

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 $T_A = 25^\circ\text{C}$, nominal input voltage, full load and after warm-up)

Input Voltage Range	±10%
Output Voltage Accuracy	±5%
Line Voltage Regulation	1.2%/1% of V_{in} 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

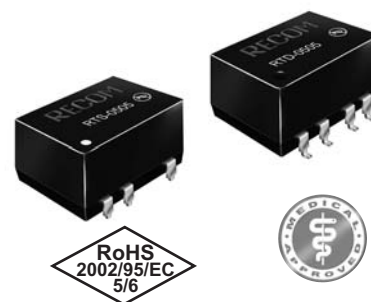
RECOM

2 Watt

SMD

Single &

Dual Output



**EN-60950-1 Certified
(All Suffixes)**

**EN-60601-1 Certified
(Suffix H3)**

RTS-RTD

EOL Dec.2011

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

Specifications - Continued

Isolation Voltage		(tested for 1 second)	1000VDC min.
Rated Working Voltage	H-Suffix	(tested for 1 second) (long term isolation)	3000VDC min. 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 Application Notes chapter "MTBF"	using MIL-HDBK 217F	886 x 10 ³ hours
(+85°C)		using MIL-HDBK 217F	128 x 10 ³ hours

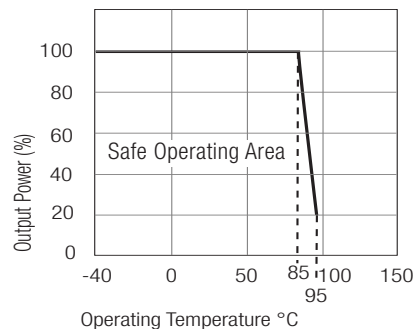
Notes

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.

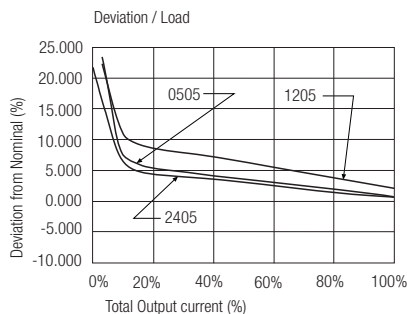
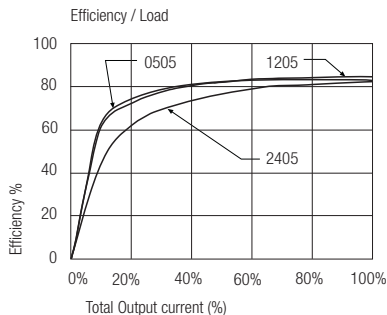
Typical Characteristics

RTS & RTD Series

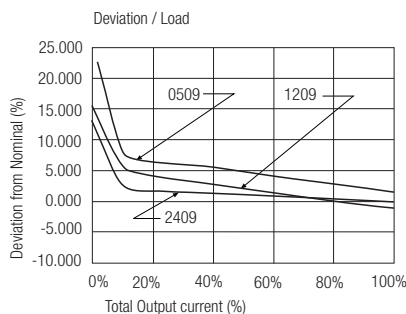
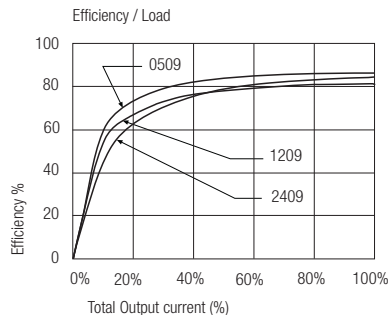
Derating-Graph (Ambient Temperature)



RTS-xx05

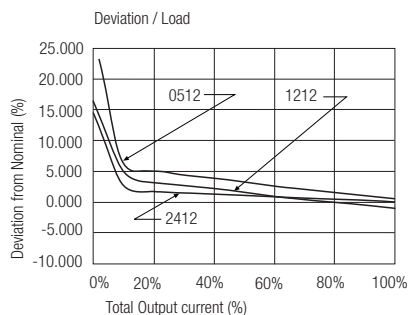
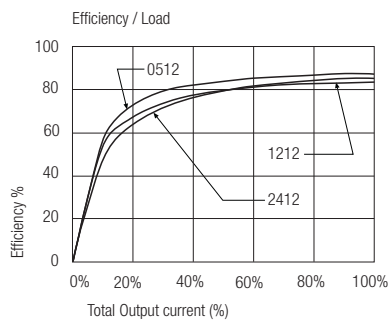


RTS-xx09

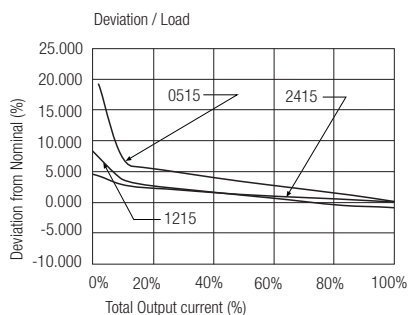
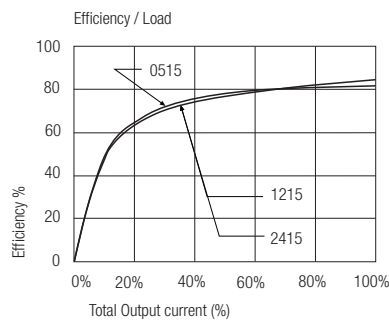


Typical Characteristics

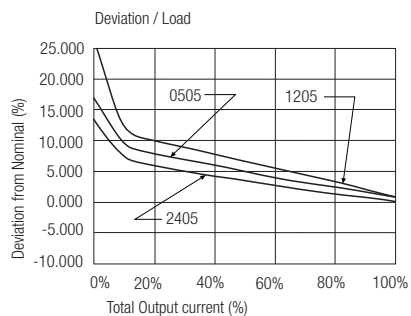
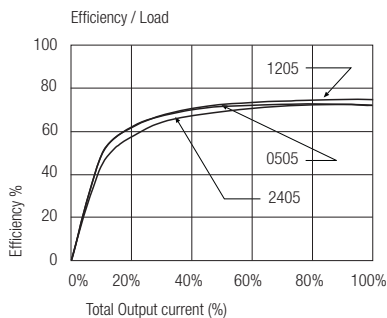
RTS-xx12



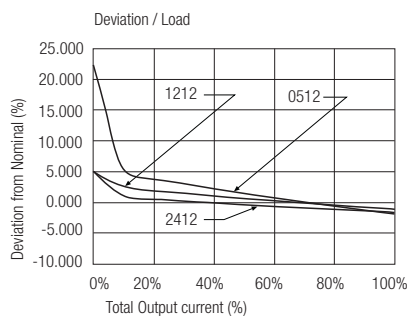
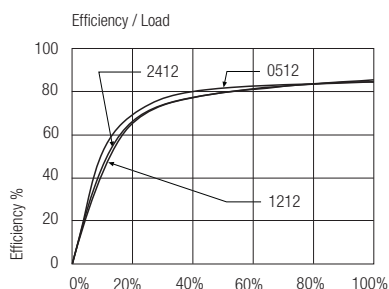
RTS-xx15



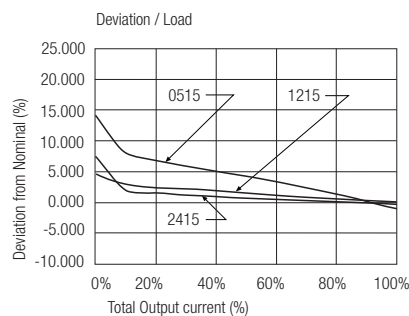
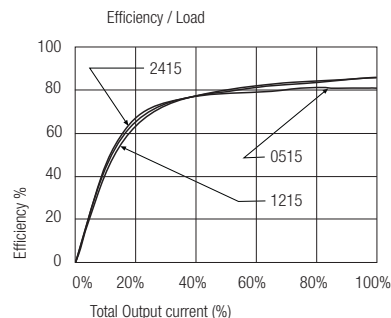
RTD-xx05



RTD-xx12



RTD-xx15



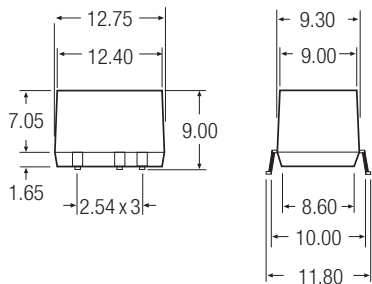
ECONOLINE

DC/DC-Converter

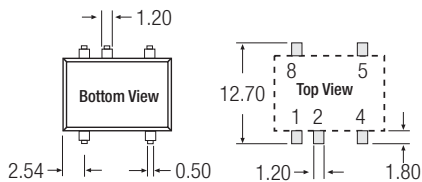
RTS & RTD Series

Package Style and Pinning (mm)

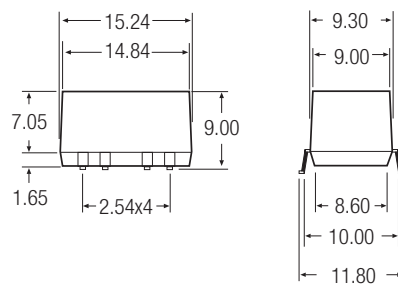
8 PIN Single SMD Package



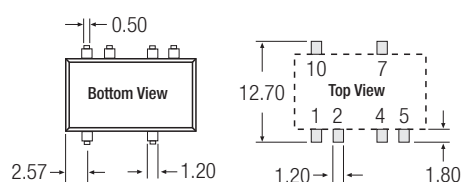
Recommended Footprint Details



10 PIN Dual SMD Package



Recommended Footprint Details



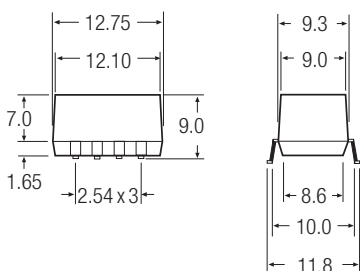
Pin Connections

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

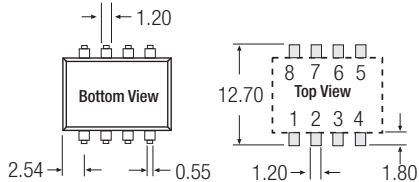
NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm

Full 8 PIN Single SMD Package

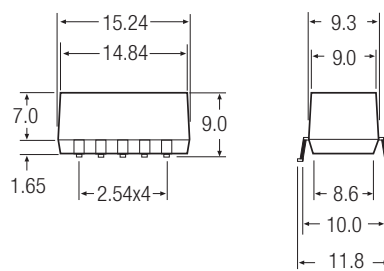


Recommended Footprint Details

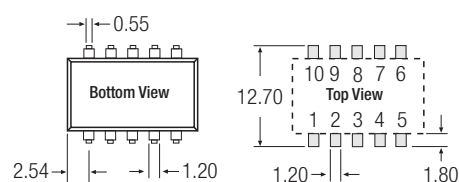


Note: /H option is not available in these pin packages

Full 10 PIN Dual SMD Package



Recommended Footprint Details



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