Features

Unregulated Converters

- UL/CSA and EN Safety certified
- EN-60601 for Medical Applications
- Isolation 6.4kVDC
- Optional Continuous Short Circuit Protected
- Unique Transformer System (Patent Pending)
- Compact SIP7 Package
- /X2 Version with >9mm Input/Output Clearance
- Suitable for IGBT Applications
- Very Low Isolation Capacitance

Selection Guide

Part Numbe SIP 7	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (%)	Max Capacitive Load[1]
RxxP23.3S	5, 12, 15, 24	3.3	600	70	3300µF
RxxP205S	5, 12, 15, 24	5	400	70-75	1200µF
RxxP209S	5, 12, 15, 24	9	222	70-75	1200µF
RxxP212S	5, 12, 15, 24	12	167	70-75	680µF
RxxP215S	5, 12, 15, 24	15	132	75-80	680µF
RxxP23.3D	5, 12, 15, 24	±3.3	±300	70	±1500µF
RxxP205D	5, 12, 15, 24	±5	±200	70-75	±470µF
RxxP209D	5, 12, 15, 24	±9	±111	70-75	±470µF
RxxP212D	5, 12, 15, 24	±12	±85	70-75	±330µF
RxxP215D	5, 12, 15, 24	±15	±66	75-80	±330µF

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

No suffux is functional isolation e.g, R05P205S

* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P205S/P, R05P205D/P

* add Suffix "/X2" for single output with alternative pinout, e.g. R05P205S/X2, R05P205S/P/X2

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 typ.
Load Voltage Regulation	3.3, 5V output types	15% max.
(10% to 100% full load)	other output types	10% max.
Output Ripple and Noise (20MHz BW)		200mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 85kHz max.
Efficiency at Full Load		65% min. / 80% max.
Minimum Load = 0%		Specifications valid for 10% minimum load only.
Isolation Voltage	(tested for 1 second)	6400VDC
	(rated for 1 minute)	3200VAC / 60Hz
Isolation Capacitance		1.5pF min / 10pF max.
Isolation Resistance		15 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
Relative Humidity		95% RH

cont.

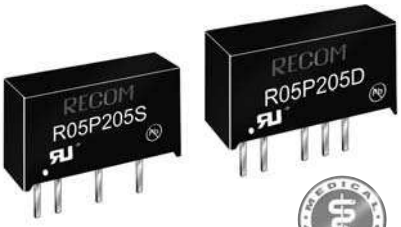
ECONOLINE

DC/DC-Converter

with 3 year Warranty

RECOM

2 Watt SIP 7 Single & Dual Output



RoHS 2002/95/EC 6/6

E-224736

EN-60950-1 Certified
EN-60601-1 Certified
UL/CSA 60950-1 Certified*
IEC 60601-1 CB Report
***+15/-9V Pending**

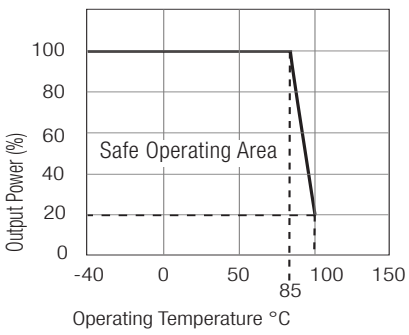
RxxP2xx

Description

The RxxP2xxS_D Series of DC/DC Converters are fcertified to UL/CSA-60950 and UL/CSA 60601. This makes them ideal for medical and safety applications where approvedisolation is required. The /X2 version has an input/ output clearance of more than 9mm.

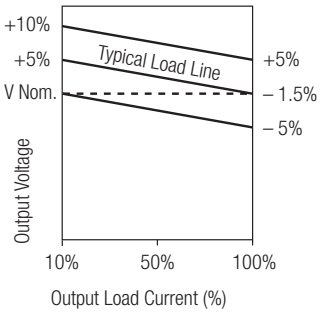
Derating-Graph

(Ambient Temperature)



Refer to Application Notes

Tolerance Envelope



Specifications (continued)

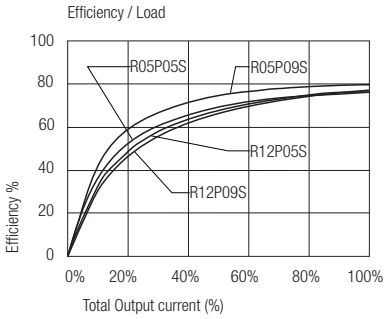
Package Weight			4.3g
Packing Quantity			25 pcs per Tube
MTBF (+25°C)	*Detailed Information see Application Notes chapter "MTBF"*	Single/Dual using MIL-HDBK 217F	2113/2434 x 10^3 hours
(+85°C)		Single/Dual using MIL-HDBK 217F	299/334 x 10^3 hours
Certifications	UL/cUL General Safety	Report: E248550	UL 60950-1 1st Ed.
	EN General Safety	Report: PS-R7219C1	EN60950-1:2001 + A11: 2004
	EN Medical Safety	Report: SPC1007090	EN60601-1:1990 + A13: 1996
	CB Report: Medical Safety	Report: SPC1007090	IEC60601-1:1988 + A1: 1991 + A2:1995

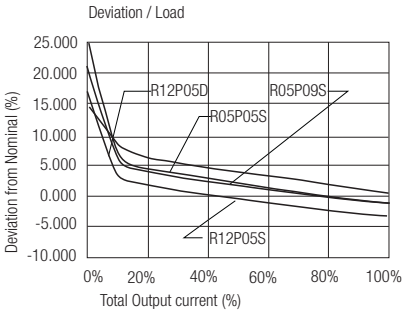
Notes

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.

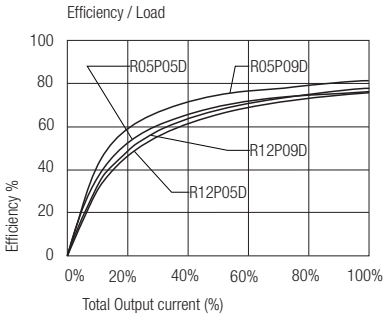
Typical Characteristics

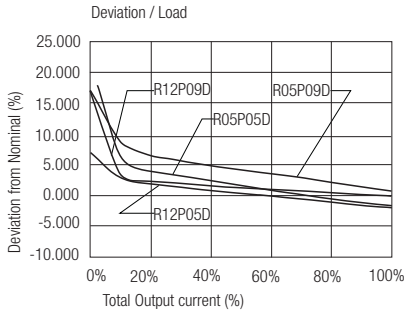
RxxP205/09S





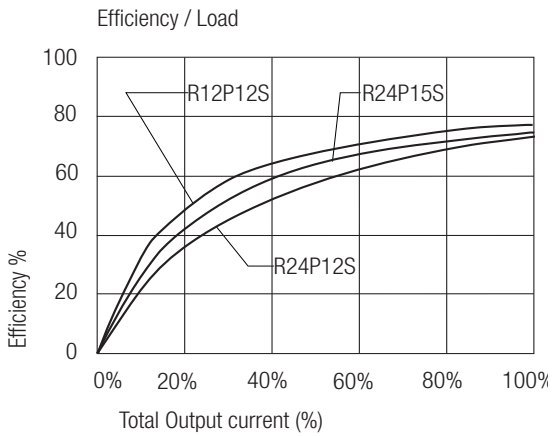
RxxP205/09D

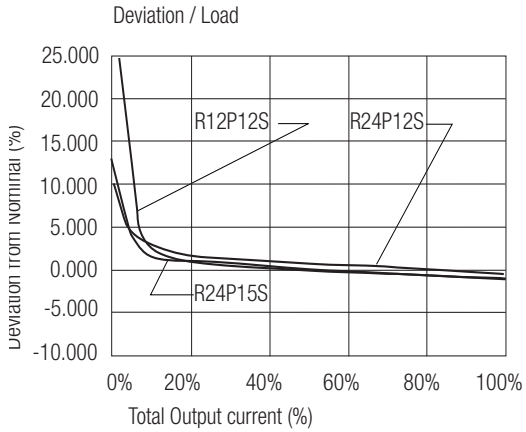




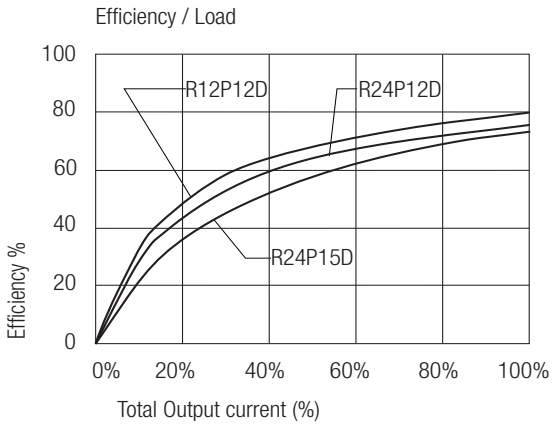
Typical Characteristics

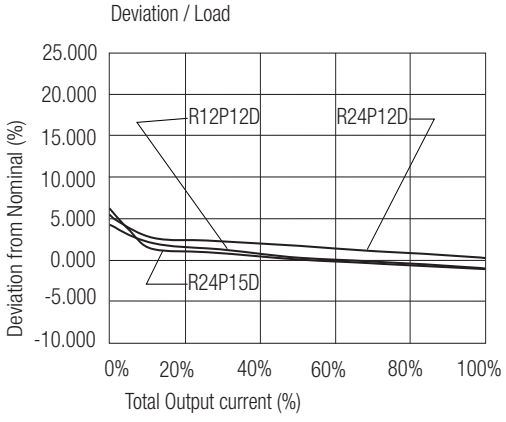
RxxP212/15S





RxxP212/15D

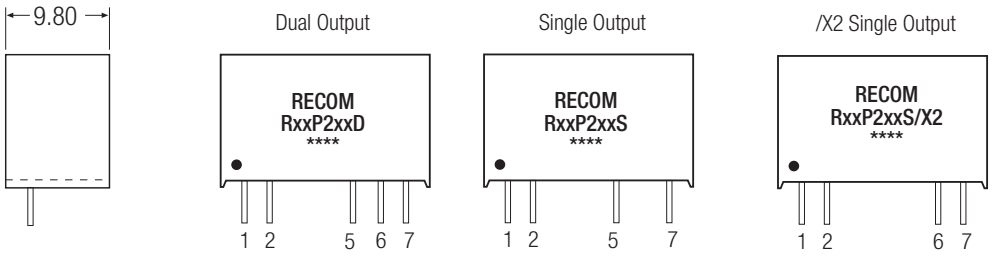




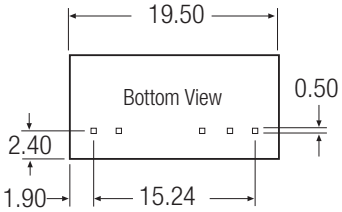
Package Style and Pinning (mm)

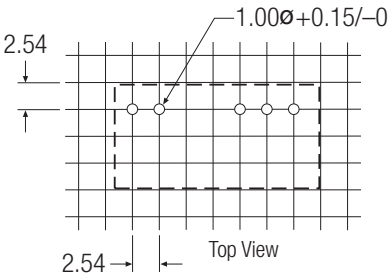
7 PIN SIP Package

3rd angle projection



Recommended Footprint Details

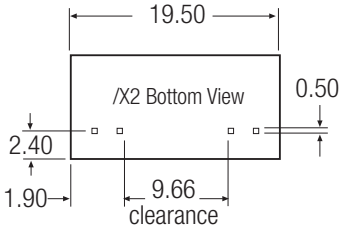


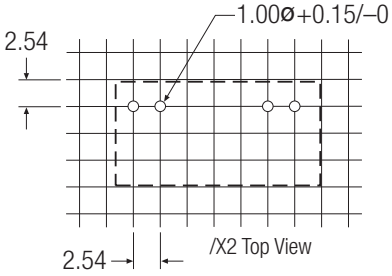


Pin Connections

Pin #	Single	Dual	/X2
1	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin
5	–Vout	–Vout	No Pin
6	No Pin	Com	-Vout
7	+Vout	+Vout	+Vout

XX.X ± 0.5 mm
XX.XX ± 0.25 mm





Features

Unregulated Converters

- UL/CSA and EN Safety certified
- EN-61010 for Test, Measurement and Lab Use
- EN-60601 for Medical Applications
- Reinforced Isolation 6.4kVDC or 8kVDC
- Optional Continuous Short Circuit Protected
- Compact SIP7 Package
- Efficiency to 88%
- Very Low Isolation Capacitance
- /X2 Version with >9mm Input/Output Clearance

Selection Guide

Part Number SIP 7	Reinforced Isolation (kVDC)	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Efficiency Std (%)	Max Capacitive Load[1]
RxxP23.3S	/R6.4 & /R8	5, 12, 15, 24	3.3	600	72-78	3300µF
RxxP205S	/R6.4 & /R8	5, 12, 15, 24	5	400	79-84	1200µF
RxxP209S	/R6.4 & /R8	5, 12, 15, 24	9	222	80-87	1200µF
RxxP212S	/R6.4 & /R8	5, 12, 15, 24	12	167	80-87	680µF
RxxP215S	/R6.4 & /R8	5, 12, 15, 24	15	132	80-88	680µF
RxxP23.3D	/R6.4 & /R8	5, 12, 15, 24	±3.3	±300	73-80	±1500µF
RxxP205D	/R6.4 & /R8	5, 12, 15, 24	±5	±200	79-85	±470µF
RxxP209D	/R6.4 & /R8	5, 12, 15, 24	±9	±111	80-87	±470µF
RxxP212D	/R6.4 & /R8	5, 12, 15, 24	±12	±85	80-87	±330µF
RxxP215D	/R6.4 & /R8	5, 12, 15, 24	±15	±66	80-88	±330µF

xx = Input Voltage. Other input and output voltage combinations available on request.
No suffux is functional isolation e.g, R05P205S
* add Suffix "P" for Continuous Short Circuit Protection, e.g. R05P205S/P, R05P205D/P
* add Suffix "/X2" for single output with alternative pinout, e.g. R05P205S/X2, R05P205S/P/X2
* add Suffix "/R6.4" or "/R8" for Reinforced Isolation, e.g. R05P205D/R6.4, R05P205S/P/X2/R8

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

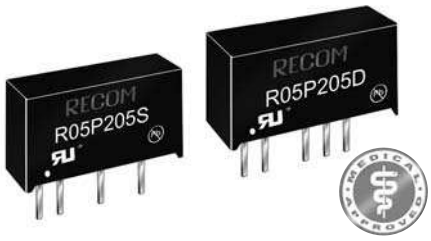
Input Voltage Range		±10%
Output Voltage Accuracy		±5%
Line Voltage Regulation		1.2%/1% of Vin typ.
Load Voltage Regulation (10% to 100% full load)	3.3, 5V output types	15% max.
	other output types	10% max.
Output Ripple and Noise (20MHz BW)		200mVp-p max.
Operating Frequency		20kHz min. / 50kHz typ. / 85kHz max.
Efficiency at Full Load		65% min. / 80% max.
Minimum Load = 0%		Specifications valid for 10% minimum load only.
/R6.4	(tested for 1 second)	6400VDC
	(rated for 1 minute)	3200VAC / 60Hz
/R8	(tested for 1 second)	8000VDC
	(rated for 1 minute)	4000VAC / 60Hz
Isolation Capacitance		1.5pF min. / 10pF max.
Isolation Resistance		15 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
Relative Humidity		95% RH

cont.

ECONOLINE
DC/DC-Converter
with 3 year Warranty

RECOM

2 Watt SIP 7 Single & Dual Output



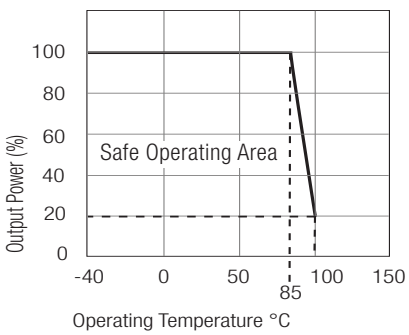
RoHS 2002/95/EC 6/6
E-224736
EN-60950-1 Certified
EN-60601-1 Certified
UL/CSA 60950-1 Certified
UL-60601 Certified
EN-61010-1 Certified
IEC-60601-1 CB Report

RxxP2xx/R

Description

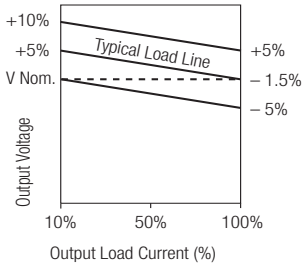
The RxxP2xxS_D Series of DC/DC Converters are fcertified to UL/CSA-60950 and UL/CSA 60601. This makes them ideal for medical and safety applications where approved or reinforced isolation is required. The reinforced versions are also EN61010-1 certified for Lab Equipment. The /X2 version has an input/output clearance of more than 9mm.

Derating-Graph (Ambient Temperature)



Refer to Application Notes

Tolerance Envelope



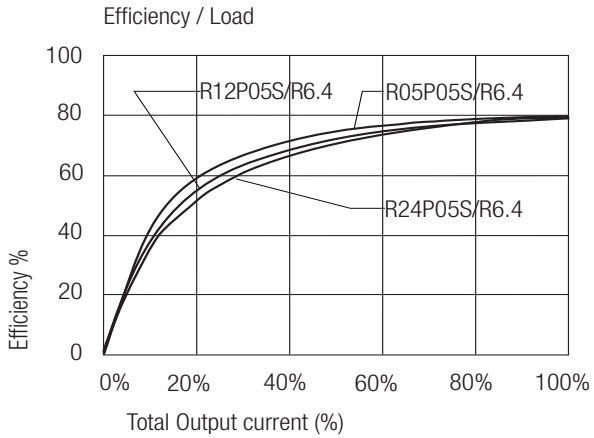
Specifications (continued)

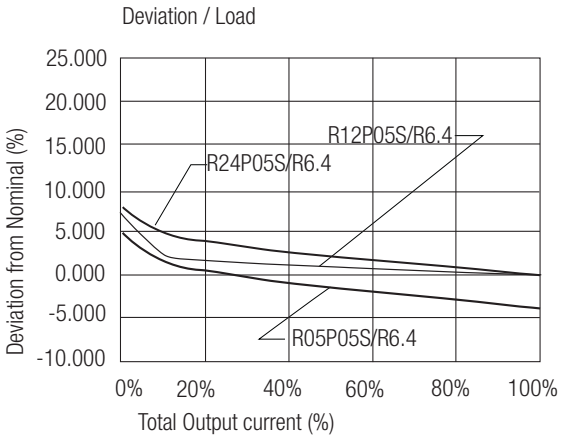
Package Weight			4.3g
Packing Quantity			25 pcs per Tube
MTBF (+25°C)	*Detailed Information see Application Notes chapter "MTBF"*		1154 x 10^3 hours
. (+85°C)		Reinforced	168 x 10^3 hours
Reinforced Isolation	Transformer Creepage	/R6.4 Types	5.5 mm min.
	Transformer Clearance	/R6.4 Types	5.5 mm min.
	PCB Creepage & Clearance	/R6.4 Types	4.8 mm min.
Certifications	CB Report: Medical Safety	Ref: CA/11158/CSA	IEC60601-1:1988 + A1: 1991 + A2:1995
Measurement, Control and Laboratory Use Safety		Report: IL091212010M1	EN 61010-1 : 2001
	CSA General Safety		UL 60950-1 1st Ed.
			C22.2 No. 60950-1-03
	UL/cUL Medical Safety	Report: E314885-A2-UL	UL60601-1 1st Edition
	CSA Medical Safety	Report: 2207629	CAN/CSA-22.2 No 601.1-M90
	EN General Safety	Report: PS-R7219C1	EN60950-1:2001 + A11: 2004
	EN Medical Safety	Report: PS090301601	EN60601-1:1990 + A13: 1996

Notes

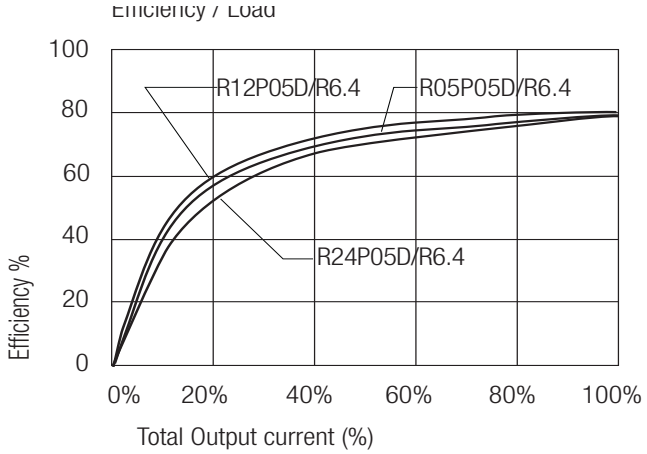
Note 1	Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage to the converter.

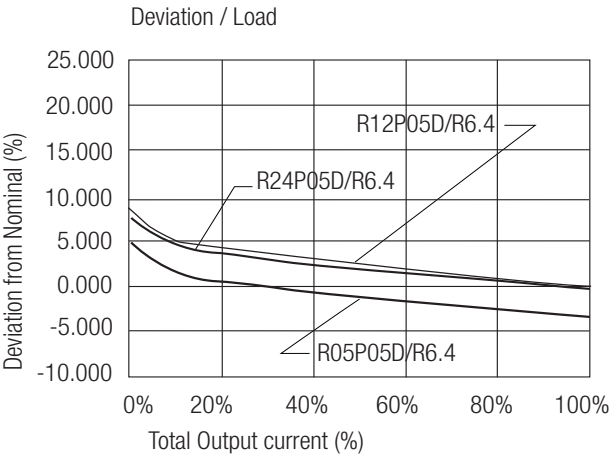
RxxP205S/R6.4
RxxP205S/R8





RxxP205D/R6.4
RxxP205D/R8

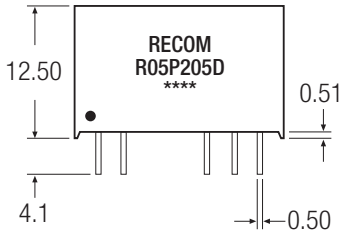


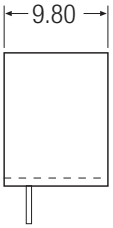


Package Style and Pinning (mm)

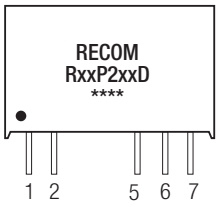
7 PIN SIP Package

3rd angle projection

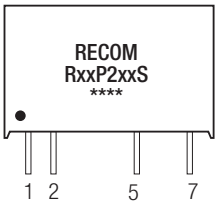


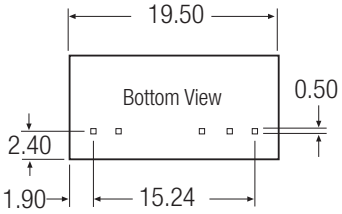


Dual Output

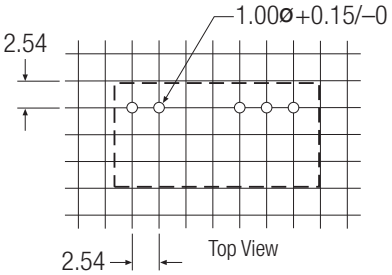


Single Output

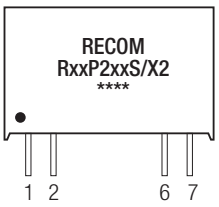


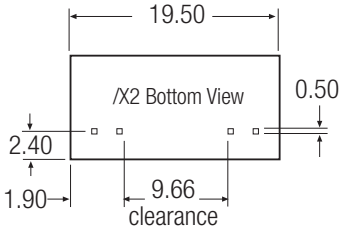


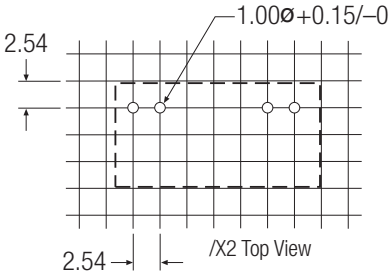
Recommended Footprint Details



/X2 Single Output







Pin Connections

Pin #	Single	Dual	/X2
1	+Vin	+Vin	+Vin
2	-Vin	-Vin	-Vin
5	–Vout	–Vout	No Pin
6	No Pin	Com	-Vout
7	+Vout	+Vout	+Vout

XX.X ± 0.5 mm
XX.XX ± 0.25 mm