

## Features

### Regulated Converters

- Controllable Output
- 1kVDC Isolation
- No Heatsink Required
- UL94V-0 Package Material
- Toroidal Magnetics
- No External Components
- Fully Encapsulated
- Efficiency to 70%

## ECONOLINE

DC/DC-Converter

# RY & RX Series

### Selection Guide

Part Number	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency (%)
SIP 7      DIP 14				
RY-xx05S    RX-xx05S	5, 9, 12, 15, 24	5	180	58-60
RY-xx09S    RX-xx09S	5, 9, 12, 15, 24	9	111	56-62
RY-xx12S    RX-xx12S	5, 9, 12, 15, 24	12	84	60-66
RY-xx15S    RX-xx15S	5, 9, 12, 15, 24	15	66	60-66
RY-xx24S    RX-xx24S	5, 9, 12, 15, 24	24	42	60-68
RY-xx05D    RX-xx05D	5, 9, 12, 15, 24	±5	±100	50-58
RY-xx09D    RX-xx09D	5, 9, 12, 15, 24	±9	±55	52-60
RY-xx12D    RX-xx12D	5, 9, 12, 15, 24	±12	±42	58-68
RY-xx15D    RX-xx15D	5, 9, 12, 15, 24	±15	±33	62-68
RY-xx24D    RX-xx24D	5, 9, 12, 15, 24	±24	±21	64-70

xx = Input Voltage

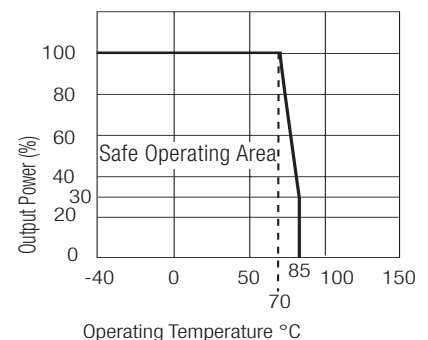
### Specifications (Core Operating Area)

Input Voltage Range		±5%	
Output Voltage Accuracy		±5%	
Line Voltage Regulation		±1% max.	
Load Voltage Regulation (10% to 100% full load)		±1% max.	
Output Ripple and Noise (20MHz limited)		100mVp-p max.	
Operating Frequency		30kHz min. / 50kHz typ. / 88kHz max.	
Efficiency at Full Load		54% min. / 60% typ.	
No Load Power Consumption	Single output types	171mW min. / 232mW typ. / 390mW max.	
	Dual output types	188mW min. / 264mW typ. / 350mW max.	
Isolation Voltage	(tested for 1 second)	1.000VDC min.	
Rated Working Voltage	(long term isolation)	see Application Notes	
Isolation Capacitance	Single output types	30pF min. / 150pF max.	
	Dual output types	40pF min. / 72pF max.	
Isolation Resistance		10 GΩ min.	
Short Circuit Protection		1 Second	
Operating Temperature Range (free air convection)		-40°C to +70°C (see Graph)	
Storage Temperature Range		-55°C to +125°C	
Relative Humidity	MSL Level 1	95% RH	
Package Weight	RY Single & Dual output types	2.8g	
	RX Single output types	2.9g	
	RX Dual output types	2.7g	
MTBF (+25°C)	} Detailed Information see Application Notes chapter "MTBF"	using MIL-HDBK 217F	924 x 10 <sup>3</sup> hours
(+70°C)		using MIL-HDBK 217F	135 x 10 <sup>3</sup> hours

## 1 Watt SIP7 & DIP14 Single & Dual Output

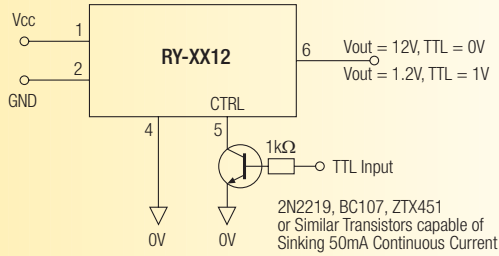


## Derating-Graph (Ambient Temperature)

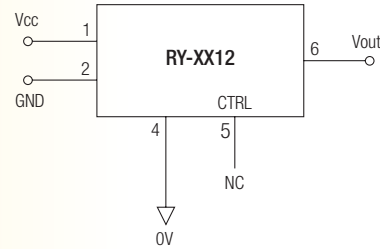


**Typical Applications**

**Flash PROM Programming Voltage Control**

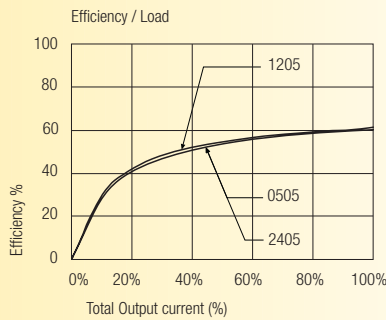


**Normal Isolated Regulated Output**

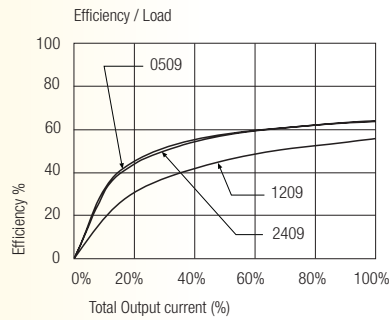


**Typical Characteristics**

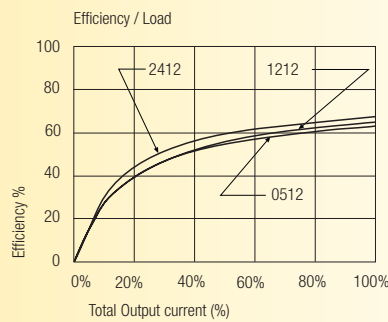
**RY/RX-xx05S**



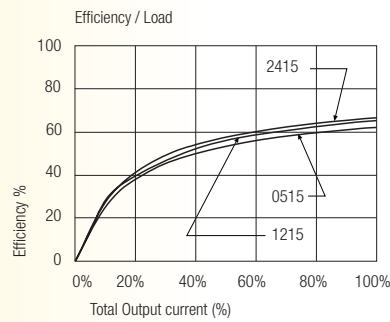
**RY/RX-xx09S**



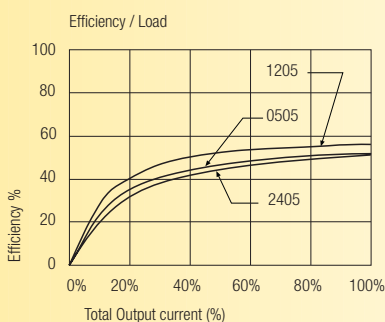
**RY/RX-xx12S**



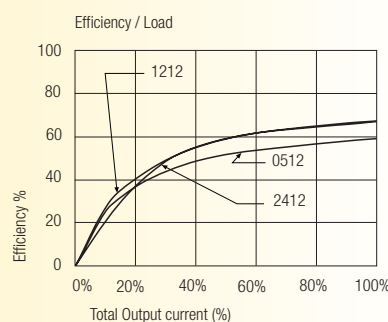
**RY/RX-xx15S**



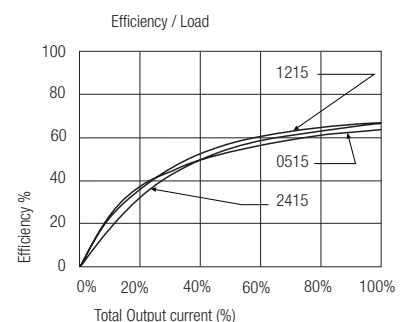
**RY/RX-xx05D**



**RY/RX-xx12D**

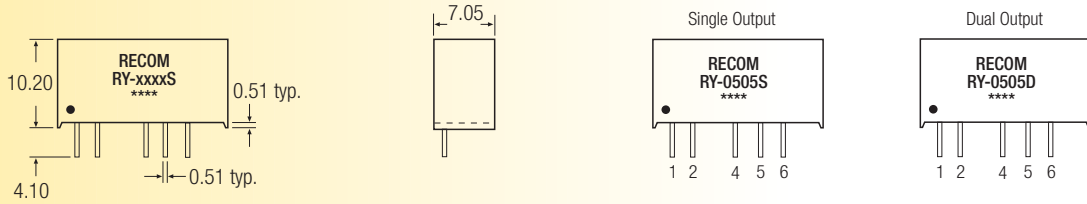


**RY/RX-xx15D**

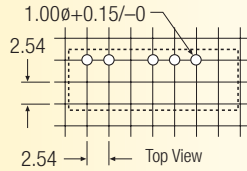
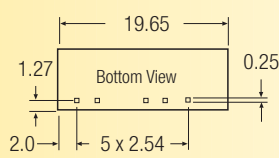


**Package Style and Pinning (mm)**

**7 PIN SIP Package**



**Recommended Footprint Details**

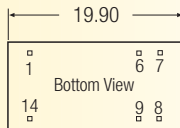
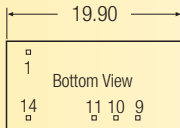
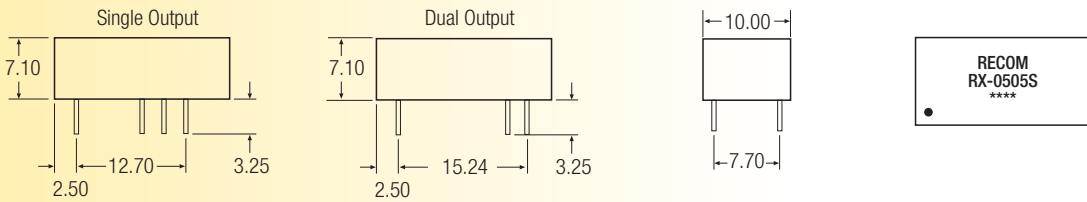


**RX Pin Connections**

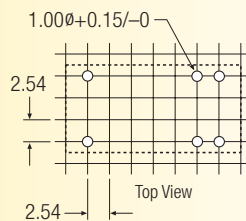
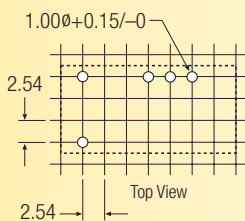
Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	CTRL	Com
6	+Vout	+Vout

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm

**14 PIN DIP Package**



**Recommended Footprint Details**



**RX Pin Connections**

Pin #	Single	Dual
1	-Vin	-Vin
6	No Pin	+Vout
7	No Pin	Com
8	No Pin	-Vout
9	+Vout	Com
10	CTRL	No Pin
11	-Vout	No Pin
14	+Vin	+Vin

XX.X ± 0.5 mm  
XX.XX ± 0.25 mm