

FEATURES

- Industrial standard SIP-4 package
- Operating temperature range -40°C ~ +105°C
- Low no load input current
- Continuous short circuit protection
- Isolation voltage 1500VDC
- Efficiency up to 88%

APPLICATIONS

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

DESCRIPTION

MU-N series is a unregulated 1 Watt DC/DC converter in standard SIP-4 plastic package, with $\pm 10\%$ input voltage range. It features isolated voltage of 1500VDC, 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

MU	S	-	05	05	N
Series Name	Output Quantity		Input Voltage	Output Voltage	New Series
	S : Single		05 : 4.5~5.5V 12 : 10.8~13.2V 24 : 21.6~26.4V	03.3 : 3.3V 05 : 5V 09 : 9V 12 : 12V 15 : 15V 24 : 24V	

■ 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				
MUS-0503.3N	5	4.5~5.5	5	250	3.3	300	80	470uF
MUS-0505N	5	4.5~5.5	5	235	5	200	85	470uF
MUS-0509N	5	4.5~5.5	6	235	9	111	85	220uF
MUS-0512N	5	4.5~5.5	7	235	12	84	85	220uF
MUS-0515N	5	4.5~5.5	8	233	15	67	86	220uF
MUS-0524N	5	4.5~5.5	9	235	24	42	86	100uF
MUS-1203.3N	12	10.8-13.2	5	104	3.3	300	80	470uF
MUS-1205N	12	10.8-13.2	5	96	5	200	87	470uF
MUS-1209N	12	10.8-13.2	5	96	9	111	87	220uF
MUS-1212N	12	10.8-13.2	5	96	12	84	87	220uF
MUS-1215N	12	10.8-13.2	5	95	15	67	88	220uF
MUS-1224N	12	10.8-13.2	5	95	24	42	88	100uF
MUS-2403.3N	24	21.6-26.4	5	52	3.3	300	80	470uF
MUS-2405N	24	21.6-26.4	5	49	5	200	85	470uF
MUS-2409N	24	21.6-26.4	5	49	9	111	85	220uF
MUS-2412N	24	21.6-26.4	5	49	12	84	85	220uF
MUS-2415N	24	21.6-26.4	5	49	15	67	85	220uF
MUS-2424N	24	21.6-26.4	5	49	24	42	85	100uF

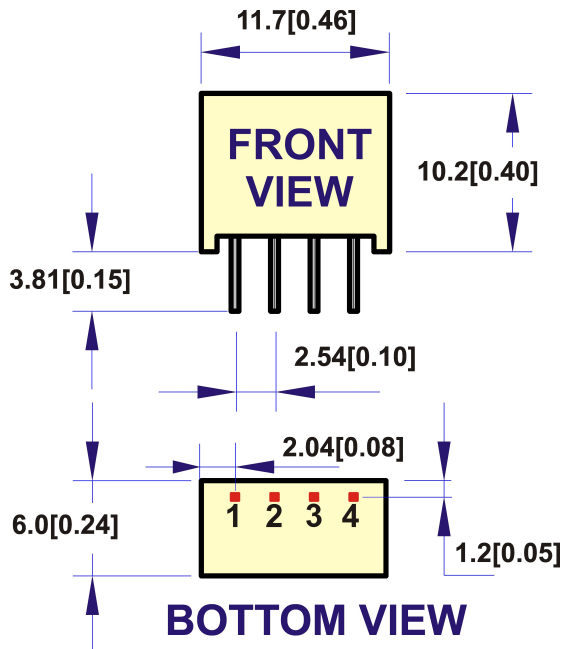
Note: Efficiency and input current are measured at nominal input voltage and full load.

Other input to output voltages may be available. Please contact factory.

■ SPECIFICATION

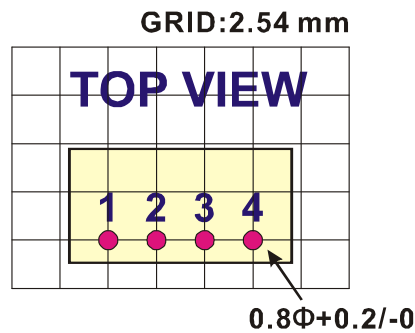
INPUT	Voltage Range	4.5-5.5V ; 10.8~13.2V ; 21.6~26.4V			
	Surge Voltage(100ms max.)	5Vin models : 9Vdc ; 12Vin models : 18Vdc ; 24Vin models : 30Vdc			
	Filter	Internal capacitor			
	Protection	Fuse recommended (see page 6)			
OUTPUT	Voltage Accuracy	±3% max.			
	Rated Power	1W			
	Ripple & Noise ¹	75mVp-p max.			
	Line Regulation ²	±1.2% (for 1% input variation)			
	Load Regulation ³	15%			
	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			
	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	Contact ±4KV	
		Radiated Susceptibility	BS IEC 61000-4-3	3V/m	
		EFT/Burst	BS IEC 61000-4-4	±0.5KV	
		Surge	BS IEC 61000-4-5	Line-Line ±0.5KV	
Conducted		BS IEC 61000-4-6	3Vrms		
Magnetic field immunity		BS IEC 61000-4-8	1A/m		
OTHERS	MTBF ⁵	>2,000,000Hours			
	Weight	1.3g typ.			
	Dimension(L*W*H)	11.7mm*6.0mm*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 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

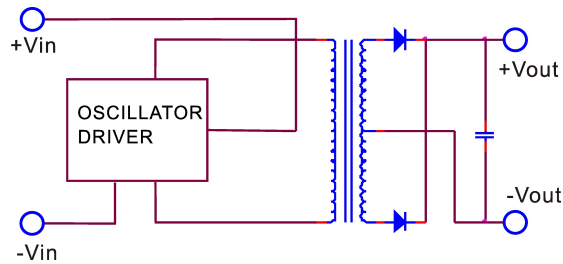


PIN CONNECTION	
PIN	SINGLE
1	-Vin
2	+Vin
3	-Vout
4	+Vout

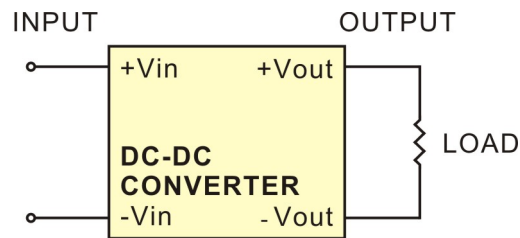
All dimensions are in mm[Inches]
 Pin size is 0.50x0.30mm[0.02"x0.01"]
 Pin tolerance .XX= ±0.05mm
 Tolerance .X or .XX= ±0.5mm



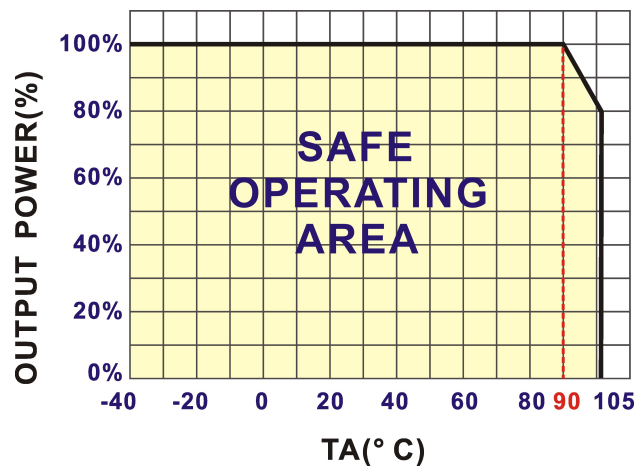
■ SIMPLIFIED SCHEMATIC



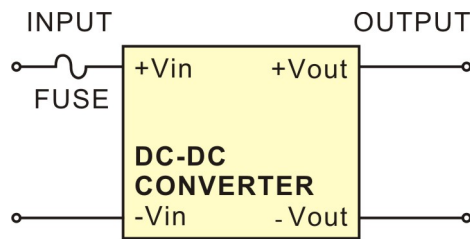
■ TYPICAL APPLICATIONS



■ DERATING CURVE



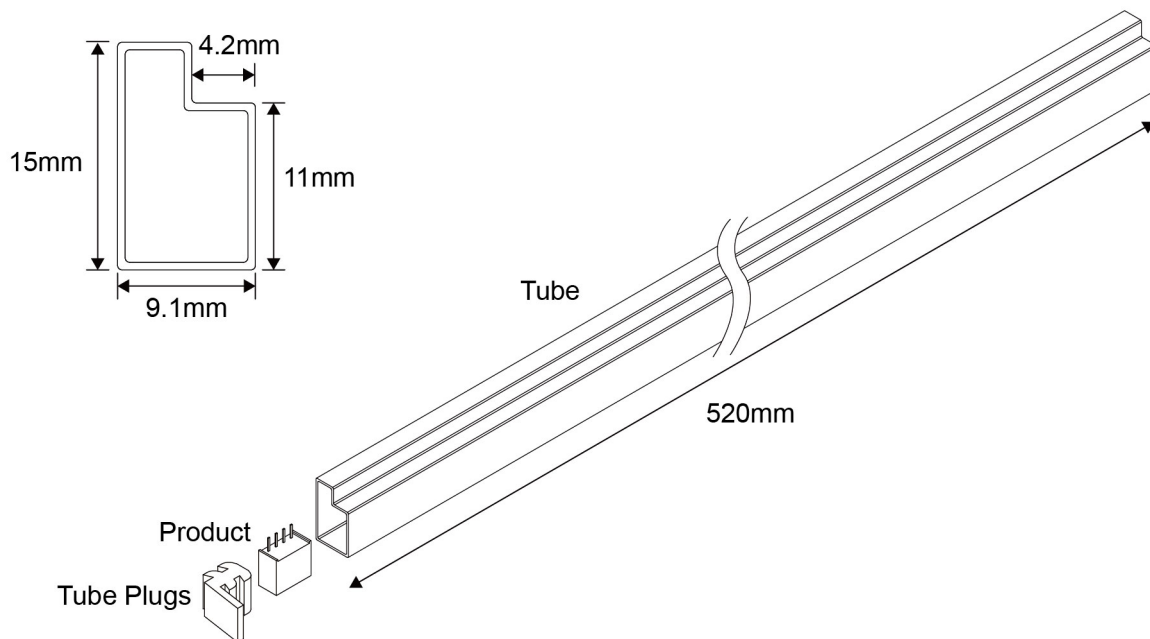
INPUT FUSE SELECTION GUIDE



MODEL NUMBER	INPUT VOLTAGE(VDC)	FUSE
MUS-05XXN	4.5~5.5V	500mA Slow-Blow Type
MUS-12XXN	10.8~13.2V	300mA Slow-Blow Type
MUS-24XXN	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: 42 pcs converter per tube