

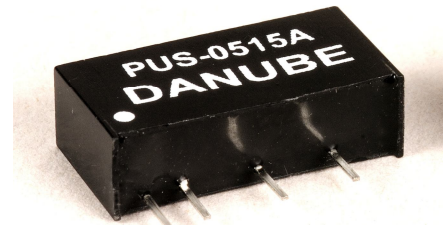
PU-L SERIES

1W UNREGULATED

DANUBE

FEATURES

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



OUTPUT SPECIFICATIONS

Voltage Setpoint Accuracy	+/-2% max
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW)	100mVp-p max
Line Regulation ¹	+/-1.2% max
Load Regulation ²	+/-8% max
Minimum Load	20% of Full Load
Short Circuit Protection	Momentary
Transient Response ⁴	100uS max

INPUT SPECIFICATIONS

Input Voltage Range	+/-10% max
Input Filter	Capacitor Typ
Input Reflected Ripple Current	50mA _{p-p} max
Protection	Fuse Recommended

GENERAL SPECIFICATIONS

Efficiency	70%-83%
Isolation Voltage ³	
Single/Dual	1500-3000 VDC min
Isolation Resistance	10 ⁹ ohms min
Isolation Capacitance	80pF max
Switching Frequency	100KHz min
MTBF ⁵	>2,000,000 Hours
Weight	2.1g Typ
Case Material	Non-Conductive Plastic
Case Size	19.6mm*6.1mm*10.2mm
	19.6mm*7.1mm*10.2mm
Conducted Emissions	EN55022 Class A
Radiated Emissions	EN55022 Class A

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-40 °C to +85 °C
Case Temperature	+95 °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.

¹ Line Regulation is for a 1.0% change in input Voltage.

² Load Regulation is for output load current change from 20% to 100%.

³ 1500VDC for 10 seconds,3000VDC for 3 seconds.

⁴ 25% Step Load Change.

⁵ 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 ⁶		EFF (%) ⁷	ISOLATION (VDC)	PACKAGE
				CURRENT(mA)				
				FULL LOAD	NO LOAD			
PUS-0505(A or B or E)L	5	5	200	283	40	71	1500	A or B or E
PUS-0509(A or B or E)L	5	9	111	257	40	78	1500	A or B or E
PUS-0512(A or B or E)L	5	12	84	253	40	79	1500	A or B or E
PUS-0515(A or B or E)L	5	15	67	253	40	79	1500	A or B or E
PUD-0505(A or B)L	5	+/-5	+/-100	278	40	72	1500	A or B
PUD-0512(A or B)L	5	+/-12	+/-42	253	40	79	1500	A or B
PUD-0515(A or B)L	5	+/-15	+/-34	260	40	77	1500	A or B
PUS-0909(A or B)L	9	9	111	148	25	75	1500	A or B
PUS-1205(A or B or E)L	12	5	200	112	15	74	1500	A or B or E
PUS-1209(A or B or E)L	12	9	111	107	11	78	1500	A or B or E
PUS-1212(A or B or E)L	12	12	84	105	15	79	1500	A or B or E
PUS-1215(A or B or E)L	12	15	67	102	12	82	1500	A or B or E
PUD-1205(A or B)L	12	+/-5	+/-100	112	15	74	1500	A or B
PUD-1212(A or B)L	12	+/-12	+/-42	105	15	79	1500	A or B
PUD-1215(A or B)L	12	+/-15	+/-34	101	15	83	1500	A or B
PUD-1515(A or B)L	15	+/-15	+/-34	87	11	77	1500	A or B
PUS-2405CL	24	5	200	57	9	73	1500	C
PUS-2409CL	24	9	111	56	8	75	1500	C
PUS-2412CL	24	12	84	54	8	77	1500	C
PUS-2415CL	24	15	67	52	7	80	1500	C
PUS-2424CL	24	24	42	54	8	77	1500	C
PUD-2405CL	24	+/-5	+/-100	57	9	73	1500	C
PUD-2412CL	24	+/-12	+/-42	54	8	77	1500	C
PUD-2415CL	24	+/-15	+/-34	52	7	80	1500	C
PUD-4815CL	48	+/-15	+/-34	26	7	80	1500	C

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

ORDERING INFORMATION:

FOR EXAMPLE: **PUS-****A(SINGLE OUTPUT A PACKAGE)**
 PUD-**A(DUAL OUTPUT A PACKAGE)**
 PUS-**B(SINGLE OUTPUT B PACKAGE)**
 PUD-**B(DUAL OUTPUT B PACKAGE)**

⁶ NOMINAL INPUT VOLTAGE.

⁷ NOMINAL INPUT VOLTAGE, FULL LOAD.

● **SELECTION GUIDE(2)**
1W 1500VDC ISOLATION

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁸		EFF (%) ⁹	ISOLATION (VDC)	PACKAGE
				CURRENT(mA)				
				FULL LOAD	NO LOAD			
PUS-0505AYL	5	5	200	283	40	71	1500	AY
PUS-0509AYL	5	9	111	257	40	78	1500	AY
PUS-0512AYL	5	12	84	253	40	79	1500	AY
PUS-0515AYL	5	15	67	253	40	79	1500	AY
PUD-0505AYL	5	+/-5	+/-100	278	40	72	1500	AY
PUD-0512AYL	5	+/-12	+/-42	253	40	79	1500	AY
PUD-0515AYL	5	+/-15	+/-34	260	40	77	1500	AY
PUS-0909AYL	9	9	111	148	25	75	1500	AY
PUS-1205AYL	12	5	200	112	15	74	1500	AY
PUS-1209AYL	12	9	111	107	11	78	1500	AY
PUS-1212AYL	12	12	84	105	15	79	1500	AY
PUS-1215AYL	12	15	67	102	12	82	1500	AY
PUD-1205AYL	12	+/-5	+/-100	112	15	74	1500	AY
PUD-1212AYL	12	+/-12	+/-42	105	15	79	1500	AY
PUD-1215AYL	12	+/-15	+/-34	101	15	83	1500	AY
PUS-2405CYL	24	5	200	57	9	73	1500	CY
PUS-2409CYL	24	9	111	56	8	75	1500	CY
PUS-2412CYL	24	12	84	54	8	77	1500	CY
PUS-2415CYL	24	15	67	52	7	80	1500	CY
PUS-2424CYL	24	24	42	54	8	77	1500	CY
PUD-2405CYL	24	+/-5	+/-100	57	9	73	1500	CY
PUD-2412CYL	24	+/-12	+/-42	54	8	77	1500	CY
PUD-2415CYL	24	+/-15	+/-34	52	7	80	1500	CY

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

ORDERING INFORMATION:

FOR EXAMPLE: PUS-**AY(SINGLE OUTPUT AY PACKAGE)**

PUD-**AY(DUAL OUTPUT AY PACKAGE)**

PUS-**CY(SINGLE OUTPUT CY PACKAGE)**

PUD-**CY(DUAL OUTPUT CY PACKAGE)**

⁸ NOMINAL INPUT VOLTAGE.

⁹ NOMINAL INPUT VOLTAGE, FULL LOAD.

● **SELECTION GUIDE(3)**
1W 3000VDC ISOLATION

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ¹⁰ CURRENT(mA)		EFF (%) ¹¹	ISOLATION (VDC)	PACKAGE
				FULL LOAD	NO LOAD			
				PUS-0505L-3K	5			
PUS-0509L-3K	5	9	111	257	40	78	3000	B
PUS-0512L-3K	5	12	84	255	40	78	3000	B
PUS-0515L-3K	5	15	67	253	40	79	3000	B
PUD-0505L-3K	5	+/-5	+/-100	274	40	73	3000	B
PUD-0512L-3K	5	+/-12	+/-42	253	40	79	3000	B
PUD-0515L-3K	5	+/-15	+/-34	253	40	79	3000	B
PUS-1205L-3K	12	5	200	112	15	74	3000	B
PUS-1209L-3K	12	9	111	107	11	78	3000	B
PUS-1212L-3K	12	12	84	105	15	79	3000	B
PUS-1215L-3K	12	15	67	103	11	81	3000	B
PUD-1205L-3K	12	+/-5	+/-100	112	15	74	3000	B
PUD-1212L-3K	12	+/-12	+/-42	105	15	79	3000	B
PUD-1215L-3K	12	+/-15	+/-34	101	15	83	3000	B
PUS-03.305L-3K	3.3	5	200	378	35	80	3000	D
PUS-2405L-3K	24	5	200	57	9	73	3000	D
PUS-2409L-3K	24	9	111	56	8	75	3000	D
PUS-2412L-3K	24	12	84	54	8	77	3000	D
PUS-2415L-3K	24	15	67	52	7	80	3000	D
PUD-2405L-3K	24	+/-5	+/-100	57	9	73	3000	D
PUD-2412L-3K	24	+/-12	+/-42	54	8	77	3000	D
PUD-2415L-3K	24	+/-15	+/-34	52	7	80	3000	D

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

ORDERING INFORMATION:

FOR EXAMPLE: PUS-*-3K(SINGLE OUTPUT 3000V ISOLATION)**

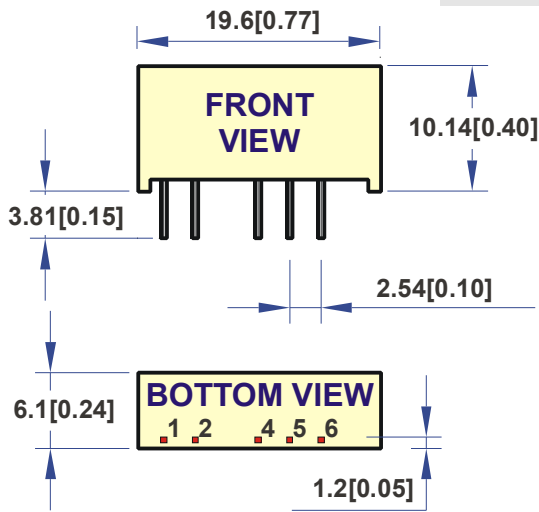
PUD-*-3K(DUAL OUTPUT 3000V ISOLATION)**

¹⁰ NOMINAL INPUT VOLTAGE.

¹¹ NOMINAL INPUT VOLTAGE, FULL LOAD.

MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

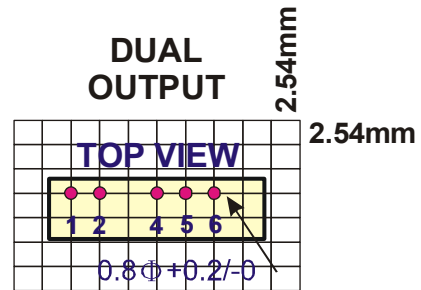
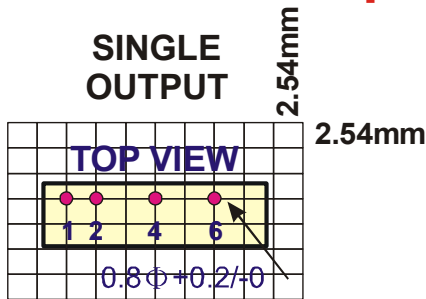
PACKAGE "A"



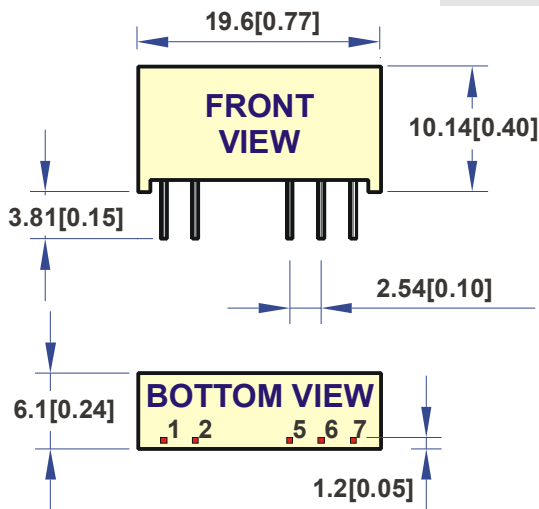
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

NOTE:
 Pin Size is Tolerance $0.50\Phi \pm 0.05\text{mm}$
 All Dimensions In mm(Inches)
 Tolerance .X or .XX= $\pm 0.5\text{mm}$

All dimensions are in mm[inches]



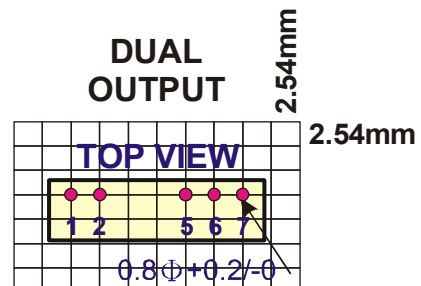
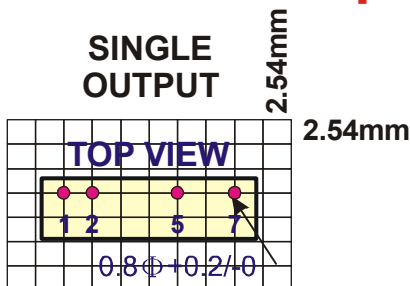
PACKAGE "B"



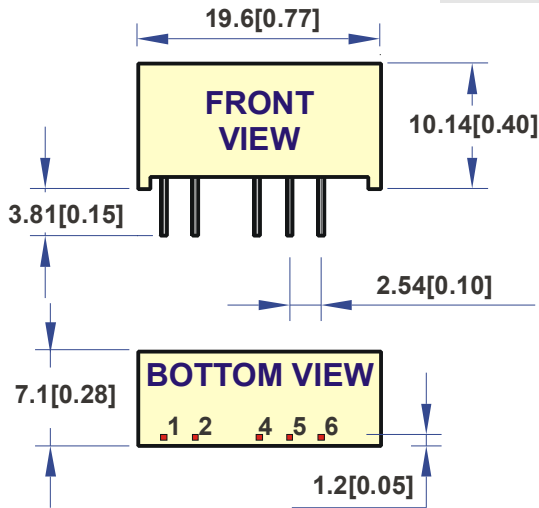
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	COMMON
7	+Vout	+Vout

NOTE:
 Pin Size is Tolerance $0.50\Phi \pm 0.05\text{mm}$
 All Dimensions In mm(Inches)
 Tolerance .X or .XX= $\pm 0.5\text{mm}$

All dimensions are in mm[inches]



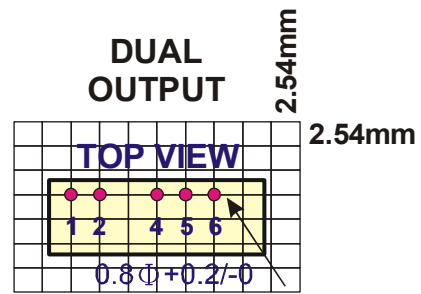
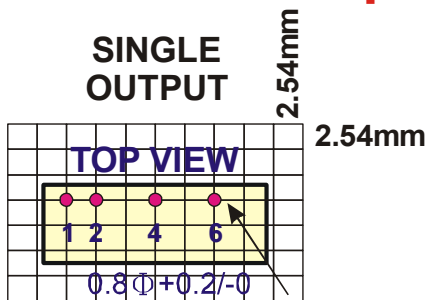
PACKAGE "C"



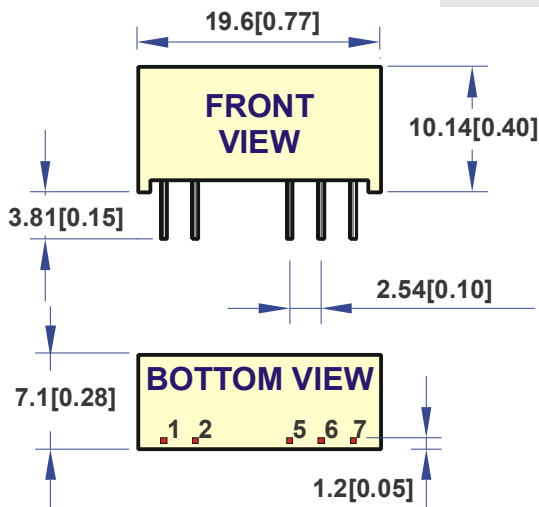
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

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]



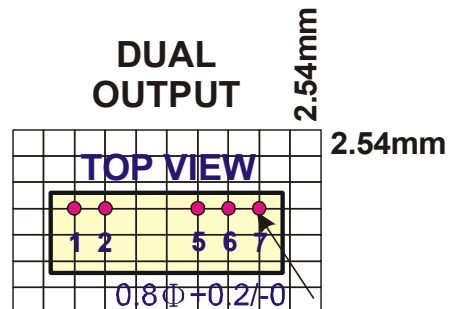
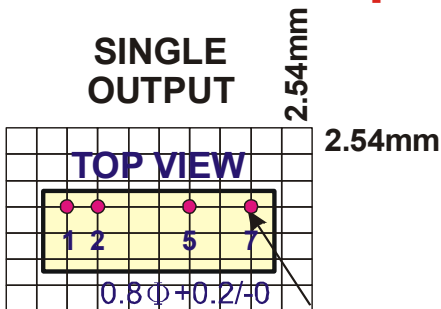
PACKAGE "D"



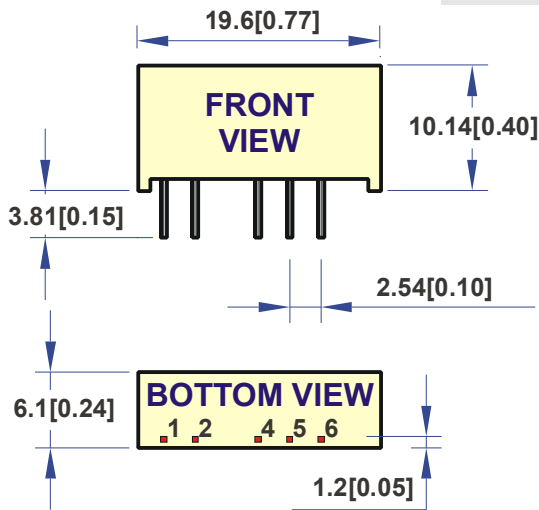
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
5	-Vout	-Vout
6	NP	COMMON
7	+Vout	+Vout

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]



PACKAGE "E"



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

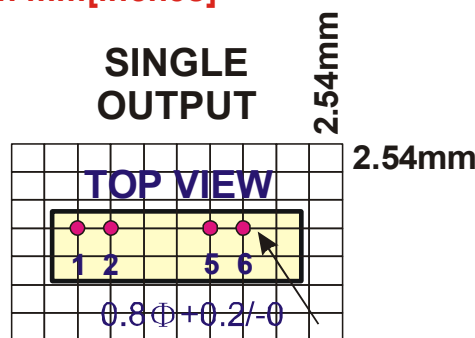
NOTE:

Pin Size is Tolerance 0.50Φ ±0.05mm

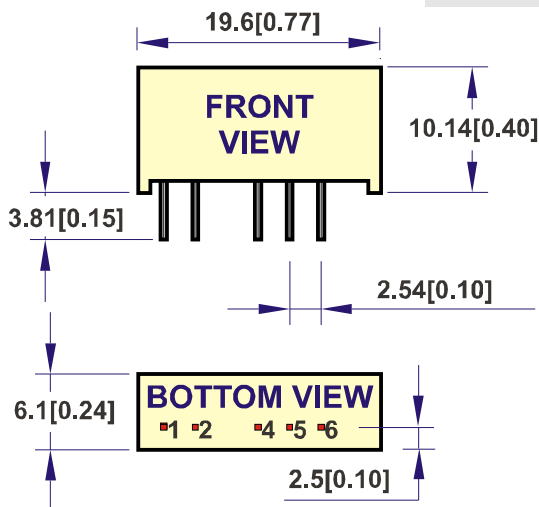
All Dimensions In mm(Inches)

Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



PACKAGE "AY"



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

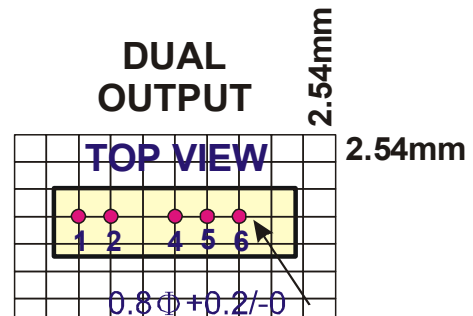
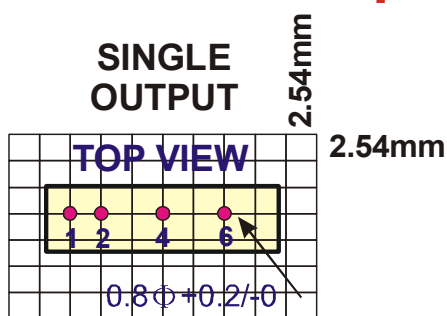
NOTE:

Pin Size is Tolerance 0.50Φ ±0.05mm

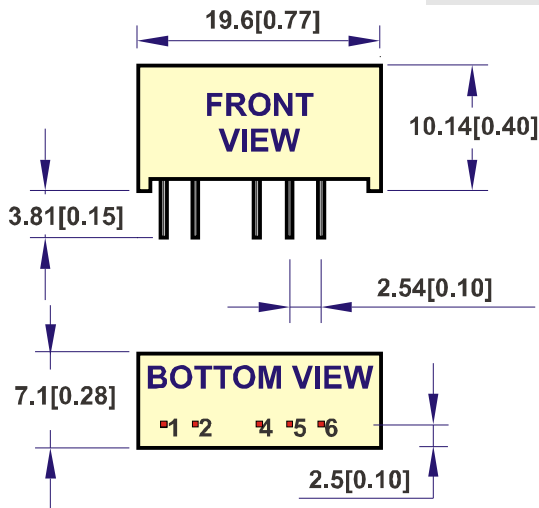
All Dimensions In mm(Inches)

Tolerance .X or .XX= ±0.5mm

All dimensions are in mm[inches]



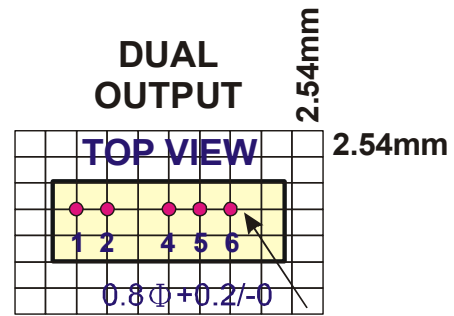
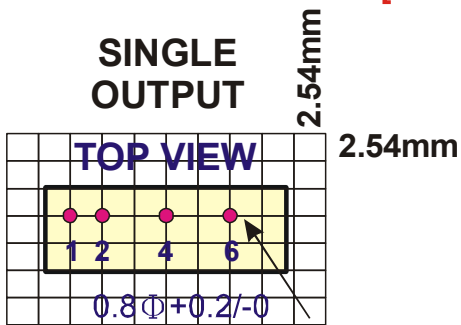
PACKAGE "CY"



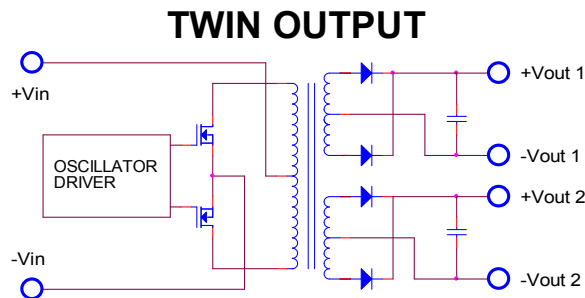
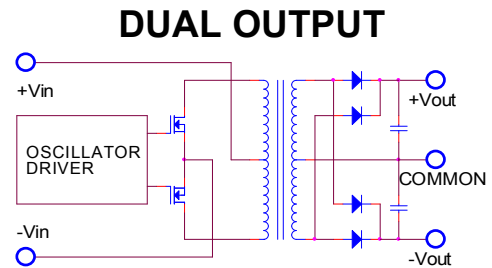
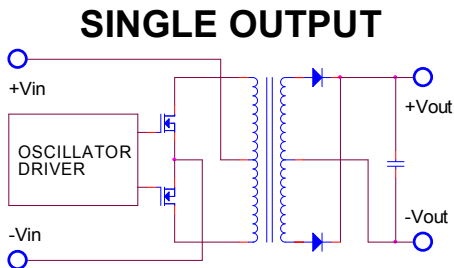
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout
5	NP	COMMON
6	+Vout	+Vout

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]

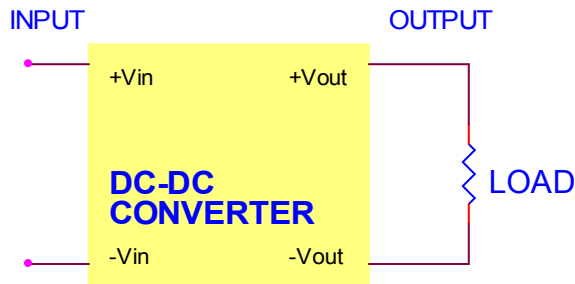


● SIMPLIFIED SCHEMATIC

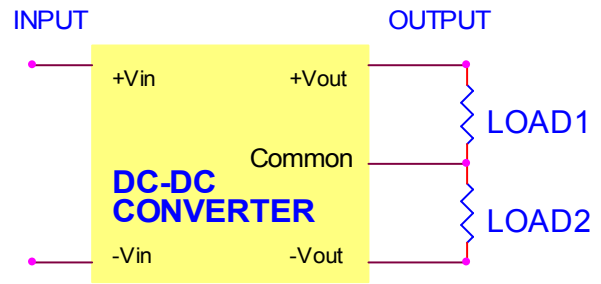


● TYPICAL APPLICATIONS

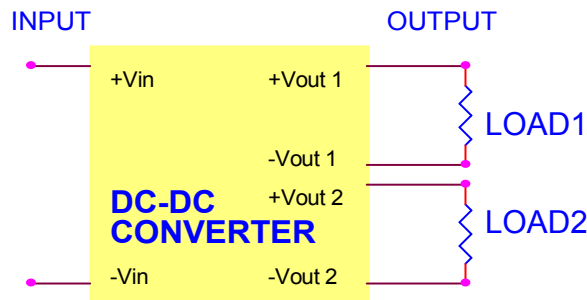
SINGLE OUTPUT



DUAL OUTPUT



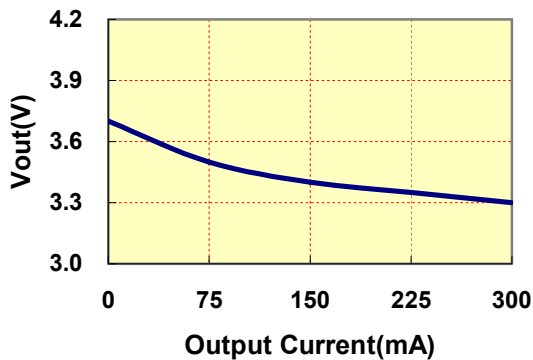
TWIN OUTPUT



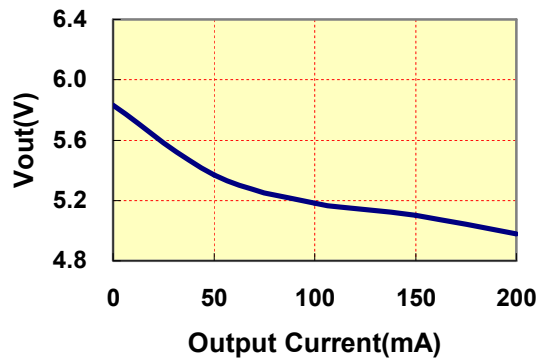
● TYPICAL PERFORMANCE CURVES

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

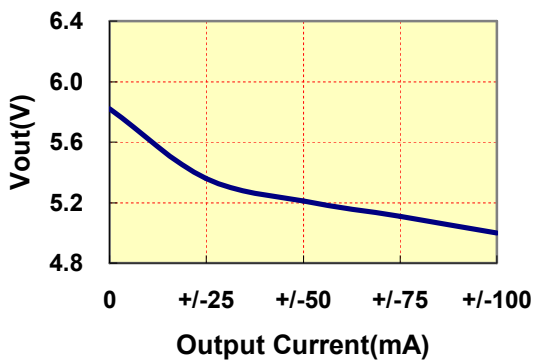
VOUT VS LOAD(3.3Vout Models)



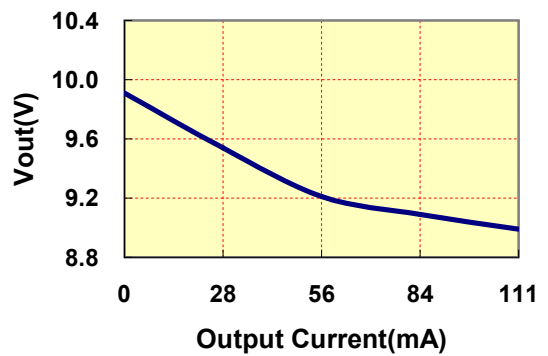
VOUT VS LOAD(5Vout Models)



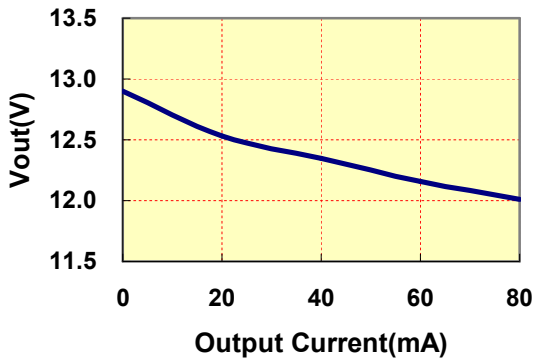
VOUT VS LOAD(+/-5Vout Models)



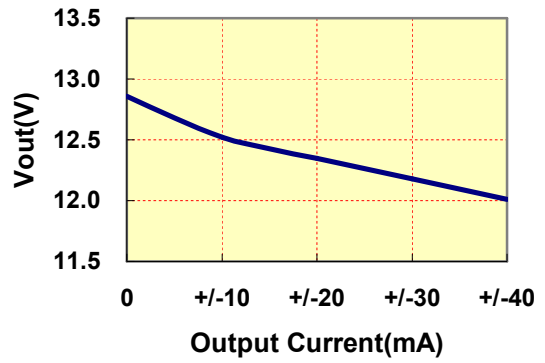
VOUT VS LOAD(9Vout Models)



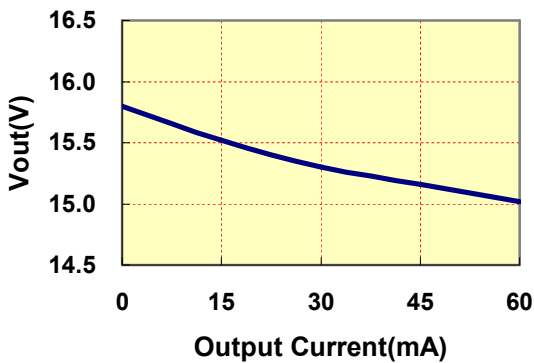
VOUT VS LOAD(12Vout Models)



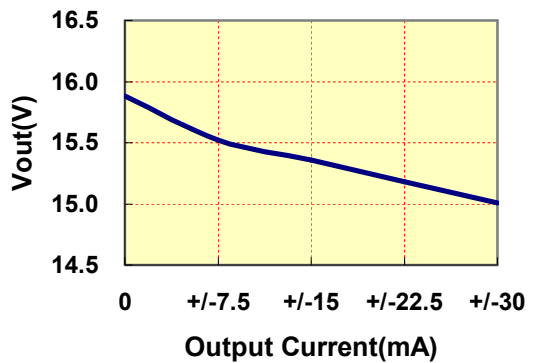
VOUT VS LOAD(+/- 12Vout Models)



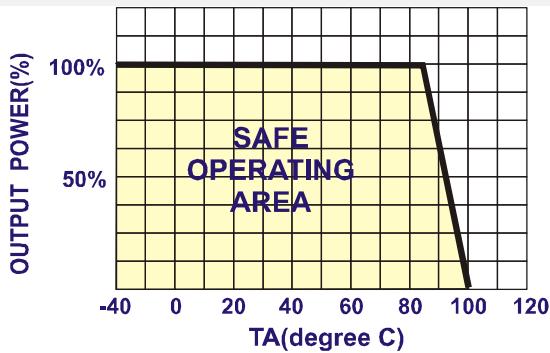
VOUT VS LOAD(15Vout Models)



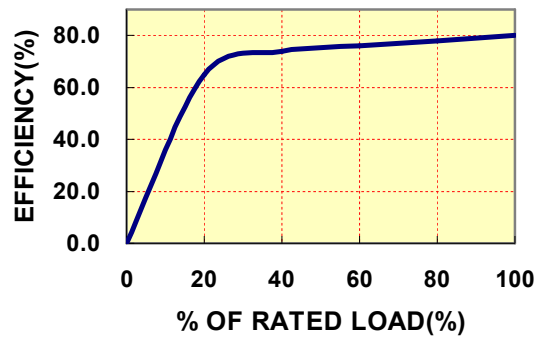
VOUT VS LOAD(+/- 15Vout Models)



DERATING CURVE



EFFICIENCY VS LOAD



● INPUT FUSE SELECTION GUIDE

4.5-5.5V (VDC)	10.8-13.2V(VDC)	13.5-16.5V(VDC)	21.6-26.4V(VDC)	43.2-52.8V(VDC)
INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE
500mA Slow-Blow Type	200mA Slow-Blow Type	200mA Slow-Blow Type	100mA Slow-Blow Type	80mA Slow-Blow Type

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

PU-L SERIES APPLICATION NOTES:

EXTERNAL CAPACITANCE REQUIREMENTS:

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

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5ohm 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.

FOR MORE INFORMATION CALL:

Danube Enterprise Co., Ltd.

Tel: 886-7-3755165

Fax: 886-7-3755330

E-mail: danube@ms10.hinet.net

Home Page

<http://www.danube.com.tw>
