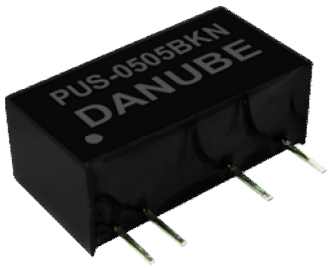
PU-N SERIES

1W DC-DC Unregulated Converter



FEATURES

- Industrial standard SIP-7 package
- Operating temperature range -40°C ~ +105°C
- Low no load input current
- Continuous short circuit protection
- Isolation voltage 1500VDC or 3000VDC
- Efficiency up to 88%
- 3 years warranty

APPLICATIONS

- Automation equipment
- Power supplies
- Industrial PC
- Data communications
- Distributed power system

DESCRIPTION

PU-N series is a unregulated 1 Watt DC/DC converter in standard SIP-7 plastic package, with ±10% input voltage range. It features isolated voltage of 3000VDC, extremely low no load current, wide working temperature range from -40~ +105°C, and suits all kinds of systems like industrial control, automation field, and so on.

MODEL ENCODING

PU	S	-	05	05	A	K	N
Series Name	Output Quantity		Input Voltage	Output Voltage	Package	Function	New Series
	S : Single D : Dual		3.3 : 2.97~3.63V 05 : 4.5~5.5V 12 : 10.8~13.2V 24 : 21.6~26.4V	03.3 : 3.3V 05 : 5V ; ±5V 09 : 9V ; ±9V 12 : 12V ; ±12V 15 : 15V ; ±15V 24 : 24V	A B	Blank : 1500VDC Isolation K : 3000VDC Isolation	:

■ MODEL SELECTION TABLE(1W OUTPUT POWER)

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
PUS-3.303.3A(K)N	3.3	2.97~3.63	10	379	3.3	300	80	470uF
PUS-3.305A(K)N	3.3	2.97~3.63	10	379	5	200	80	470uF
PUS-0503.3A(K)N	5	4.5~5.5	6	250	3.3	300	80	470uF
PUS-0505A(K)N	5	4.5~5.5	6	235	5	200	85	470uF
PUS-0509A(K)N	5	4.5~5.5	7	235	9	111	85	220uF
PUS-0512A(K)N	5	4.5~5.5	9	235	12	84	85	220uF
PUS-0515A(K)N	5	4.5~5.5	12	233	15	67	86	220uF
PUS-0524A(K)N	5	4.5~5.5	16	235	24	42	86	100uF
PUD-0505A(K)N	5	4.5~5.5	6	235	±5	±100	85	220uF
PUD-0509A(K)N	5	4.5~5.5	7	235	±9	±56	85	100uF
PUD-0512A(K)N	5	4.5~5.5	9	235	±12	±42	85	100uF
PUD-0515A(K)N	5	4.5~5.5	12	233	±15	±34	86	100uF
PUD-0524A(K)N	5	4.5~5.5	16	233	±24	±21	86	100uF
PUS-1203.3A(K)N	12	10.8-13.2	6	104	3.3	300	80	470uF
PUS-1205A(K)N	12	10.8-13.2	6	96	5	200	87	470uF
PUS-1209A(K)N	12	10.8-13.2	6	96	9	111	87	220uF
PUS-1212A(K)N	12	10.8-13.2	6	96	12	84	87	220uF
PUS-1215A(K)N	12	10.8-13.2	6	95	15	67	88	220uF
PUS-1224A(K)N	12	10.8-13.2	7	95	24	42	88	100uF
PUD-1205A(K)N	12	10.8-13.2	6	96	±5	±100	87	220uF
PUD-1209A(K)N	12	10.8-13.2	6	96	±9	±56	87	100uF
PUD-1212A(K)N	12	10.8-13.2	6	96	±12	±42	87	100uF
PUD-1215A(K)N	12	10.8-13.2	6	95	±15	±34	88	100uF
PUS-2403.3A(K)N	24	21.6-26.4	5	52	3.3	300	80	470uF
PUS-2405A(K)N	24	21.6-26.4	5	49	5	200	85	470uF
PUS-2409A(K)N	24	21.6-26.4	5	49	9	111	85	220uF
PUS-2412A(K)N	24	21.6-26.4	5	49	12	84	85	220uF
PUS-2415A(K)N	24	21.6-26.4	5	49	15	67	85	220uF
PUS-2424A(K)N	24	21.6-26.4	6	49	24	42	85	100uF
PUD-2405A(K)N	24	21.6-26.4	5	49	±5	±100	85	220uF
PUD-2409A(K)N	24	21.6-26.4	5	49	±9	±56	85	100uF
PUD-2412A(K)N	24	21.6-26.4	5	49	±12	±42	85	100uF
PUD-2415A(K)N	24	21.6-26.4	5	49	±15	±34	85	100uF

Note: Efficiency and input current are measured at nominal input voltage and full load.
Other input to output voltages may be available. Please contact factor

■ MODEL SELECTION TABLE(1W OUTPUT POWER)

MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
PUS-3.303.3BKN	3.3	2.97~3.63	10	379	3.3	300	80	470uF
PUS-3.305BKN	3.3	2.97~3.63	10	379	5	200	80	470uF
PUS-0503.3BKN	5	4.5~5.5	6	250	3.3	300	80	470uF
PUS-0505BKN	5	4.5~5.5	6	235	5	200	85	470uF
PUS-0509BKN	5	4.5~5.5	7	235	9	111	85	220uF
PUS-0512BKN	5	4.5~5.5	9	235	12	84	85	220uF
PUS-0515BKN	5	4.5~5.5	12	233	15	67	86	220uF
PUS-0524BKN	5	4.5~5.5	16	235	24	42	86	100uF
PUD-0505BKN	5	4.5~5.5	6	235	±5	±100	85	220uF
PUD-0509BKN	5	4.5~5.5	7	235	±9	±56	85	100uF
PUD-0512BKN	5	4.5~5.5	9	235	±12	±42	85	100uF
PUD-0515BKN	5	4.5~5.5	12	233	±15	±34	86	100uF
PUD-0524BKN	5	4.5~5.5	16	233	±24	±21	86	100uF
PUS-1203.3BKN	12	10.8-13.2	6	104	3.3	300	80	470uF
PUS-1205BKN	12	10.8-13.2	6	96	5	200	87	470uF
PUS-1209BKN	12	10.8-13.2	6	96	9	111	87	220uF
PUS-1212BKN	12	10.8-13.2	6	96	12	84	87	220uF
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PUS-1224BKN	12	10.8-13.2	7	95	24	42	88	100uF
PUD-1205BKN	12	10.8-13.2	6	96	±5	±100	87	220uF
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PUD-1215BKN	12	10.8-13.2	6	95	±15	±34	88	100uF
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PUS-2412BKN	24	21.6-26.4	5	49	12	84	85	220uF
PUS-2415BKN	24	21.6-26.4	5	49	15	67	85	220uF
PUS-2424BKN	24	21.6-26.4	6	49	24	42	85	100uF
PUD-2405BKN	24	21.6-26.4	5	49	±5	±100	85	220uF
PUD-2409BKN	24	21.6-26.4	5	49	±9	±56	85	100uF
PUD-2412BKN	24	21.6-26.4	5	49	±12	±42	85	100uF
PUD-2415BKN	24	21.6-26.4	5	49	±15	±34	85	100uF

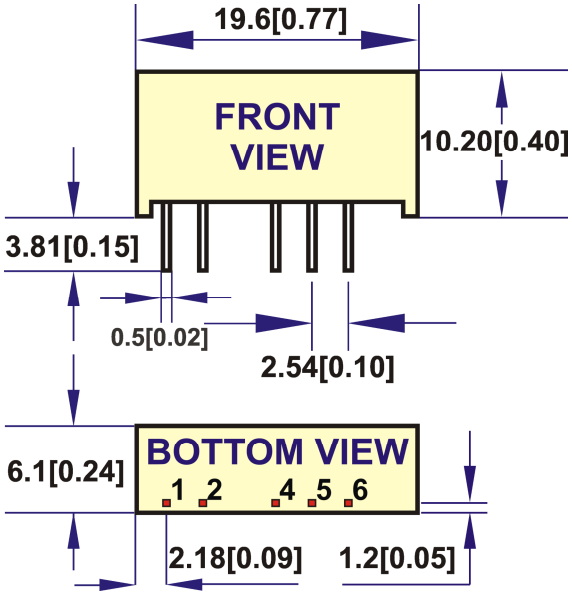
Note: Efficiency and input current are measured at nominal input voltage and full load.
Other input to output voltages may be available. Please contact factor

■ SPECIFICATION

INPUT	Voltage Range	3.3 : 2.97~3.63V ; 5 : 4.5~5.5V ; 12 : 10.8~13.2V ; 24 : 21.6~26.4V		
	Surge Voltage(100ms max.)	3.3Vin models : 9Vdc ; 5Vin models : 9Vdc ; 12Vin models : 18Vdc ; 24Vin models : 30Vdc		
	Filter	Internal capacitor		
	Protection	Fuse recommended (see page 8)		
OUTPUT	Voltage Accuracy	±3% max.		
	Rated Power	1W		
	Ripple & Noise[1]	75mVp-p max.		
	Line Regulation[2]	±1.2% (other output) , (for 1% input variation) ±1.5% (3.3Vdc output) , (for 1% input variation)		
	Load Regulation[3]	15% max.		
	Switching Frequency	200KHz min.		
	Minimum Load	10% of full load		
PROTECTION	Short Circuit	Continuous , automatic recovery		
ENVIRONMENT	Cooling	Free-air convection		
	Working Temperature	-40~ +105°C (refer to “Derating Curve”)		
	Case Temperature	+115°C max.		
	Working Humidity	5% ~ 95% RH non-condensing		
	Storage Temp., Humidity	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	Temperature Coefficient	±0.05% / °C		
	Soldering Temperature	1.5mm from case of 3~5 sec./265°C(max.)		
	Vibration	10~500Hz, 2G 10min./1cycle, period for 60 min. each along X, Y, Z axes		
SAFETY & EMC	Isolation Voltage[4]	I/P-O/P : 1500VDC or 3000VDC		
	Isolation Resistance	I/P-O/P : 1000M Ohms / 500VDC / 25°C / 70% RH		
	Isolation Capacitance	50pF typ.		
	EMC Emission	**Parameter**	**Standard**	**Test Level / Note**
		Conducted	EN55032(CISPR32)	N/A
		Radiated	EN55032(CISPR32)	Class B
	EMC Immunity	**Parameter**	**Standard**	**Test Level / Note**
		ESD	BS IEC 61000-4-2	Air 8KV
		Radiated Susceptibility	BS IEC 61000-4-3	3V/m
		EFT/Burst	BS IEC 61000-4-4	0.5KV/5KHz
		Surge	BS IEC 61000-4-5	0.5KV/Line-Line
		Conducted	BS IEC 61000-4-6	3Vrms
		Magnetic field immunity	BS IEC 61000-4-8	1A/m
OTHERS	MTBF[5]	>3,900,000Hours		
	Weight	2.1g typ.		
	Dimension(L*W*H)	19.6mm*6.1mm*10.2mm		
	Case Material	Non-conductive plastic		
NOTE	**[1] Ripple & noise are measured at 20MHz with 1uF ceramic capacitor connect to the output pins.** **[2] High line to low line at rated load.** **[3] Load regulation is for output load current change from 10% to 100%.** **[4] 1500VDC for 60 seconds, 3000VDC for 10 seconds.** **[5] MIL-HDBK-217F @25 °C, Ground Benign.** ***All specifications are measured at Ta=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.**			

■ MECHANICAL SPECIFICATION

PACKAGE "A"



PIN CONNECTION		
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	Common
6	+Vout	+Vout

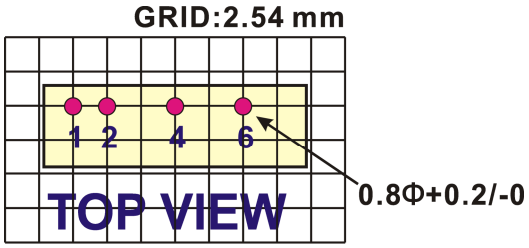
NP : No pin

All dimensions are in mm[Inches]

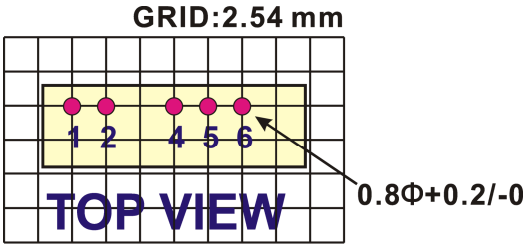
Pin size is 0.50x0.30mm[0.02"x0.01"]

Pin tolerance .XX= ±0.05mm

Tolerance .X or .XX= ±0.5mm

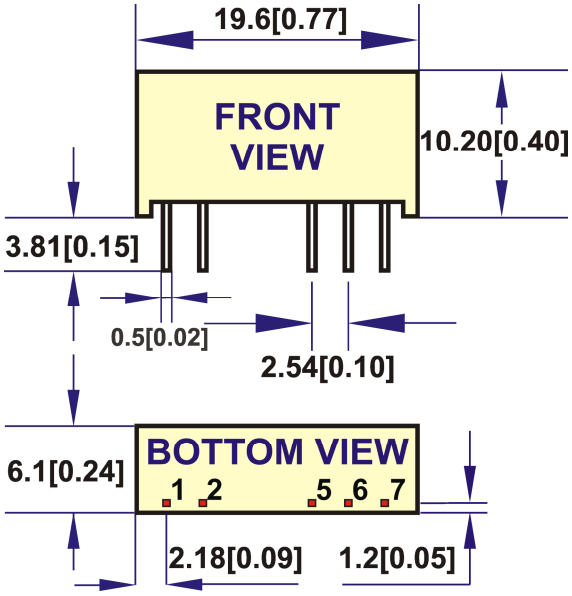


SINGLE OUTPUT



DUAL OUTPUT

PACKAGE "B"



PIN CONNECTION		
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	Common
7	+Vout	+Vout

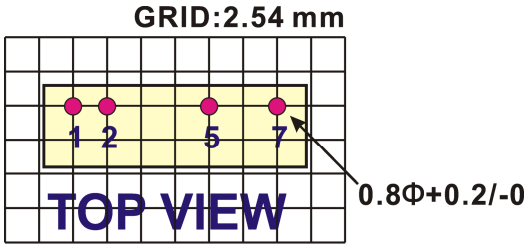
NP : No pin

All dimensions are in mm[Inches]

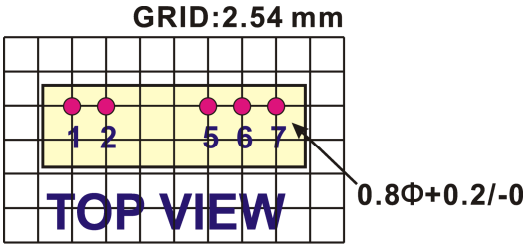
Pin size is 0.50x0.30mm[0.02"x0.01"]

Pin tolerance .XX= ±0.05mm

Tolerance .X or .XX= ±0.5mm



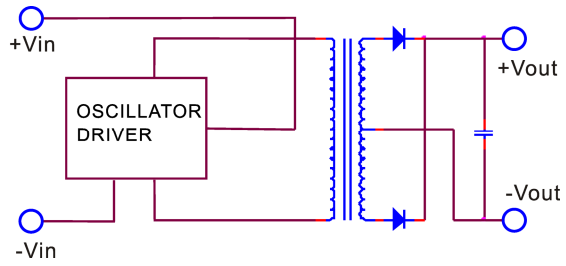
SINGLE OUTPUT



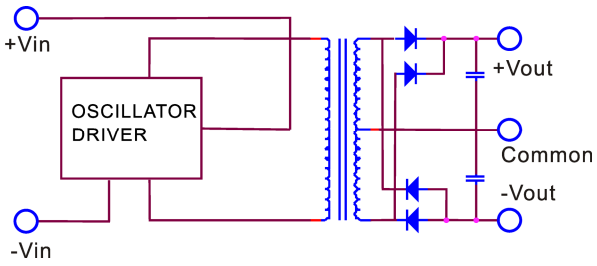
DUAL OUTPUT

SIMPLIFIED SCHEMATIC

Single output

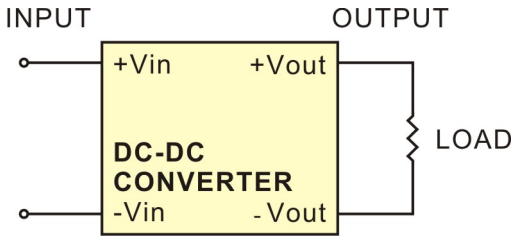


Dual output

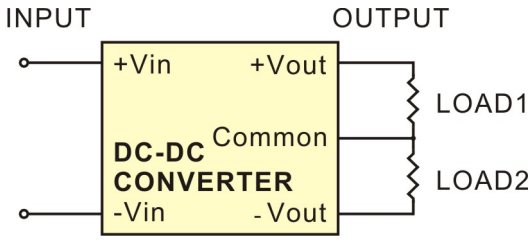


TYPICAL APPLICATIONS

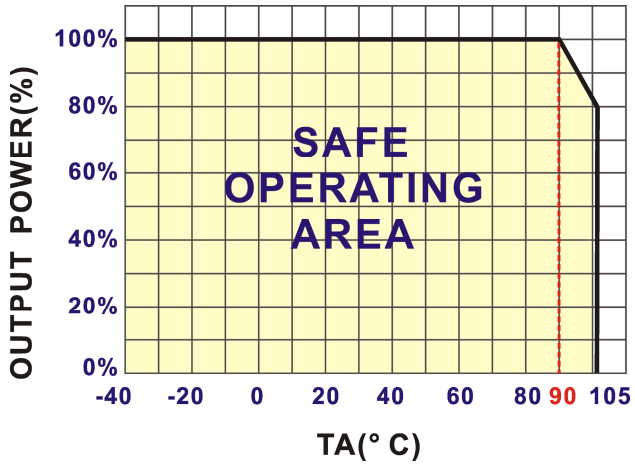
Single output



Dual output



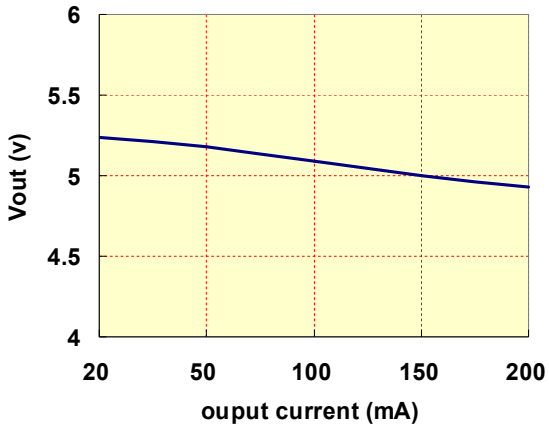
DERATING CURVE



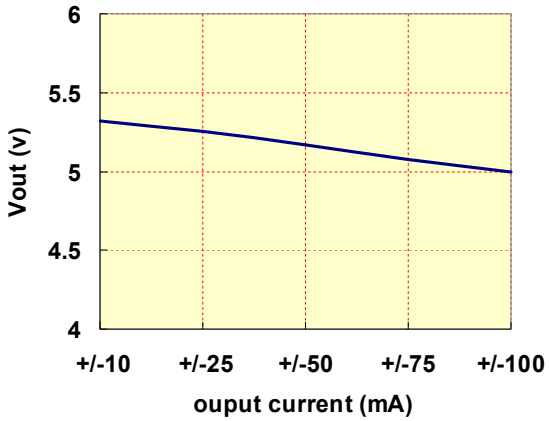
■ TYPICAL PERFORMANCE CURVES

Specifications typical at TA=25 °C,nominal input voltage , rated output current unless otherwise specified.

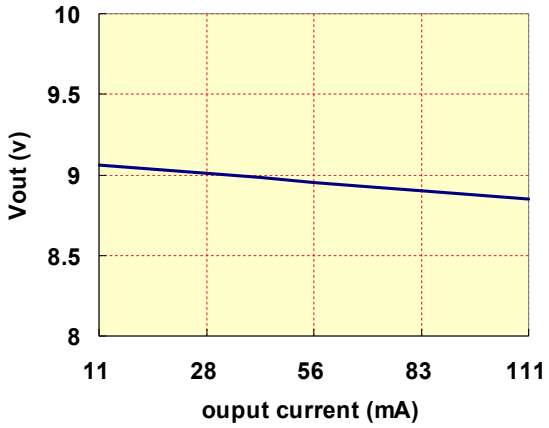
VOUT VS LOAD (5Vout Models)



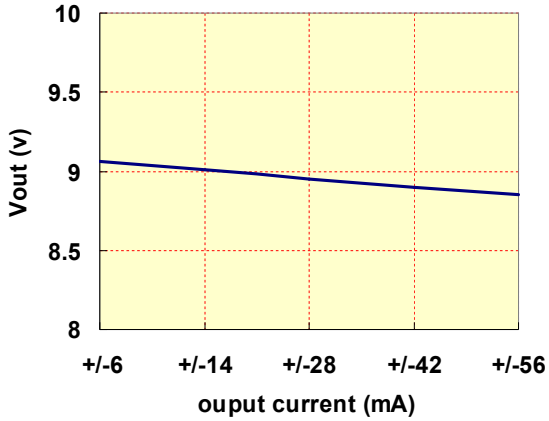
VOUT VS LOAD (+/-5Vout Models)



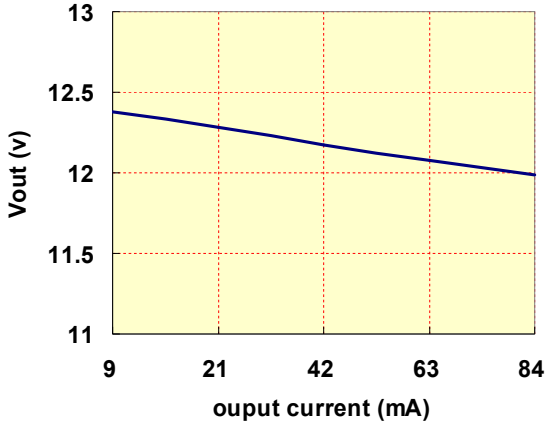
VOUT VS LOAD (9Vout Models)



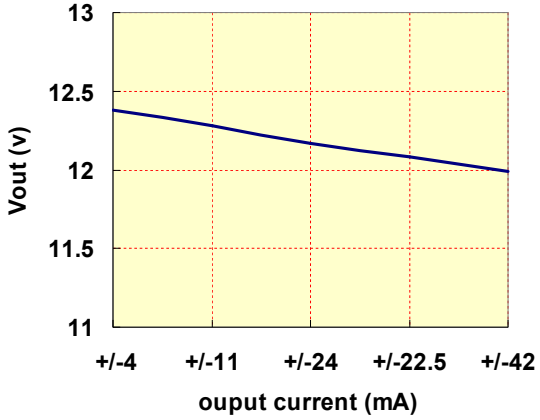
VOUT VS LOAD (+/-9Vout Models)



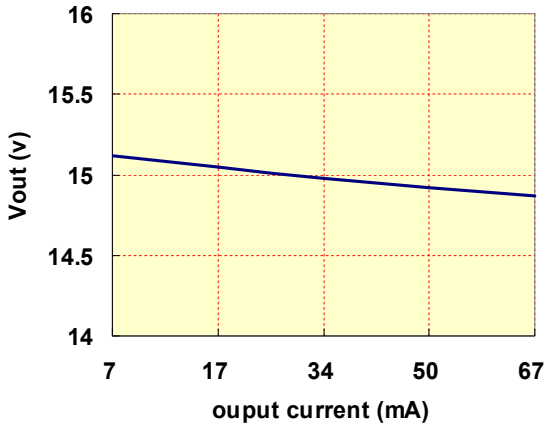
VOUT VS LOAD (12Vout Models)



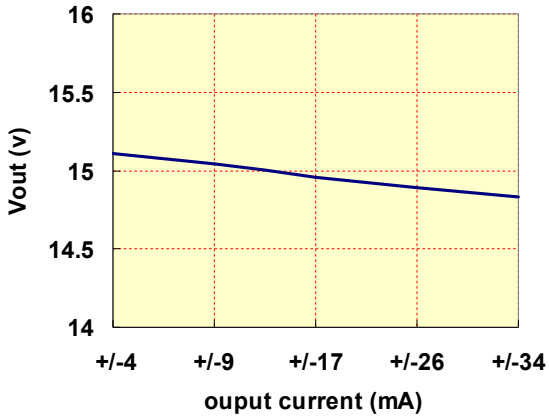
VOUT VS LOAD (+/-12Vout Models)



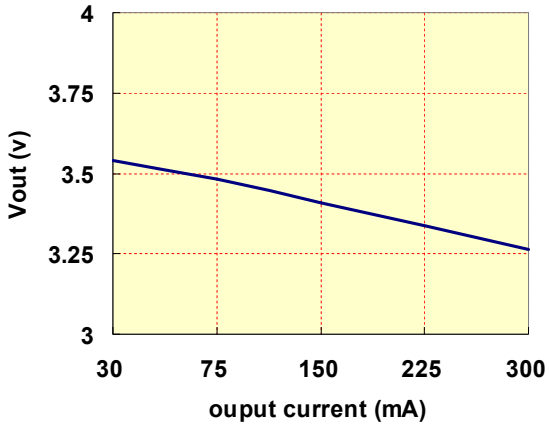
VOUT VS LOAD (15Vout Models)



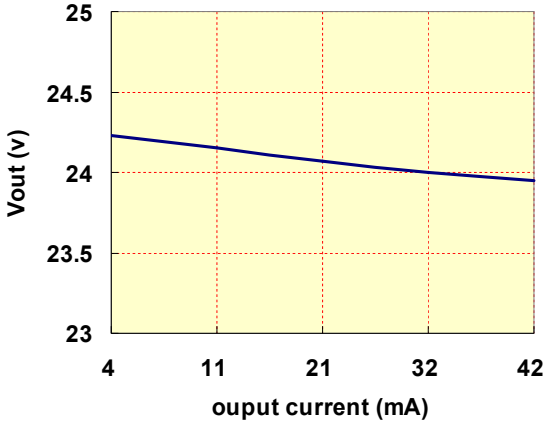
VOUT VS LOAD (+/-15Vout Models)



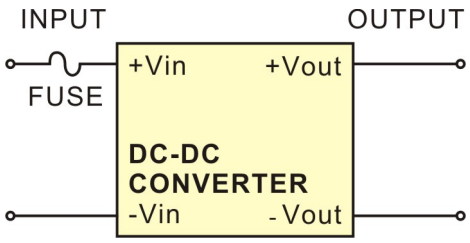
VOUT VS LOAD (3.3Vout Models)



VOUT VS LOAD (24Vout Models)



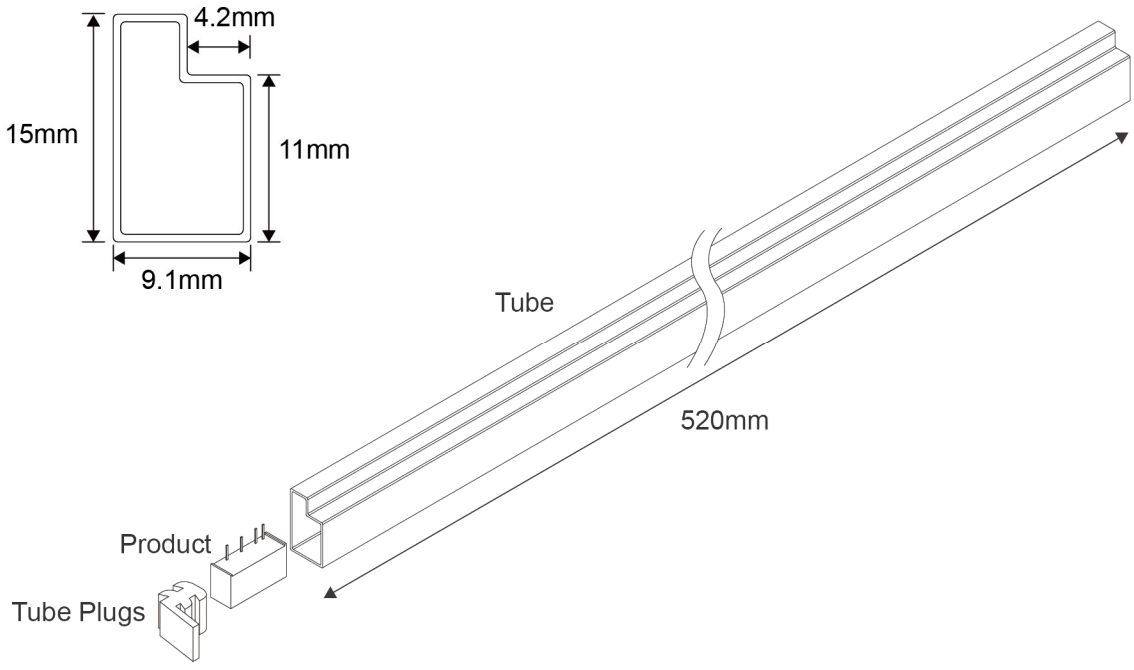
■ INPUT FUSE SELECTION GUIDE



MODEL NUMBER	INPUT VOLTAGE(VDC)	FUSE
PUX-3.3XXA/B	2.97~3.63V	1000mA Slow-Blow Type
PUX-05XXA/B	4.5~5.5V	500mA Slow-Blow Type
PUX-12XXA/B	10.8~13.2V	300mA Slow-Blow Type
PUX-24XXA/B	21.6~26.4V	150mA Slow-Blow Type

Note: Certain applications may require the installation of external fuse in front of the input.

■ PACKAGING INFORMATION



Packaging Quantity: 25 pcs converter per tube

DANUBE ENTERPRISE CO., LTD.
Tel: 886-7-3755165 **Fax:** 886-7-3755330
E-mail: danube@ms10.hinet.net