



**COIL TECHNOLOGY  
CORPORATION**

## **Multi Output 1W & 2W DC/DC CONVERTERS**

<b>SERIES</b>	<b>DESCRIPTION</b>	<b>Page</b>
<b>CHA (1W)</b>	<b>8 pin DIP package 2 outputs 1kv isolation; 2kv option</b>	<b>2</b>
<b>MSA (1W)</b>	<b>7 pin SIL package 2 outputs 1kv isolation</b>	<b>4</b>
<b>MDA (1W)</b>	<b>14 pin DIP package 2 outputs 1kv isolation</b>	<b>6</b>
<b>MDRA (1W)</b>	<b>14 pin DIP package 2 regulated outputs 1kv isolation</b>	<b>8</b>
<b>MSAH (2W)</b>	<b>7 pin DIL package 2 outputs 1kv isolation</b>	<b>10</b>

**ELECTRICAL SPECIFICATIONS: UNREGULATED**

- Input voltage range -----  $\pm 10\%$
- Input filter----- Capacitor.
- Output voltage accuracy -----  $\pm 5\%$
- Line voltage regulation ----- 1.2%Typ./1%Of Vin
- Load voltage regulation (10% ~ 100%)
  - 3.3V Output Types----- 20% Max.
  - 5V Output Types----- 15% Max.
  - 9V,12V and 15V Output Types----- 10% Max.
- Ripple&noise/20MHZ BW ----- 75mV P-P Max.
- Efficiency at full load----- 70% Min.
- Isolation voltage ----- 1000 Vdc/1sec.
- Short circuit protection ----- 1.0 Second
- Operating temperature range -----  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Storage temperature range -----  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$



\*Note: Measured @ 25 With The Condition of  
Vin = Nominal And Full Load.

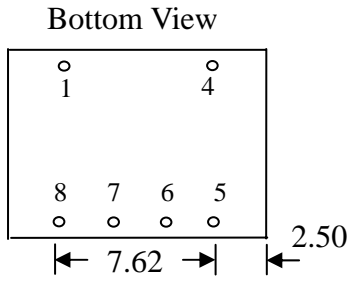
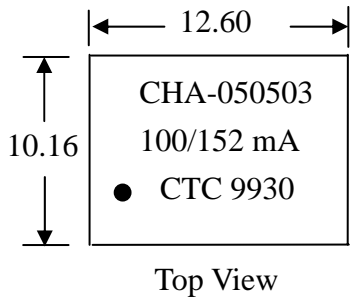


**Note: Add H after P/N for isolation 2000Vdc**

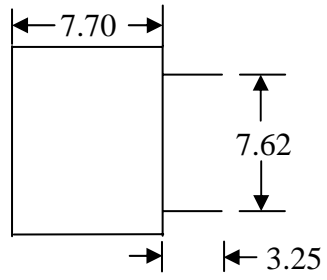
**Selection Guide**

Part Number	Input Voltage (VDC)	Output VO1 Voltage (VDC)	Output VO2 Voltage (VDC)	Output VO1/VO2 Current (mA)	Efficiency (%)
CHA-050503	5	5	3.3	100/152	70
CHA-050505	5	5	5	100/100	70
CHA-050509	5	5	9	100/56	75
CHA-050512	5	5	12	100/42	75
CHA-050515	5	5	15	100/33	78
CHA-050909	5	9	9	56/56	75
CHA-051212	5	12	12	42/42	78
CHA-051515	5	15	15	33/33	80
CHA-120503	12	5	3.3	100/152	70
CHA-120505	12	5	5	100/100	70
CHA-120509	12	5	9	100/56	75
CHA-120512	12	5	12	100/42	75
CHA-120515	12	5	15	100/33	78
CHA-120909	12	9	9	56/56	75
CHA-121212	12	12	12	42/42	78
CHA-121515	12	15	15	33/33	80
CHA-240503	24	5	3.3	100/152	70
CHA-240505	24	5	5	100/100	70
CHA-240509	24	5	9	100/56	75
CHA-240512	24	5	12	100/42	75
CHA-240515	24	5	15	100/33	78

# Package Style And Pinning (mm)



PIN	FUNCTION
1	-VIN
4	+VIN
5	+VO1
6	-VO1
7	+VO2
8	-VO2



\*Note : Terminal ----- 0.51 X 0.25 Flat Pin  
TOL. : ±0.25mm  
UNIT : mm

**ELECTRICAL SPECIFICATIONS: UNREGULATED**

- Input voltage range -----  $\pm 10\%$
- Input filter----- Capacitor.
- Output voltage accuracy -----  $\pm 5\%$
- Line voltage regulation ----- 1.2%Typ./1%Of Vin
- Load voltage regulation (10% ~ 100%)-  
5V Output Types----- 15% Max.  
9V,12V and 15V Output Types----- 10% Max.
- Ripple&noise/20MHZ BW ----- 75mV P-P Max.
- Efficiency at full load----- 70% Min.
- Isolation voltage ----- 1000Vdc/1sec.
- Short circuit protection ----- 1.0 Second
- Operating temperature range -----  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Storage temperature range -----  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Isolation resistance ----- 10G  $\Omega$  Min.
- Isolation capacity ----- 90pF Typ.
- Package weight----- 2.2g
- Meet CE EN-60950-1 Certified、CE  
EN-60601-1 Certified



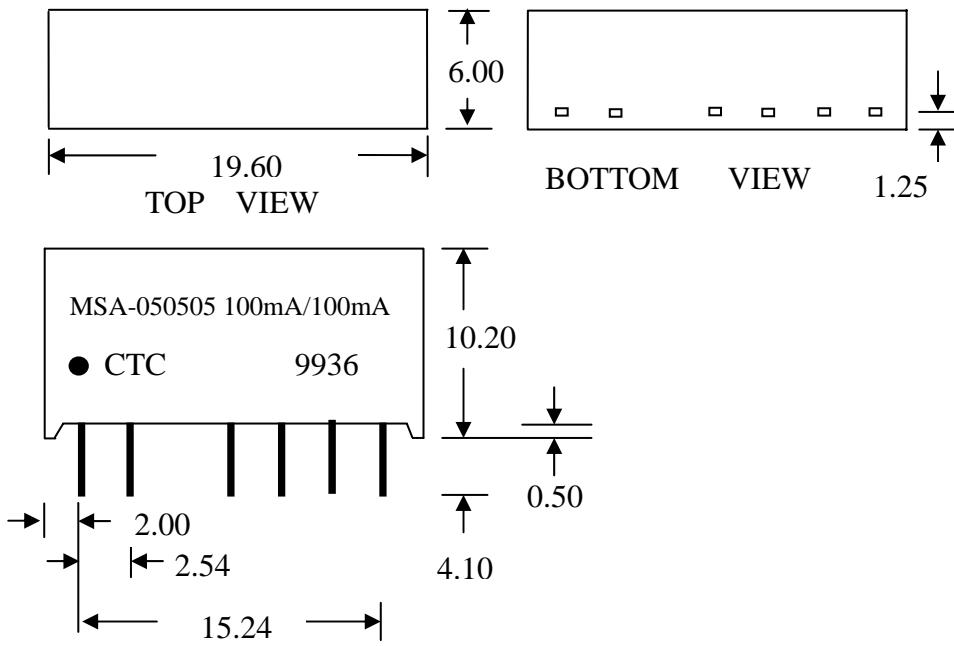
\*Note: Measured @  $25^{\circ}\text{C}$  With The Condition of Vin = Nominal And Full Load.

**Note: They are also available for Vin = 15Vdc and 24Vdc**

**Selection Guide**

Part Number	Input Voltage (VDC)	Output VO1 Voltage (VDC)	Output VO2 Voltage (VDC)	Output vO1/vO2 Current (mA)	Efficiency (%)
MSA-050503	5	5	3.3	100/152	70 %
MSA-050505	5	5	5	100/100	70
MSA-050509	5	5	9	100/55	75
MSA-050512	5	5	12	100/42	75
MSA-050515	5	5	15	100/32	78
MSA-050909	5	9	9	55/55	75
MSA-051212	5	12	12	42/42	78
MSA-051515	5	15	15	33/33	80
MSA-120503	12	5	3.3	100/152	70
MSA-120505	12	5	5	100/100	70
MSA-120509	12	5	9	100/55	75
MSA-120512	12	5	12	100/42	75
MSA-120515	12	5	15	100/33	78
MSA-120909	12	9	9	55/55	75
MSA-121212	12	12	12	42/42	78
MSA-121515	12	15	15	33/33	80

## Package Style And Pinning (mm)



PIN	FUNCTION
1	+VIN
2	-VIN
4	+VO1
5	-VO1
6	+VO2
7	-VO2

\*Note : Terminal ----- 0.51 X 0.25 Flat Pin

TOL. :  $\pm 0.25$ mm

UNIT : mm

**ELECTRICAL SPECIFICATIONS: UNREGULATED**

- Input voltage range -----  $\pm 10\%$
- Input filter----- Capacitor.
- Output voltage accuracy -----  $\pm 5\%$
- Line voltage regulation ----- 1.2%Typ./1%Of Vin
- Load voltage regulation (10% ~ 100%)-  
5V Output Types----- 15% Max.  
9V,12V and 15V Output Types----- 10% Max.
- Ripple&noise/20MHZ BW ----- 75mV P-P Max.
- Efficiency at full load----- 70% Min.
- Isolation voltage ----- 1000 Vdc/1sec.
- Short circuit protection ----- 1.0 Second
- Operating temperature range -----  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Storage temperature range -----  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Meet CE EN-60950-1 Certified、CE  
EN-60601-1 Certified



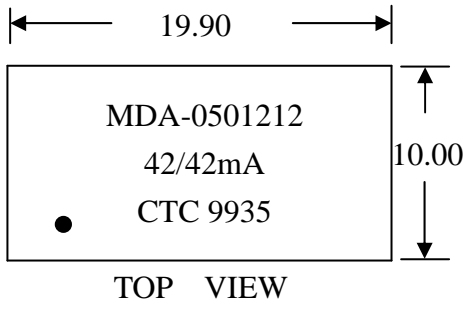
\*Note: Measured @  $25^{\circ}\text{C}$  With The Condition of  
Vin = Nominal And Full Load.

**Note: They are also available for Vin = 15Vdc and 24Vdc**

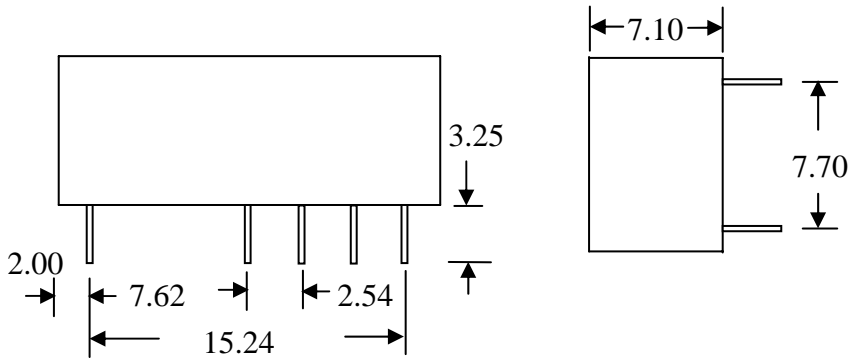
**Selection Guide**

Part Number	Input Voltage (VDC)	Output VO1 Voltage (VDC)	Output VO2 Voltage (VDC)	Output VO1/VO2 Current (mA)	Efficiency (%)
MDA-050503	5	5	3.3	100/152	70
MDA-050505	5	5	5	100/100	70
MDA-050509	5	5	9	100/55	75
MDA-050512	5	5	12	100/42	75
MDA-050515	5	5	15	100/33	78
MDA-050909	5	9	9	55/55	75
MDA-051212	5	12	12	42/42	78
MDA-051515	5	15	15	33/33	80
MDA-120503	12	5	3.3	100/152	70
MDA-120505	12	5	5	100/100	70
MDA-120509	12	5	9	100/55	75
MDA-120512	12	5	12	100/42	75
MDA-120515	12	5	15	100/33	78
MDA-120909	12	9	9	55/55	75
MDA-121212	12	12	12	42/42	78
MDA-121515	12	15	15	33/33	80

# Package Style And Pinning (mm)



PIN	FUNCTION
1	-VIN
7	NC
8	-VO2
9	+VO2
10	-VO1
11	+VO1
14	+VIN



\*Note : Terminal ----- 0.51 X 0.25 Flat Pin

TOL. :  $\pm 0.25$ mm

UNIT : mm

**ELECTRICAL SPECIFICATIONS: REGULATED**

- Input voltage range -----  $\pm 5\%$
- Input voltage range(option)----- Capacitor
- Output voltage accuracy -----  $\pm 5\%$
- Line voltage regulation ----- 1.0% Max.
- Load voltage regulation ----- 1.0% Max.
- Ripple&noise/20MHZ BW ----- 100mV P-P Max.
- Efficiency at full load----- 52% Min.
- Isolation voltage----- 1000 Vdc/1sec.
- Short circuit protection ----- 1.0 Second
- Operating temperature range -----  $-40^{\circ}\text{C}$  to  $71^{\circ}\text{C}$
- Storage temperature range -----  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Isolation resistance ----- 10G  $\Omega$  Min.
- Isolation capacity ----- 80pF Typ.
- Package weight----- 2.9g
- Meet CE EN-60950-1 Certified、CE EN-60601-1 Certified

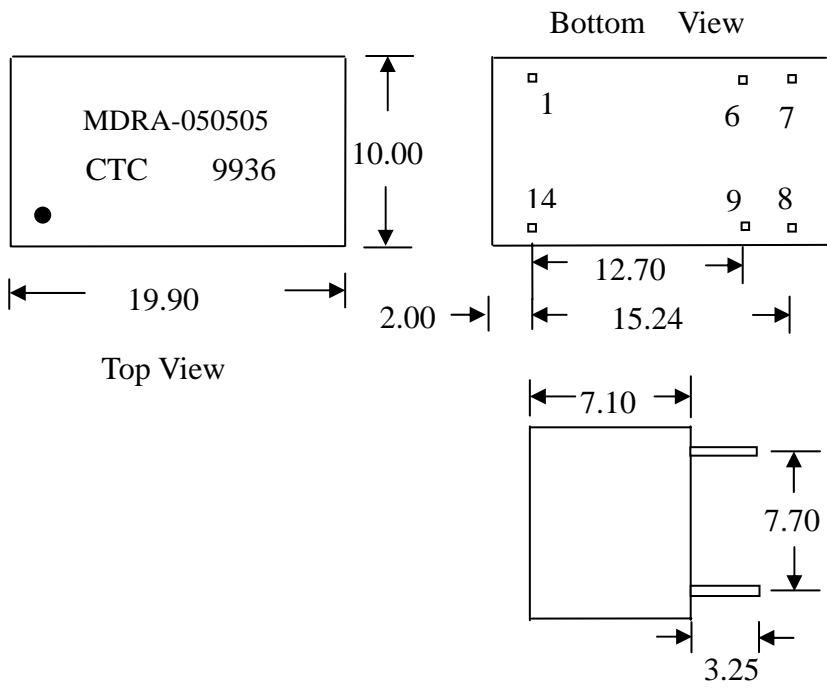


**Note : 1.Please add a tantalex capacitor 4.7uF/25V at the output each when application**  
**2. Add/T after P/N for input voltage----- $\pm 10\%$**

Selection Guide				
Part Number	Input Voltage (VDC)	Output VO1/VO2 Voltage (VDC)	Output VO1/VO2 Current (mA)	Efficiency (%)
MDRA-050505	5	5/5	100/100	53
MDRA-050909	5	9/9	55/55	58
MDRA-051212	5	12/12	42/42	62
MDRA-051515	5	15/15	33/33	65
MDRA-120505	12	5/5	100/100	53
MDRA-120909	12	9/9	55/55	58
MDRA-121212	12	12/12	42/42	62
MDRA-121515	12	15/15	33/33	65
MDRA-150505	15	5/5	100/100	53
MDRA-150909	15	9/9	55/55	58
MDRA-151212	15	12/12	42/42	62
MDRA-151515	15	15/15	33/33	65
MDRA-240505	24	5/5	100/100	53
MDRA-240909	24	9/9	55/55	58
MDRA-241212	24	12/12	42/42	62
MDRA-241515	24	15/15	33/33	65



# Package Style And Pinning (mm)



PIN	FUNCTION
1	-VIN
6	+VO1
7	-VO1
8	-VO2
9	+VO2
14	+VIN

\*Note : Terminal ----- 0.51 X 0.25 Flat Pin  
 TOL :  $\pm 0.25$ mm  
 UNIT : mm

**ELECTRICAL SPECIFICATIONS: UNREGULATED**

- Input voltage range -----  $\pm 10\%$
- Input filter----- Capacitor.
- Output voltage accuracy -----  $\pm 5\%$
- Line voltage regulation ----- 1.2%Typ./1%Of Vin
- Load voltage regulation (10% ~ 100%)-  
5V Output Types----- 15% Max.  
9V,12V and 15V Output Types----- 10% Max.
- Ripple&noise/20MHZ BW ----- 150mV P-P Max.
- Efficiency at full load----- 70% Min.
- Isolation voltage ----- 1000 Vdc/1sec.
- Short circuit protection ----- 1.0 Second
- Operating temperature range -----  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$
- Storage temperature range -----  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Isolation resistance ----- 10G  $\Omega$
- Isolation capacity ----- 56pF Typ.
- Package weight----- 2.9g
- Meet CE EN-60950-1 Certified、CE  
EN-60601-1 Certified



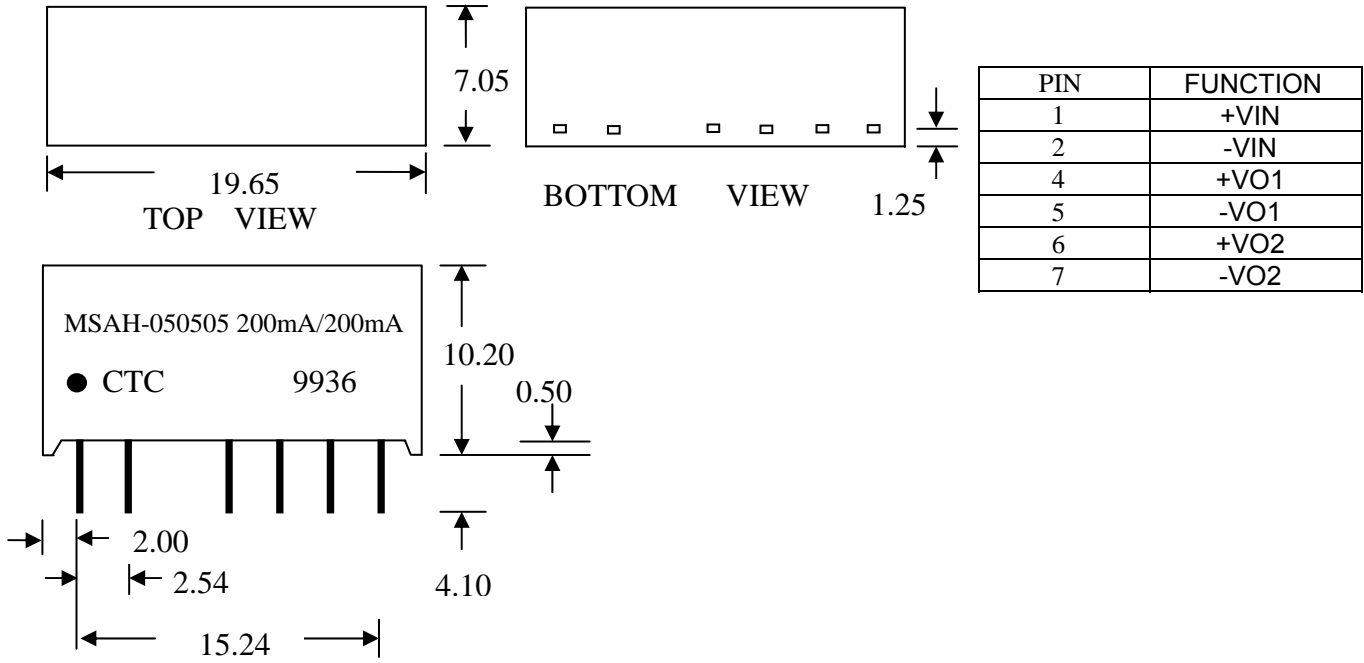
Note: Measured @  $25^{\circ}\text{C}$  With The Condition of  
Vin = Nominal And Full Load.

**Note : They are also available for Vin=15Vdc and 24Vdc.**

**Selection Guide**

Model Number	Input Voltage (VDC)	Output VO1 Voltage (VDC)	Output VO2 Voltage (VDC)	Output VO1/VO2 Voltage (VDC)	Efficiency (%)
MSAH-050505	5	5	5	200/200	70
MSAH-050509	5	5	9	200/111	75
MSAH-050512	5	5	12	200/84	75
MSAH-050515	5	5	15	200/66	78
MSAH-050909	5	9	9	111/111	75
MSAH-051212	5	12	12	84/84	78
MSAH-051515	5	15	15	66/66	80
MSAH-120505	12	5	5	200/200	70
MSAH-120509	12	5	9	200/111	75
MSAH-120512	12	5	12	200/84	75
MSAH-120515	12	5	15	200/66	78
MSAH-120909	12	9	9	111/111	75
MSAH-121212	12	12	12	84/84	78
MSAH-121515	12	15	15	66/66	80

## Package Style And Pinning (mm)



\*Noe : Terminal ----- 0.51 X 0.25 Flat Pin  
 TOL. :  $\pm 0.25$ mm  
 UNIT : mm