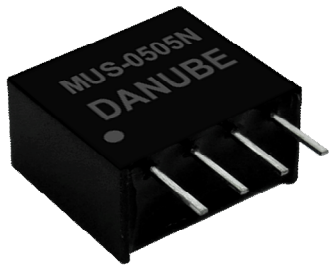
MU-N SERIES

1W DC-DC Unregulated Converter



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%
- 3 years warranty

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 ±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		3.3 : 2.97~3.63V	03.3 : 3.3V	
			05 : 4.5~5.5V	05 : 5V	
			12 : 10.8~13.2V	09 : 9V	
			24 : 21.6~26.4V	12 : 12V	
				15 : 15V	
				24 : 24V	

■ MODEL SELECTION TABLE(1W OUTPUT POWER)

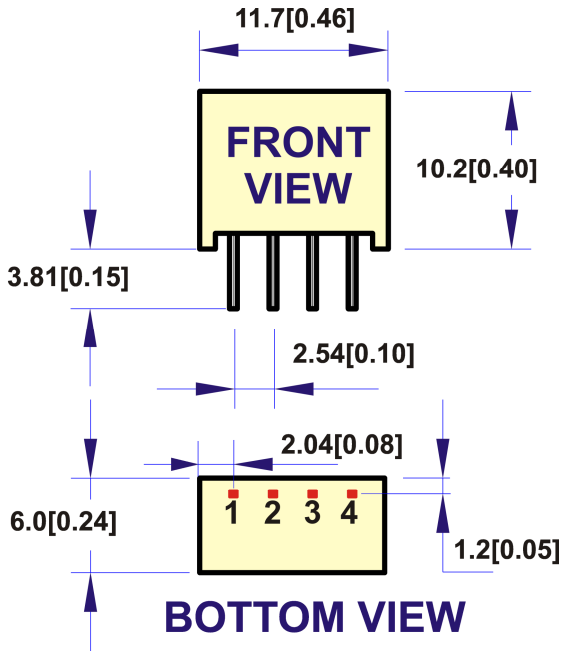
MODEL NUMBER	INPUT				OUTPUT		EFF. (%)	CAPACITOR LOAD (Max.)
	VOLTAGE (VDC)		CURRENT (mA)		VOLTAGE (VDC)	CURRENT (mA)		
	NOMINAL	RANGE	NO LOAD	FULL LOAD				
MUS-3.303.3N	3.3	2.97-3.63	10	379	3.3	300	80	470uF
MUS-3.305N	3.3	2.97-3.63	10	357	5	200	85	470uF
MUS-0503.3N	5	4.5~5.5	6	247	3.3	300	81	470uF
MUS-0505N	5	4.5~5.5	6	235	5	200	85	470uF
MUS-0509N	5	4.5~5.5	7	230	9	111	87	220uF
MUS-0512N	5	4.5~5.5	9	235	12	84	85	220uF
MUS-0515N	5	4.5~5.5	12	233	15	67	86	220uF
MUS-0524N	5	4.5~5.5	20	235	24	42	85	100uF
MUS-1203.3N	12	10.8-13.2	6	102	3.3	300	82	470uF
MUS-1205N	12	10.8-13.2	6	96	5	200	87	470uF
MUS-1209N	12	10.8-13.2	6	96	9	111	87	220uF
MUS-1212N	12	10.8-13.2	6	96	12	84	87	220uF
MUS-1215N	12	10.8-13.2	6	95	15	67	88	220uF
MUS-1224N	12	10.8-13.2	10	96	24	42	87	100uF
MUS-2403.3N	24	21.6-26.4	5	51	3.3	300	82	470uF
MUS-2405N	24	21.6-26.4	5	49	5	200	85	470uF
MUS-2409N	24	21.6-26.4	5	48	9	111	86	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	6	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

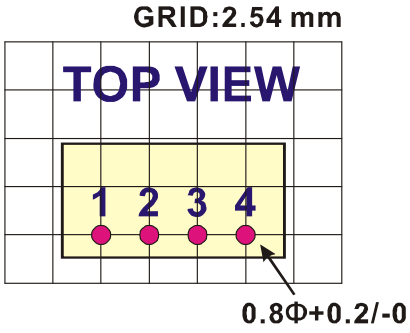
INPUT	Voltage Range	3.3 : 2.97~3.63V ; 5 : 4.5~5.5V ; 12 : 10.8~13.2V ; 24 : 21.6~26.4V		
	Surge Voltage(100ms max.)	3.3Vin models : 9Vdc ; 5Vin models : 9Vdc ; 12Vin models : 18Vdc ; 24Vin models : 30Vdc		
	Filter	Internal capacitor		
	Protection	Fuse recommended (see page 6)		
OUTPUT	Voltage Accuracy	±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]	8% (other output) 12% (3.3Vdc output)		
	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	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]	>4,000,000Hours		
	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 1 minute. [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

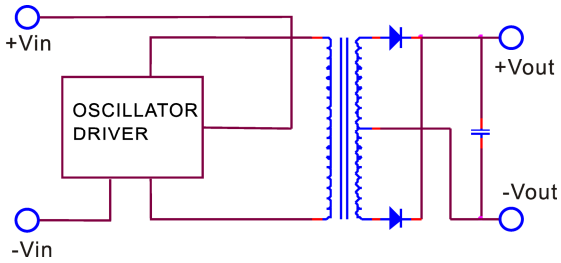


PIN CONNECTION	
PIN	SINGLE
1	-Vin
2	+Vin
3	-Vout
4	+Vout

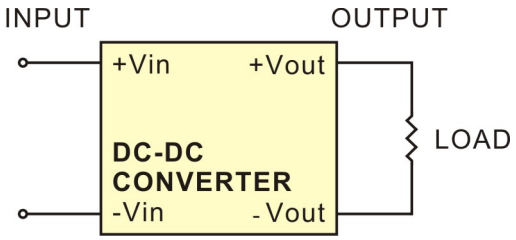
All dimensions are in mm[Inches]
Pin size is 0.50x0.30mm[0.02"x0.01"]
Pin tolerance .XX= ±0.05mm
Tolerance .x = ±0.5mm
.xx=±0.25mm



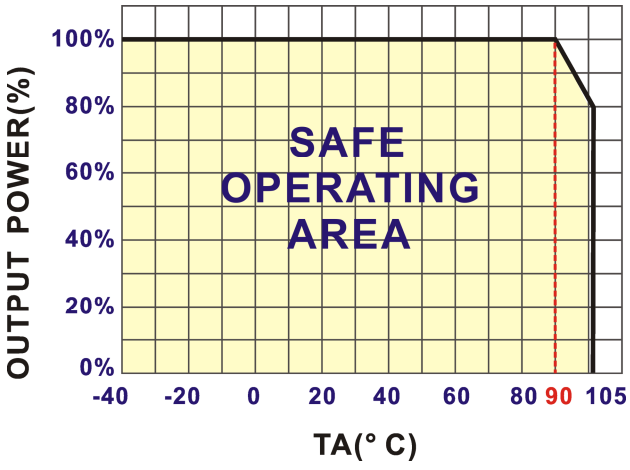
SIMPLIFIED SCHEMATIC



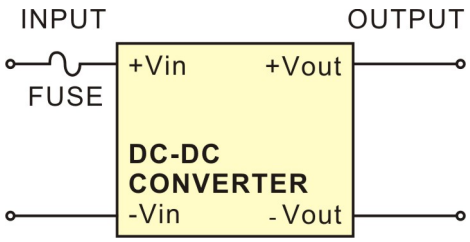
TYPICAL APPLICATIONS



DERATING CURVE



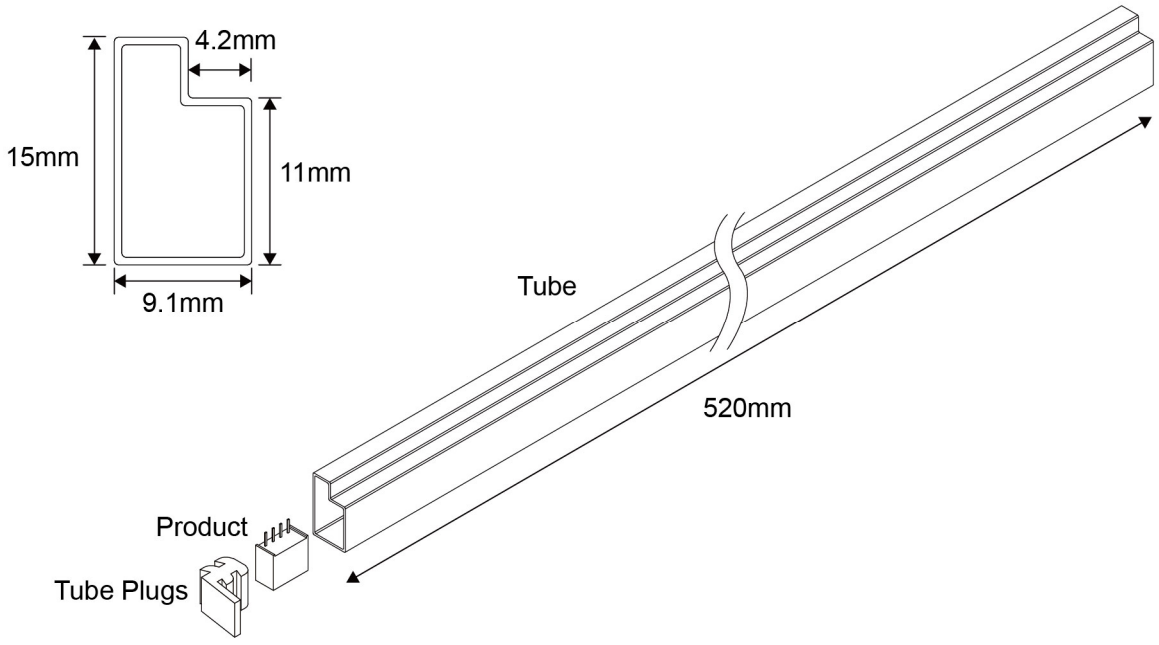
■ INPUT FUSE SELECTION GUIDE



MODEL NUMBER	INPUT VOLTAGE(VDC)	FUSE
MUS-3.3XXN	2.97~3.63V	1000mA Slow-Blow Type
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

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