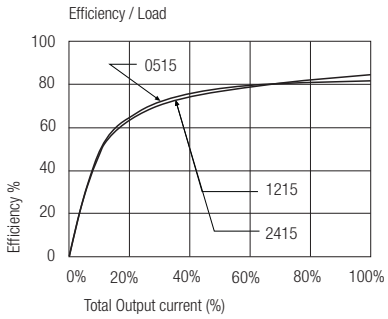
Typical Characteristics

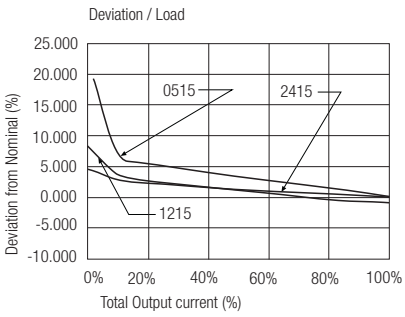
RTS-xx12



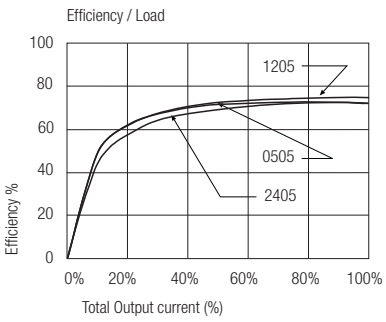


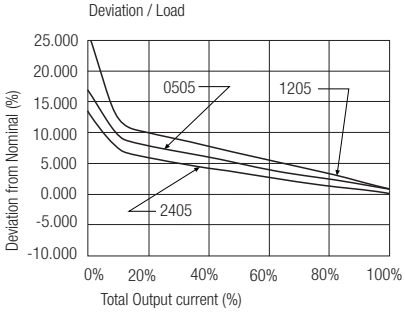
RTS-xx15



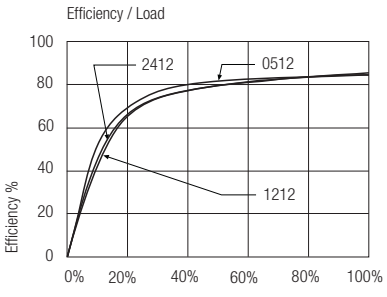


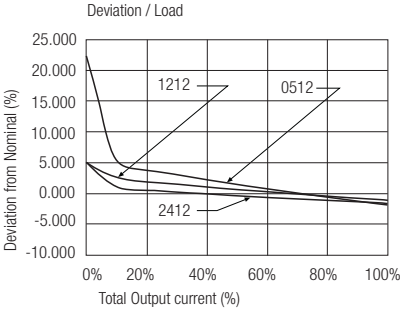
RTD-xx05



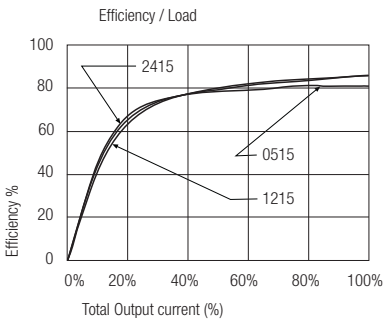


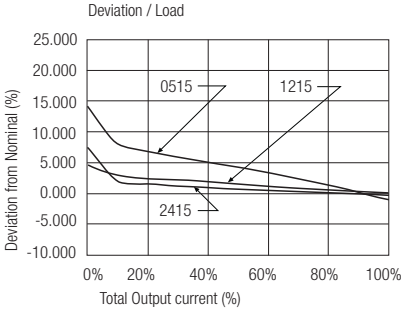
RTD-xx12





RTD-xx15





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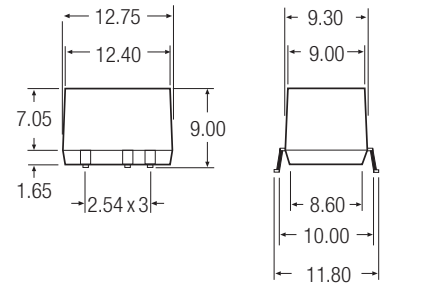
ECONOLINE
DC/DC-Converter

RTS & RTD Series

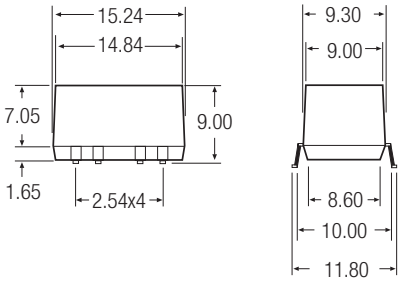
Package Style and Pinning (mm)

3rd angle projection

8 PIN Single SMD Package



10 PIN Dual SMD Package



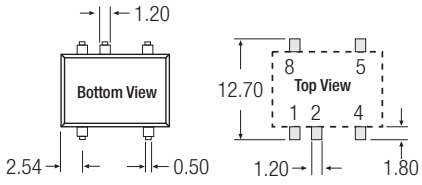
Pin Connections

Pin #	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
4	–Vout	Com
5	+Vout	–Vout
7	No Pin	+Vout
8	NC	No Pin
10	No Pin	NC

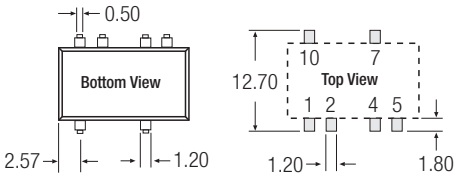
NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm

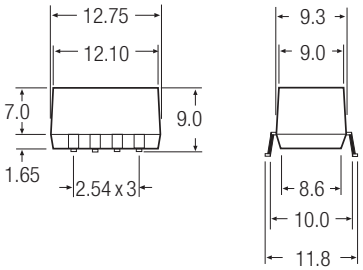
Recommended Footprint Details



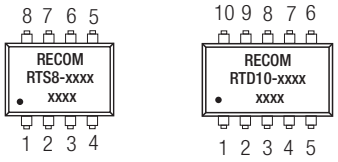
Recommended Footprint Details



Full 8 PIN Single SMD Package



Note: /H option is not available in these pin packages



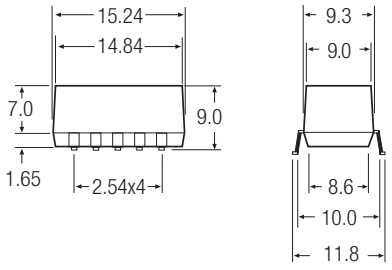
Pin Connections

Pin #	Single	Dual
1	–Vin	–Vin
2	+Vin	+Vin
3	NC	NC
4	–Vout	Com
5	+Vout	–Vout
6	NC	NC
7	NC	+Vout
8	NC	NC
9	-	NC
10	-	NC

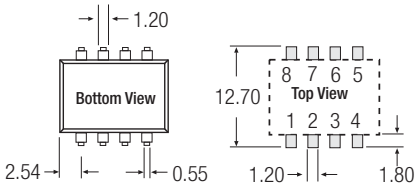
NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm

Full 10 PIN Dual SMD Package



Recommended Footprint Details



Recommended Footprint Details