

## Features

## Unregulated Converters

Rev.0

- 1kVDC & 3kV Isolation
- Approved for Medical Applications
- Suitable for Automated Assembly
- High Power Density
- Optional Continuous Short Circuit Protected
- Efficiency to 85 %

### 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	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)
RTS-xx3.3	5, 12, 15, 24	3.3	606	70-75
RTS-xx05	5, 12, 15, 24	5	400	80-85
RTS-xx09	5, 12, 15, 24	9	222	80-85
RTS-xx12	5, 12, 15, 24	12	167	80-85
RTS-xx15	5, 12, 15, 24	15	133	80-85
RTS-xx24	5, 12, 15, 24	24	83	80-85
RTD-xx05	5, 12, 15, 24	±5	±200	70-75
RTD-xx09	5, 12, 15, 24	±9	±111	75-78
RTD-xx12	5, 12, 15, 24	±12	±83	75-83
RTD-xx15	5, 12, 15, 24	±15	±66	75-85
RTD-xx24	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/PH

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

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

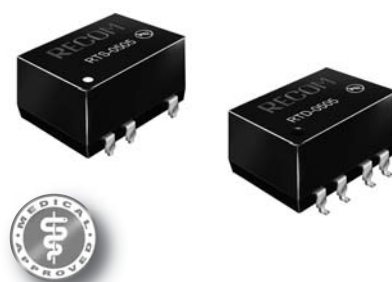
Input Voltage Range			±10%
Output Voltage Accuracy			±5%
Line Voltage Regulation			1.2%/1% of $V_{in}$ max.
Load Voltage Regulation (10% to 100% full load)	3.3V output types	20% max.	
	5V output type	15% max.	
	9V, 12V, 15V, 24V output types	10% max.	
Output Ripple and Noise (20MHz limited)			150mVp-p 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. / 250mW max.	
	RTD typ.	159mW min. / 192mW typ. / 240mW max.	
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 $\text{G}\Omega$ 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

## ECONOLINE

DC/DC-Converter

# RTS & RTD Series

## 2 Watt SMD Single & Dual Output

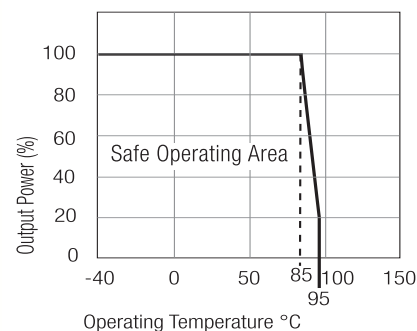


**EN-60950-1 Certified (All Suffixes)**

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

**RECOM**

## Derating-Graph (Ambient Temperature)

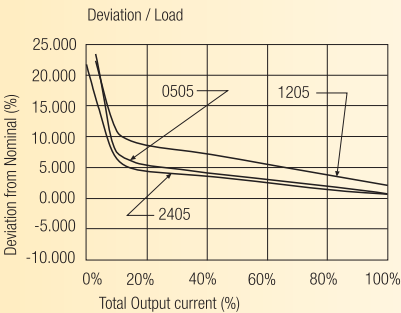
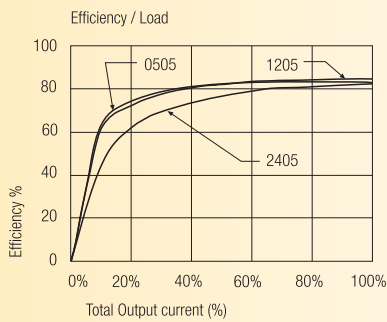


**Specifications - Continued**

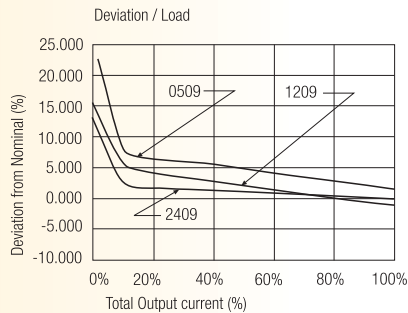
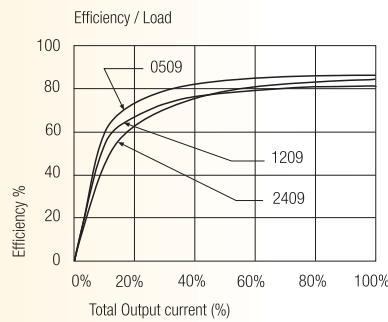
Reflow Temperature	ROHS compliant	245°C (30 sec) max.	
Vapour Phase Process	(for more details see Application Notes)	240°C (90 sec) max.	
Relative Humidity		95% RH	
Package Weight	RTS types	2.1g	
	RTD types	2.5g	
MTBF (+25°C)	Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	886 x 10 <sup>3</sup> hours
(+85°C)		using MIL-HDBK 217F	128 x 10 <sup>3</sup> hours

**Typical Characteristics**

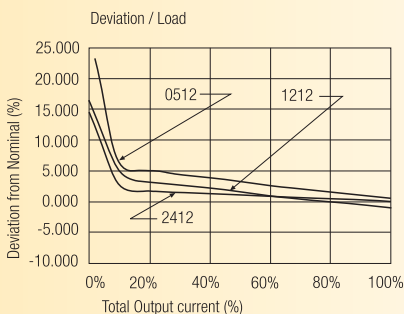
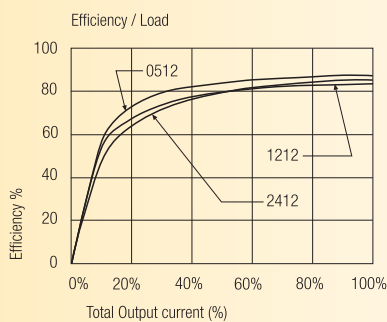
**RTS-xx05**



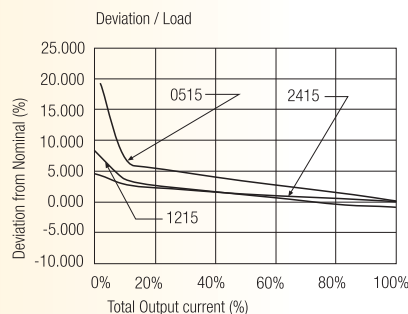
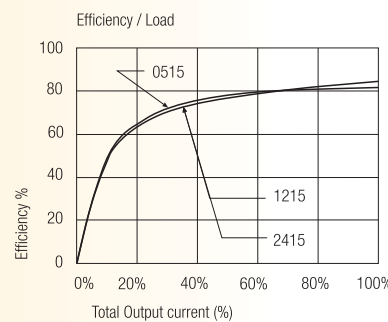
**RTS-xx09**



**RTS-xx12**

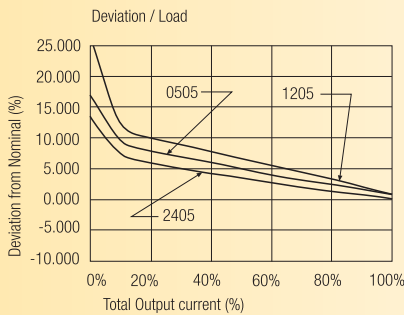
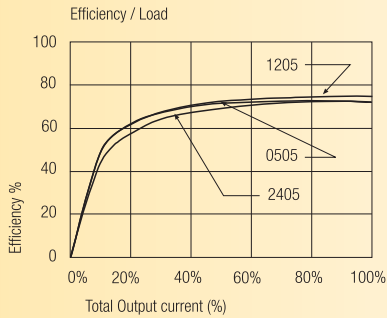


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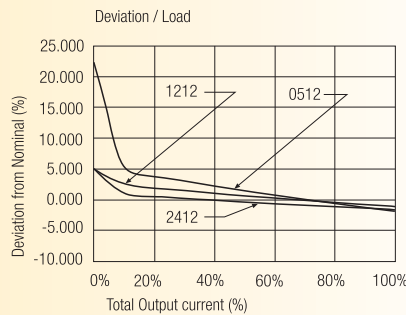
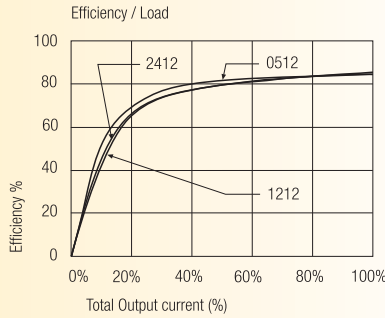


**Typical Characteristics**

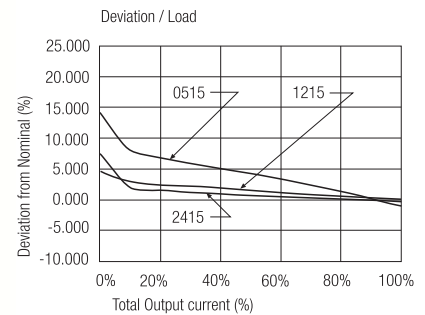
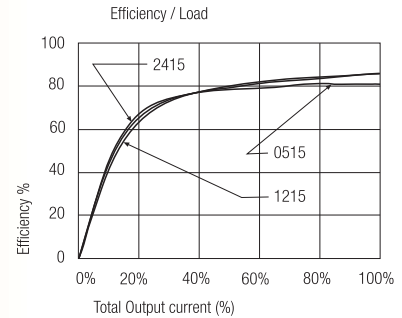
**RTD-xx05**



**RTD-xx12**

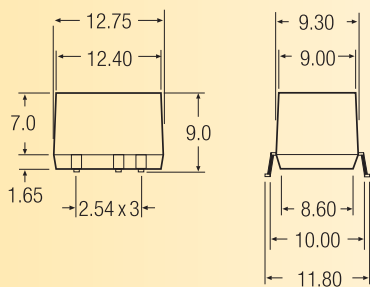


**RTD-xx15**

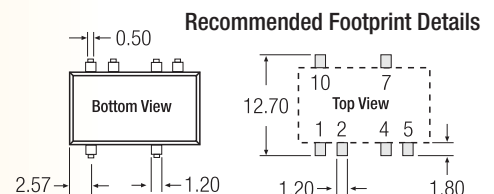
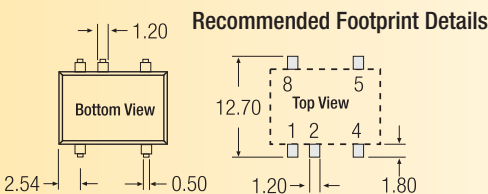
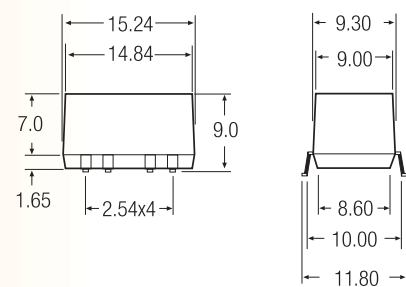


**Package Style and Pinning (mm)**

**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