

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 (%)
RTS**-xx3.3	(H)	5, 12, 15, 24	3.3	606	70-75
RTS**-xx05	(H)	5, 12, 15, 24	5	400	80-85
RTS**-xx09	(H)	5, 12, 15, 24	9	222	80-85
RTS**-xx12	(H)	5, 12, 15, 24	12	167	80-85
RTS**-xx15	(H)	5, 12, 15, 24	15	133	80-85
RTS**-xx24	(H)	5, 12, 15, 24	24	83	80-85
RTD**-xx05	(H)	5, 12, 15, 24	±5	±200	70-75
RTD**-xx09	(H)	5, 12, 15, 24	±9	±111	75-78
RTD**-xx12	(H)	5, 12, 15, 24	±12	±83	75-83
RTD**-xx15	(H)	5, 12, 15, 24	±15	±66	75-85
RTD**-xx24	(H)	5, 12, 15, 24	±24	±42	78-85

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.	
No Load Power Consumption	RTS typ.	124mW min. / 186mW typ. / 350mW max.
	RTD typ.	159mW min. / 192mW typ. / 350mW max.

cont.

ECONOLINE

DC/DC-Converter

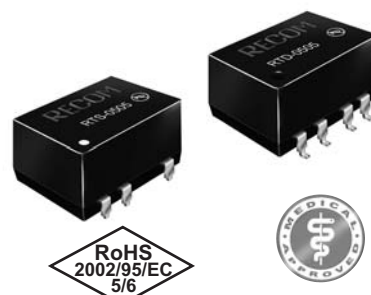
RECOM

2 Watt

SMD

Single &

Dual Output



EN-60950-1 Certified
(All Suffixes)

EN-60601-1 Certified
(Suffix H3)

RTS-RTD

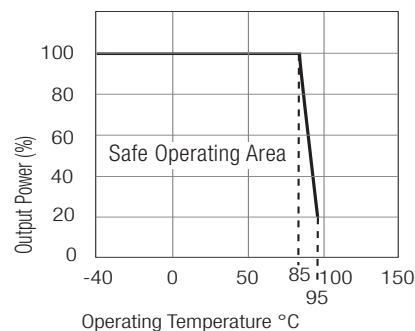
Refer to Application Notes

Refer to Application Notes

Specifications - Continued

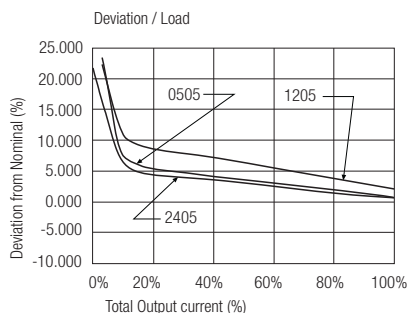
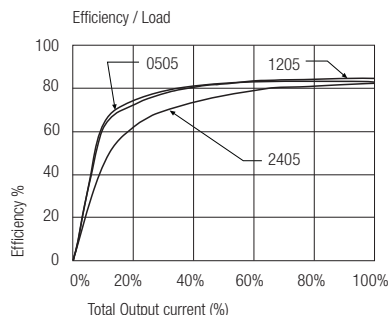
Isolation Voltage	(tested for 1 second)	1000VDC min.
H-Suffix	(tested for 1 second)	3000VDC min.
Rated Working Voltage	(long term isolation)	see Application Notes
Isolation Capacitance		40pF min. / 115pF max.
Isolation Resistance		10 GΩ min.
Short Circuit Protection		1 Second
P-Suffix		Continuous
Operating 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 Application Notes chapter "MTBF"	using MIL-HDBK 217F
(+85°C)		using MIL-HDBK 217F
		886 x 10 ³ hours
		128 x 10 ³ hours

Derating-Graph (Ambient Temperature)

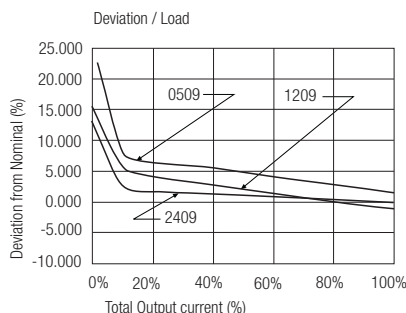
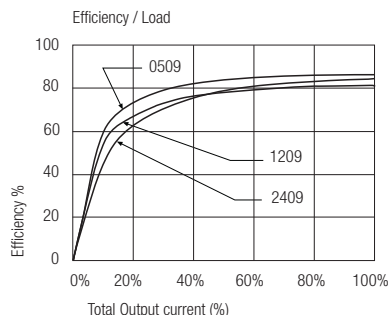


Typical Characteristics

RTS-xx05

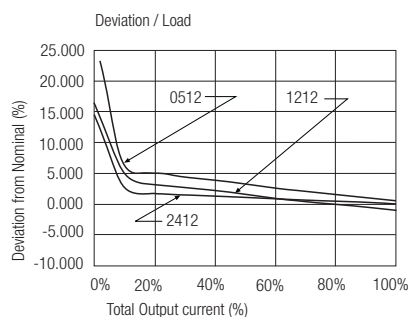
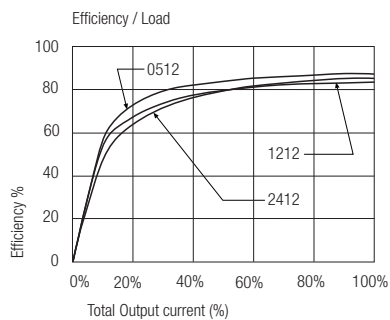


RTS-xx09

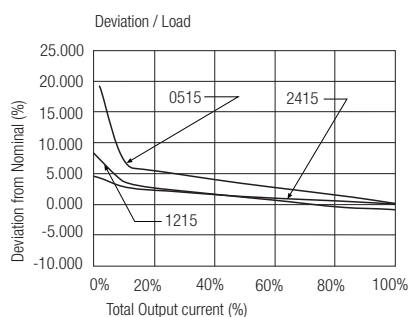
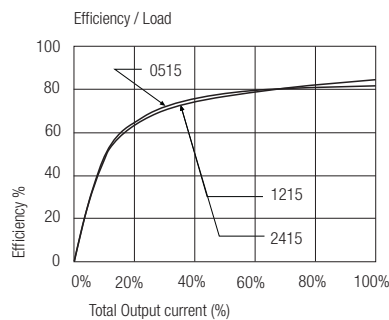


Typical Characteristics

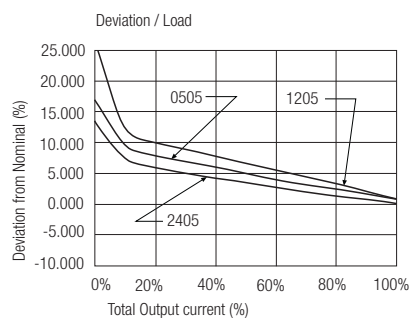
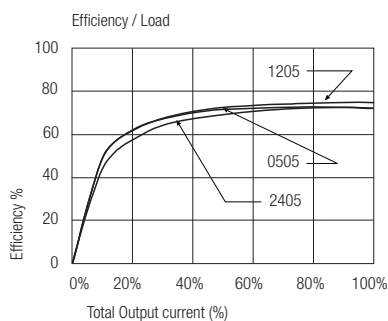
RTS-xx12



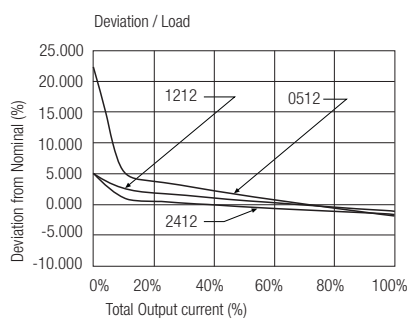
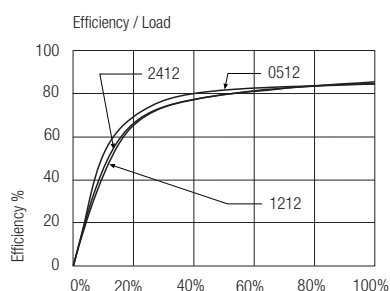
RTS-xx15



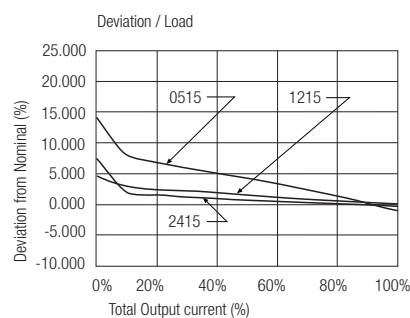
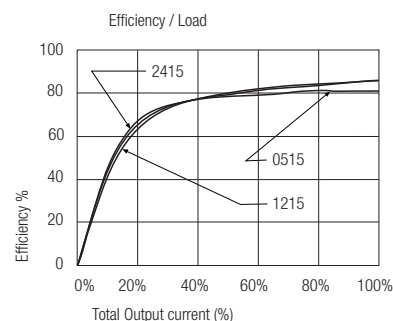
RTD-xx05



RTD-xx12

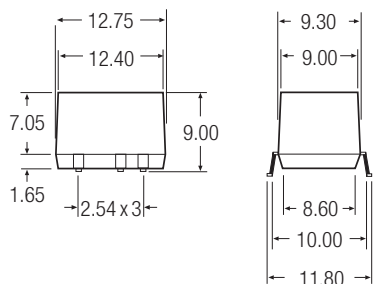


RTD-xx15

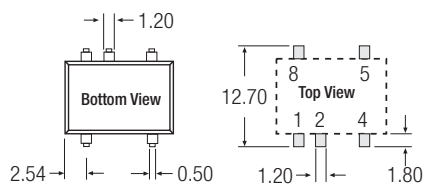


Package Style and Pinning (mm)

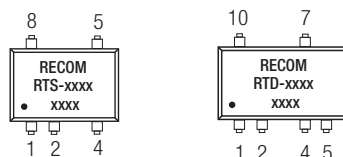
8 PIN Single SMD Package



Recommended Footprint Details



10 PIN Dual SMD Package

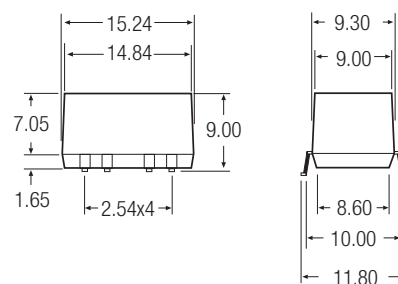


Pin Connections

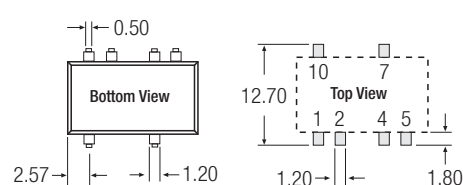
Pin #	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
4	-Vout	Com
5	+Vout	-Vout
7	No Pin	+Vout
8	NC	No Pin
10	No Pin	NC

NC = No Connection

XX.X ± 0.5 mm
XX.XX ± 0.25 mm



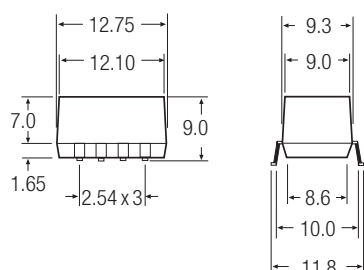
Recommended Footprint Details



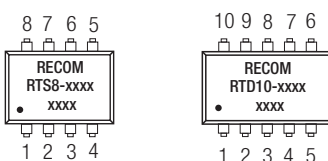
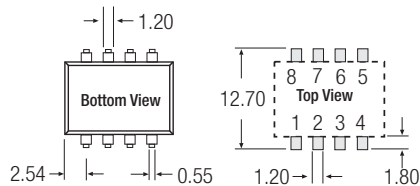
Full 8 PIN Single SMD Package

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

Full 10 PIN Dual SMD Package



Recommended Footprint Details

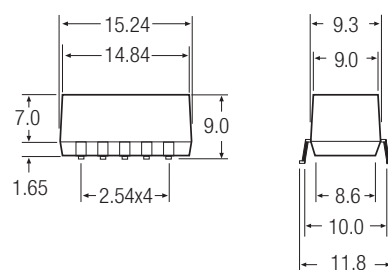


Pin Connections

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



Recommended Footprint Details

