

# MU SERIES

**1W UNREGULATED**

# DANUBE

## FEATURES

- SINGLE IN LINE PACKAGE
- UP TO 1W UNREGULATED OUTPUT POWER
- 100% BURN IN
- HIGH EFFICIENCY
- INTERNAL SMD TECHNOLOGY
- LOW COST
- NO HEATSINK REQUIRED
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



## OUTPUT SPECIFICATIONS

Voltage Set-point Accuracy	+/-2% max
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW) <sup>1</sup>	100mVp-p max
Line Regulation <sup>2</sup>	+/-1.2% max
Load Regulation <sup>3</sup>	+/-8% max
Load Regulation <sup>4</sup>	+/-12% max
Minimum Load	10% of Full Load
Short Circuit Protection	Momentary

## INPUT SPECIFICATIONS

Input Voltage Range	+/-10% max
Input Filter	Capacitor Typ
Input Reflected Ripple Current	50mA <sub>p-p</sub> max
Protection	Fuse Recommended

## GENERAL SPECIFICATIONS

Efficiency	70%-82%
Isolation Voltage <sup>5</sup>	1500-3000 VDC
Isolation Resistance	10 <sup>9</sup> ohms min
Isolation Capacitance	80pF max
Switching Frequency	100KHz Typ
MTBF <sup>6</sup>	>2,000,000 Hours
Weight	1.3g Typ
Case Material	Non-Conductive Plastic
Case Size	11.7mm*6.0mm*10.2mm
	11.7mm*7.5mm*10.1mm
Conducted Emissions	EN55022 Class A
Radiated Emissions	EN55022 Class B

## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-25 °C to +71 °C
Case Temperature	+90 °C max
Storage Temperature	-55 °C to +125 °C
Humidity	95% max
Cooling	Free-Air Convection

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD AND 25 °C UNLESS OTHERWISE NOTED.

<sup>1</sup> Measured with 1uF ceramic capacitor connect to the output pins.

<sup>2</sup> Line Regulation is for a 1.0% change in input Voltage.

<sup>3</sup> Load Regulation is for output load current change from 20% to 100%.

<sup>4</sup> Load Regulation is for output load current change from 20% to 100% when input voltage is 3V and 3.3V.

<sup>5</sup> 1500VDC for 10 seconds, 3000VDC for 3 seconds.

<sup>6</sup> MIL-HDBK-217F @25 °C , Ground Benign.

● **SELECTION GUIDE(1)**  
**1W 1500VDC ISOLATION**

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT <sup>7</sup>		EFF (%) <sup>8</sup>	ISOLATION (VDC)	PACKAGE
				CURRENT(mA)				
				FULL LOAD	NO LOAD			
MUS-0303	3	3	333	475	35	70	1500	B
MUS-03.303	3.3	3	333	425	43	71	1500	B
MUS-03.303.3	3.3	3.3	303	403	43	75	1500	B
MUS-0305	3	5	200	475	50	70	1500	B
MUS-03.305	3.3	5	200	404	46	75	1500	B
MUS-0503.3	5	3.3	303	282	32	71	1500	B
MUS-0505	5	5	200	274	30	73	1500	A
MUS-0509	5	9	110	260	27	77	1500	A
MUS-0512	5	12	84	253	26	79	1500	A
MUS-0515	5	15	67	253	28	79	1500	A
MUS-0524	5	24	42	253	28	79	1500	B
MUS-1203.3	12	3.3	300	112	11	74	1500	A
MUS-1205	12	5	200	112	11	74	1500	A
MUS-1209	12	9	110	105	11	79	1500	A
MUS-1212	12	12	84	102	11	82	1500	A
MUS-1215	12	15	67	102	12	82	1500	A
MUS-2403.3	24	3.3	300	57	8	73	1500	B
MUS-2405	24	5	200	57	8	73	1500	B
MUS-2409	24	9	110	54	8	77	1500	B
MUS-2412	24	12	84	54	8	77	1500	B
MUS-2415	24	15	67	54	10	77	1500	B
MUS-2424	24	24	42	54	10	77	1500	B
MUS-4805	48	5	200	29	10	72	1500	B

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

<sup>7</sup> NOMINAL INPUT VOLTAGE.

<sup>8</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

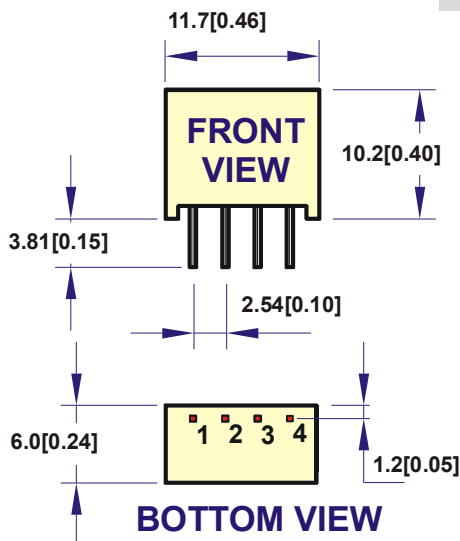
## ● SELECTION GUIDE(2) 1W 3000VDC ISOLATION

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT <sup>9</sup> CURRENT(mA)		EFF (%) <sup>10</sup>	ISOLATION (VDC)	PACKAGE
				FULL LOAD	NO LOAD			
				MUS-03.303.3-3K	3.3			
MUS-0505-3K	5	5	200	274	26	73	3000	B
MUS-0509-3K	5	9	110	260	27	77	3000	B
MUS-0512-3K	5	12	84	253	26	79	3000	B
MUS-0515-3K	5	15	67	253	28	79	3000	B
MUS-1203.3-3K	12	3.3	300	112	11	74	3000	B
MUS-1205-3K	12	5	200	112	11	74	3000	B
MUS-1209-3K	12	9	110	105	11	79	3000	B
MUS-1212-3K	12	12	84	102	11	82	3000	B
MUS-1215-3K	12	15	67	102	12	82	3000	B
MUS-2403.3-3K	24	3.3	300	57	8	73	3000	B
MUS-2405-3K	24	5	200	57	8	73	3000	B
MUS-2409-3K	24	9	110	54	8	77	3000	B
MUS-2412-3K	24	12	84	54	8	77	3000	B
MUS-2415-3K	24	15	67	54	10	77	3000	B

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

## ● MECHANICAL DIMENSIONS

### PACKAGE "A"



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

NOTE: Pin Size is Tolerance 0.50Φ ±0.05mm

All Dimensions In mm(Inches)

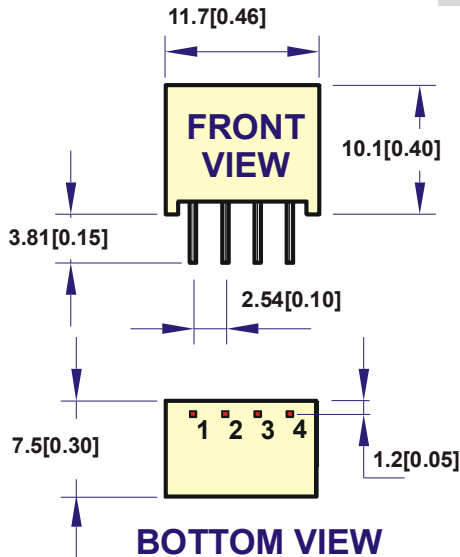
Tolerance .X or .XX= ±0.5mm

**All dimensions are in mm[inches]**

<sup>9</sup> NOMINAL INPUT VOLTAGE.

<sup>10</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

## PACKAGE "B"



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

NOTE: Pin Size is Tolerance 0.50Φ ±0.05mm

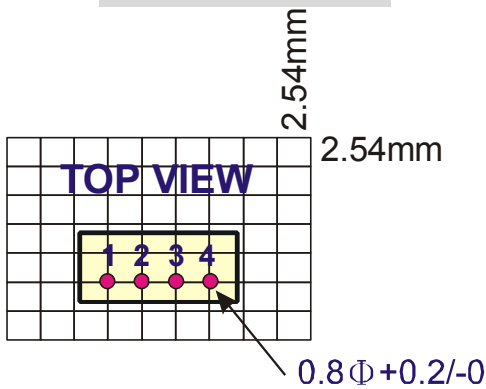
All Dimensions In mm(Inches)

Tolerance .X or .XX= ±0.5mm

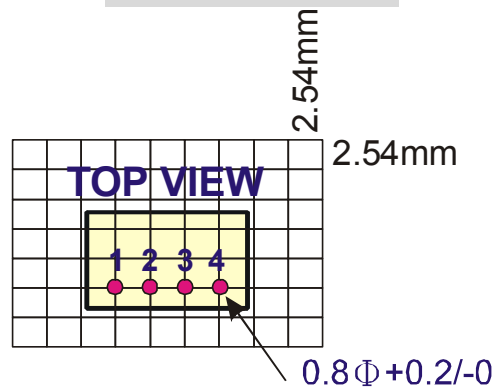
All dimensions are in mm[inches]

## RECOMMENDED FOOTPRINT DETAILS

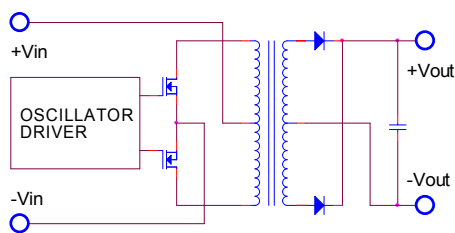
### PACKAGE "A"



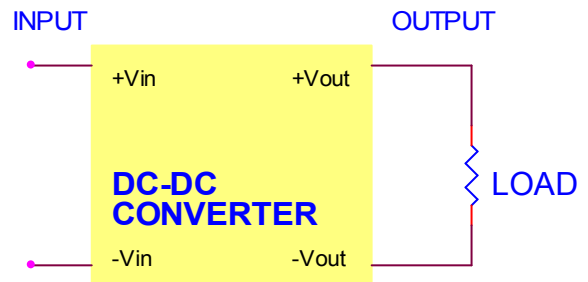
### PACKAGE "B"



## SIMPLIFIED SCHEMATIC



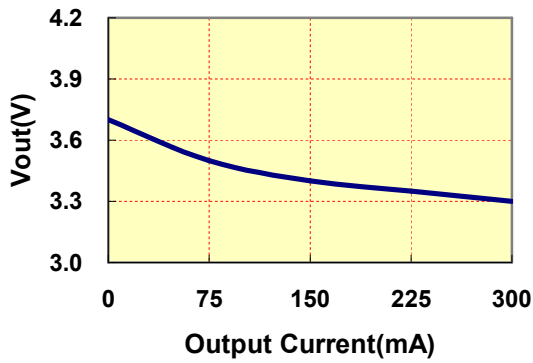
## TYPICAL APPLICATIONS



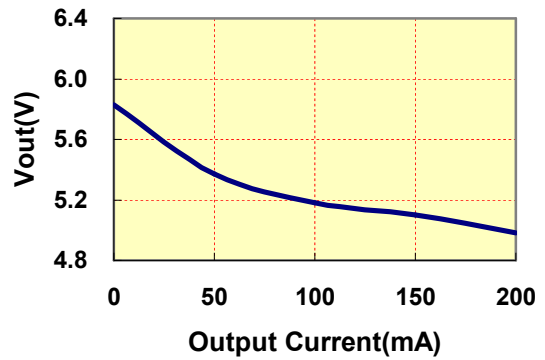
## ● TYPICAL PERFORMANCE CURVES

Specifications typical at  $t_a=25^\circ\text{C}$ , nominal input voltage, rated output current unless otherwise specified.

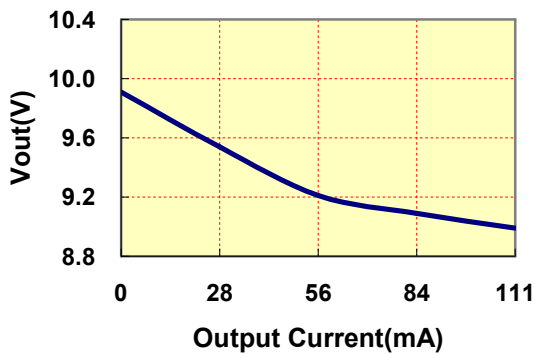
### VOUT VS LOAD(3.3Vout Models)



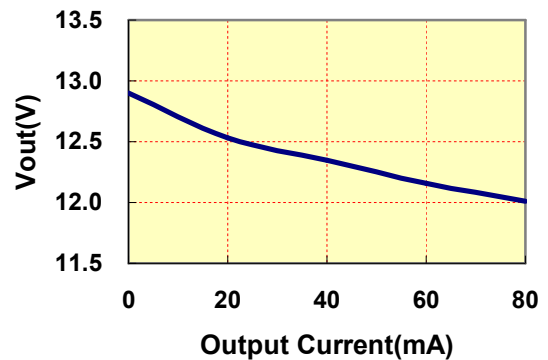
### VOUT VS LOAD(5Vout Models)



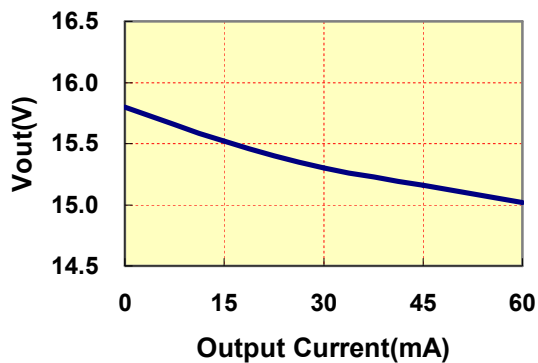
### VOUT VS LOAD(9Vout Models)



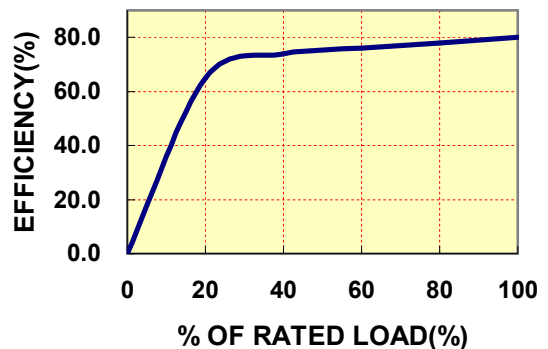
### VOUT VS LOAD(12Vout Models)



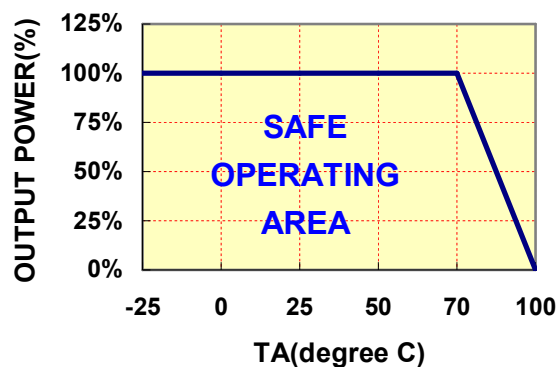
### VOUT VS LOAD(15Vout Models)



### EFFICIENCY VS LOAD



## DERATING CURVES



## ● INPUT FUSE SELECTION GUIDE

2.7-3.6V	4.5-5.5V	10.8-13.2V	21.6-26.4V	43.2-52.8V
INPUT VOLTAGE(VDC)	INPUT VOLTAGE(VDC)	INPUT VOLTAGE(VDC)	INPUT VOLTAGE(VDC)	INPUT VOLTAGE(VDC)
1200mA Slow-Blow Type	500mA Slow-Blow Type	300mA Slow-Blow Type	150mA Slow-Blow Type	100mA Slow-Blow Type

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

### MU SERIES APPLICATION NOTES:

#### EXTERNAL CAPACITANCE REQUIREMENTS:

Output filtering is required for operation. A minimum of 10 $\mu$ F is needed. Output capacitance may be increased for additional filtering, not to exceed 220 $\mu$ F.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 250KHz is required.

We Can Offer EMC-Filter According To EN55011/22 Class B.

#### Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

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### FOR MORE INFORMATION CALL:

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