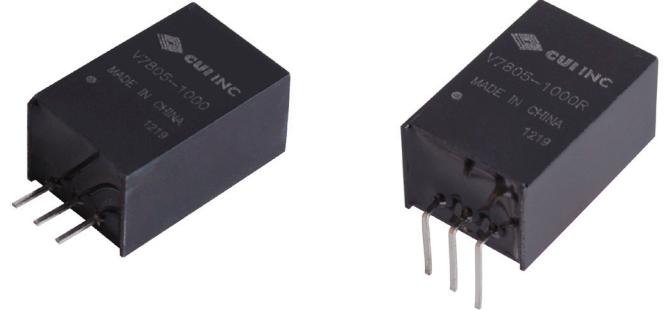


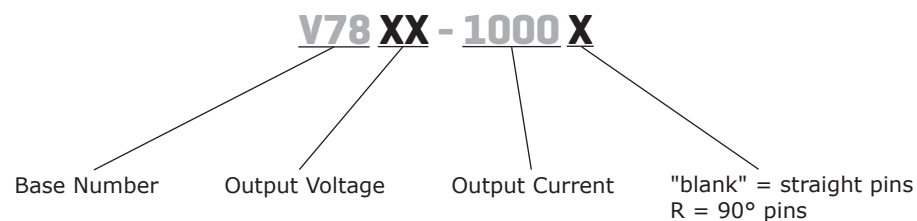
SERIES: V78-1000 | DESCRIPTION: NON-ISOLATED SWITCHING REGULATOR
FEATURES

- 1 A current output
- extremely high efficiency up to 97%
- no heat sink required
- pin compatible to LM78XX linear regulators
- available in straight and right angle SIP packages
- low ripple and noise
- short circuit protection, thermal shutdown
- wide temperature (-40~85°C)

**MODEL**

	input voltage		output voltage¹	output current	ripple and noise²	efficiency	
	typ (Vdc)	range (Vdc)	(Vdc)	max (mA)	max (mVp-p)	Vin min (%)	Vin max (%)
V7803-1000	24	4.75~28	3.3	1,000	35	90	83
V7805-1000	24	6.5~32	5	1,000	35	93	88
V7806-1000	24	9~32	6.5	1,000	35	94	90
V7809-1000	24	12~32	9	1,000	35	95	92
V7812-1000	24	16~32	12	1,000	35	96	94
V7815-1000	24	20~32	15	1,000	35	97	94

Notes: 1. Not recommended for use in a negative output mode.
2. Ripple and noise are measured at 20 MHz BW, see Test Configuration section.

PART NUMBER KEY

INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	3.3 Vdc model	4.75	24	28	Vdc
	5 Vdc model	6.5	24	32	Vdc
	6.5 Vdc model	9.0	24	32	Vdc
	9 Vdc model	12	24	32	Vdc
	12 Vdc model	16	24	32	Vdc
	15 Vdc model	20	24	32	Vdc

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	Vin = min ~ max, at full load		±0.2	±0.4	%
load regulation	measured from 10% load to full load		±0.4	±0.6	%
voltage accuracy	100% load		±2	±3	%
switching frequency	100% load, input voltage range	280	330	450	kHz
temperature coefficient			±0.02		%/°C
load capacitance				1,000	µF

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, automatic recovery				
thermal shutdown			150		°C

SAFETY AND COMPLIANCE

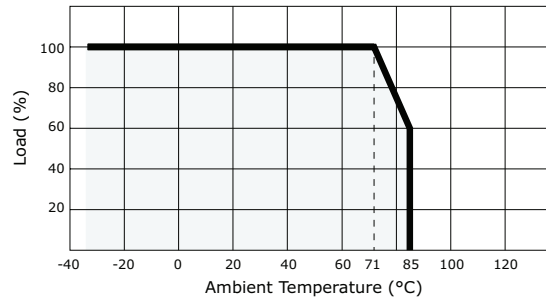
parameter	conditions/description	min	typ	max	units
MTBF	as per MIL-HDBK-217F, 25°C	2,000,000			hours
RoHS compliant	2011/65/EU				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-55		125	°C
case temperature				100	°C
storage humidity	non-condensing			95	%
lead temperature	1.5 mm from case for 10 seconds			300	°C

DERATING CURVES

1. output power vs. ambient temperature



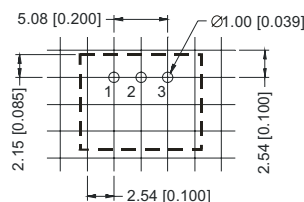
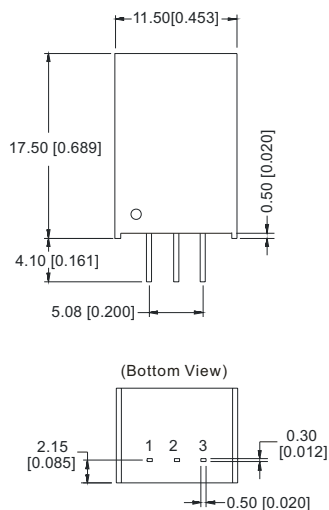
MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	11.50 x 9.00 x 17.50 (0.689 x 0.354 x 0.453 inch)				mm
case material	plastic (UL94-V0)				
weight			3.7		g

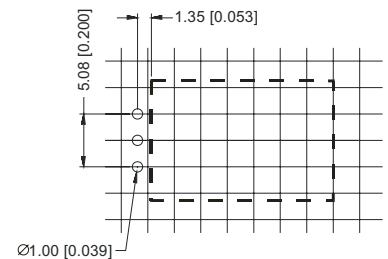
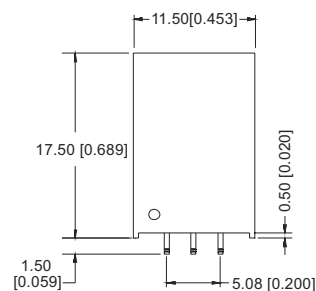
MECHANICAL DRAWING

units: mm [inches]
 tolerance: ± 0.25 [0.010]
 pin section tolerance: ± 0.10 [0.004]

V78XX-1000



V78XX-1000R



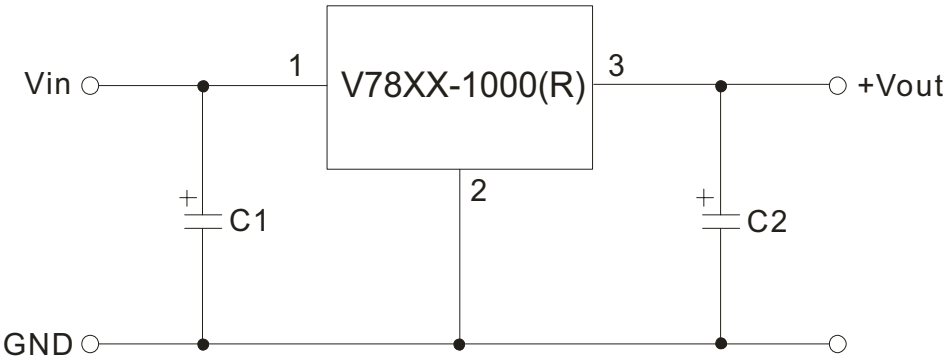
PIN CONNECTIONS

PIN	FUNCTION
1	+Vin
2	GND
3	+Vo

EXTERNAL CAPACITOR TABLE

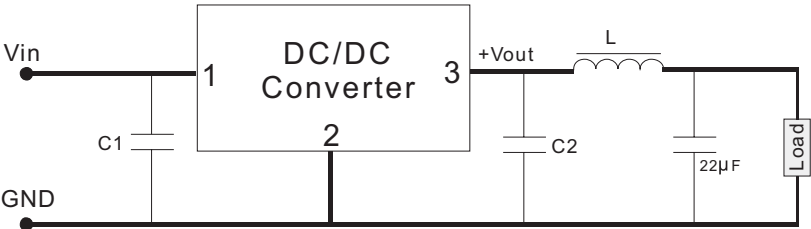
Part Number	C1 ² (Ceramic capacitor)	C2 (Ceramic capacitor)
V7803-1000(R)	10µF/50V	22µF/6.3V
V7805-1000(R)	10µF/50V	22µF/16V
V7806-1000(R)	10µF/50V	10µF/16V
V7809-1000(R)	10µF/50V	10µF/16V
V7812-1000(R)	10µF/50V	10µF/25V
V7815-1000(R)	10µF/50V	10µF/25V

TYPICAL APPLICATION CIRCUIT



- Notes:
- 1. C1 and C2 are required and should be fitted close to the converter pins.
 - 2. If the input voltage is greater than 26 Vdc (3.3 Vdc output model) or greater than 28 Vdc (all other models), it is required to have C1 be $\geq 22 \mu\text{F}$ electrolytic capacitor to protect the part from voltage spikes.

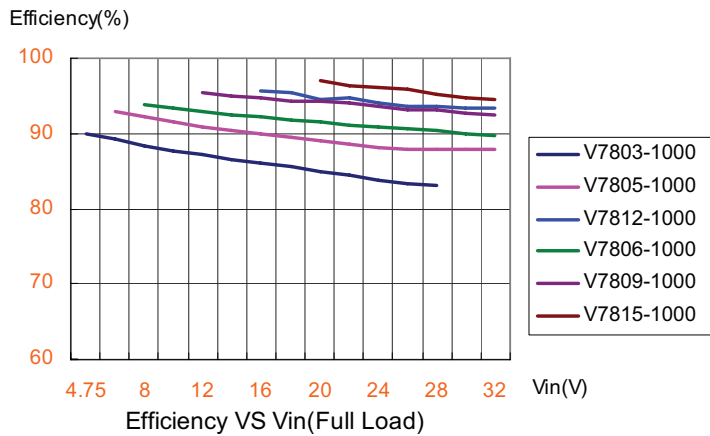
OUTPUT RIPPLE REDUCTION



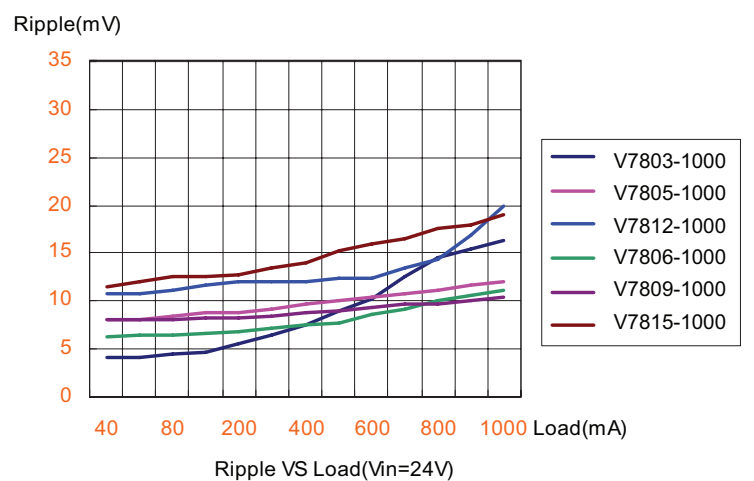
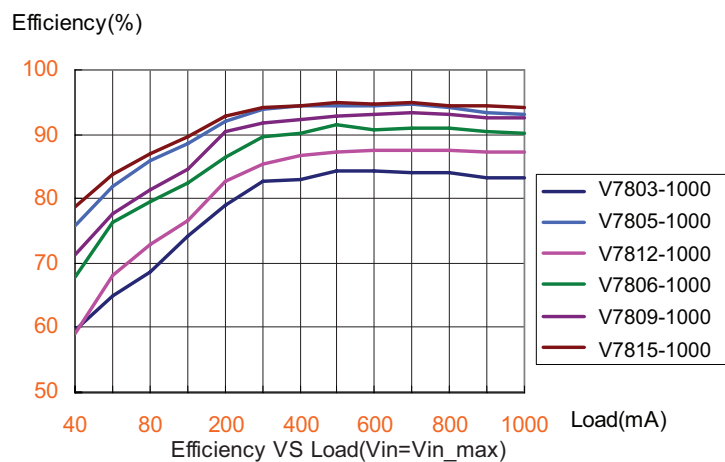
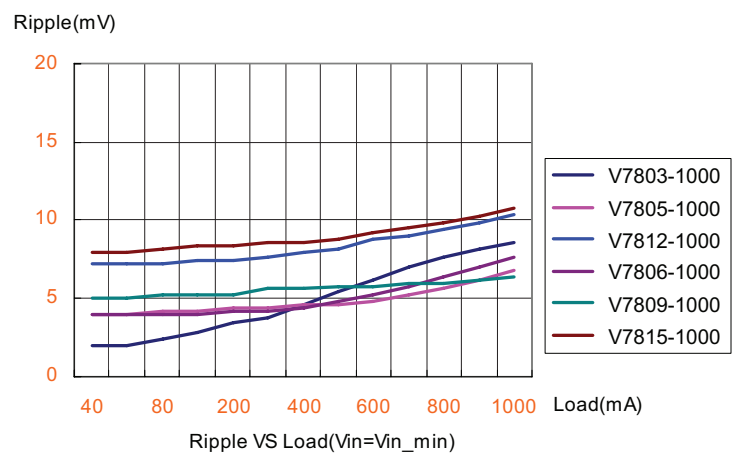
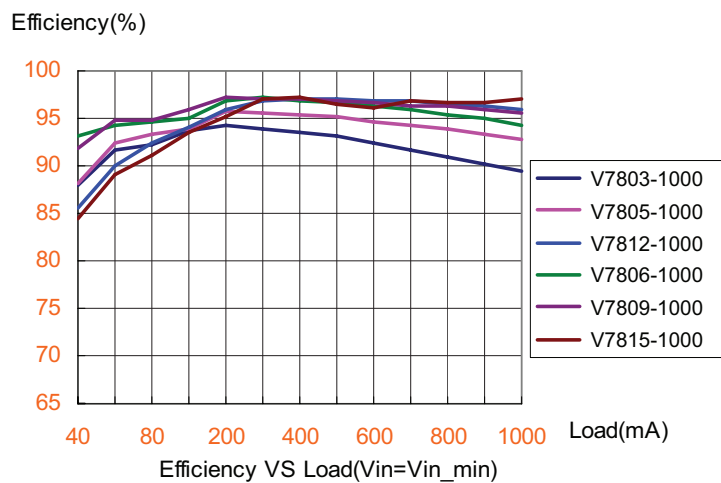
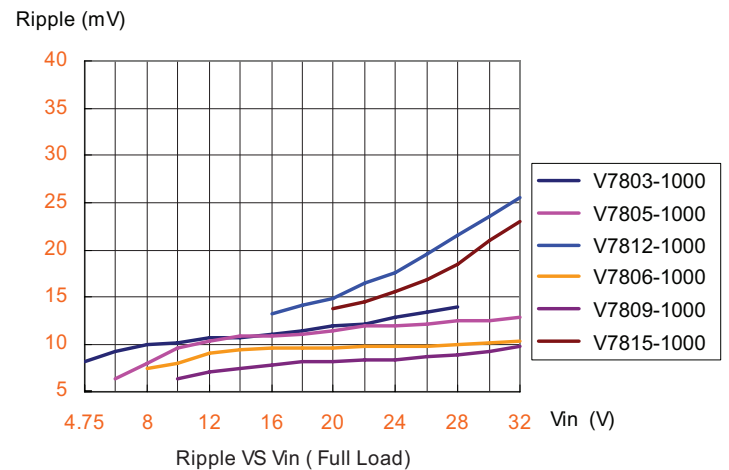
To reduce output ripple, it is recommended to add a LC filter in output port.
L: Recommended parameter 10µH ~ 47µH.

EFFICIENCY AND RIPPLE CURVES

Efficiency

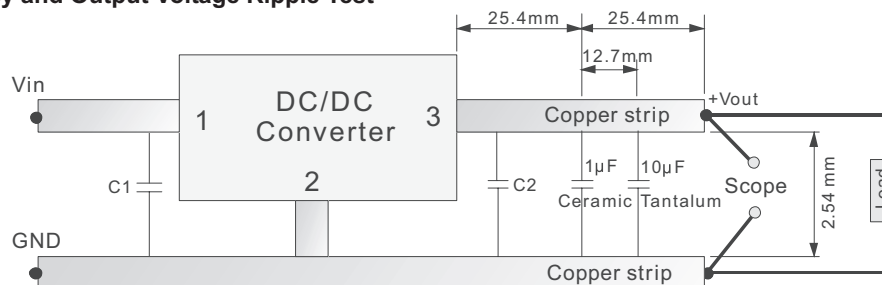


Ripple

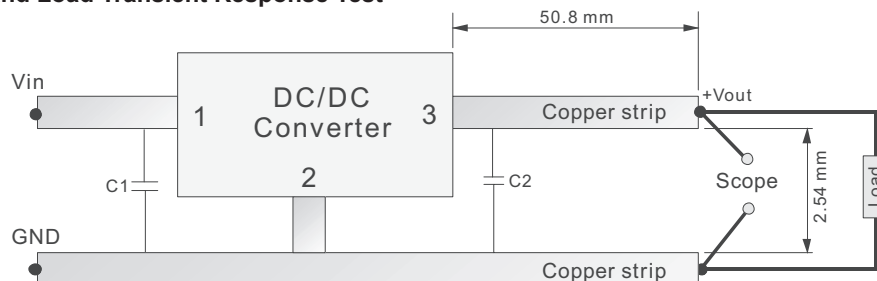


TEST CONFIGURATION

Efficiency and Output Voltage Ripple Test



Start-up and Load Transient Response Test



Note: All specifications measured at 25°C, humidity <75%, nominal input voltage, and full load unless otherwise noted.

REVISION HISTORY

rev.	description	date
1.0	initial release	07/13/2010
1.01	V-Infinity branding removed	09/04/2012
1.02	updated typical application circuits	09/25/2012
1.03	corrected switching frequency values	04/22/2013
1.04	not recommended for use as an inverter	08/27/2014

The revision history provided is for informational purposes only and is believed to be accurate.



CUI INC[®]

Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

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