

## PCB-MOUNT DC-DC CONVERTER ENCAPSULATED MODULES DIP PACKAGE 1W UNREGULATED SINGLE & DUAL OUTPUT DHSA010 SERIES



### FEATURES:

- SINGLE IN LINE PACKAGE
- HIGH EFFICIENCY
- NO HEATSINK REQUIRED
- NO EXTERNAL COMPONENTS REQUIRED
- INTERNAL FILTERING
- UL-94V0 PACKAGE MATERIAL
- RoHS COMPLIANT

### SPECIFICATION

#### INPUT SPECIFICATION

**Input Range:** +/-10% max. See Ratings Chart.

**Input Current:** Various with input range and load.  
See Ratings Chart.

**Input Filter:** Capacitor Type.

**Isolation Voltage:** 3000VDC min.

**Isolation Resistance:**  $10^9$  ohm min.

**Isolation Capacitance:** 80pF max.

**EMI:** Meet Conducted and Radiated EN550022 Class A.

#### OUTPUT SPECIFICATION

**Output Voltage:** See Ratings Chart.

**Output Current:** See Ratings Chart.

**Voltage Setpoint Accuracy:**  $\pm 2.0\%$  max.

**Line Regulation:**  $\pm 1.2\%$  max.

**Load Regulation:**  $\pm 8\%$  max.

**Minimum Load:** 10% of Full load.

**Noise & Ripple (20MHz BW):** 50mVp-p max.

**Short Circuit Protection:** Momentary.

#### GENERAL SPECIFICATION

**Efficiency:** 70-85% min. See Ratings Chart.

**Switching Frequency:** 100KHz min

**Transient Response:** 100uS max. at 25% step load change.

**Case:** Non-Conductive Plastic.

**Operating Temperature:** -40°C to +71°C.

**Case Temperature:** +95°C max.

**Storage Temperature:** -55°C to +125°C.

**Cooling:** Free-Air convection.

**Humidity:** 95% max.

**MTBF:** >1,800,000 hours. MIL-HDBK-217F @25°C.

**NOTE:** (1) All measurements are at nominal line, full load, and +25°C unless otherwise specified.

(2) Ripple & Noise: Measured with 1uF ceramic capacitor connected to the output pins.

(3) Line Regulation is for a 1.0% change in input Voltage.

(4) Load Regulation is for output load current change from 20% to 100%.

(5) 3000VDC for 3 seconds.

(6) Due to requests in market and advances in technology, specifications subject to change without notice.

# INPUT/OUTPUT & VOLTAGE/ CURRENT RATINGS CHART

2009/07/22

## SINGLE OUTPUT

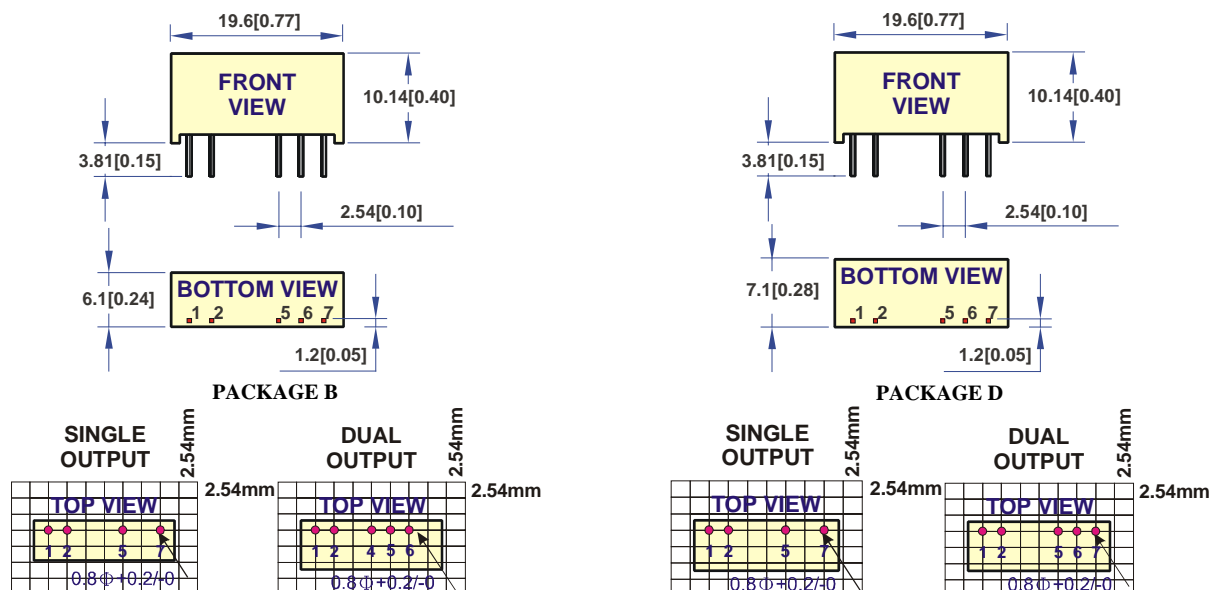
MODEL NO.	INPUT Vdc	INPUT CURRENT		OUTPUT VO1(Vdc)	OUTPUT VO1(mA)	EFF(%)	Isolation	Package
		N. L. (mA)	F.L.					
DHSA010-3.3A-S050200	3.3	35	378	5	200	80	3000	D
DHSA010-05A-S033300	5	21	274	3.3	300	73	3000	B
DHSA010-05A-S050200	5	21	283	5	200	71	3000	B
DHSA010-05A-S090111	5	25	257	9	111	78	3000	B
DHSA010-05A-S120084	5	28	255	12	84	78	3000	B
DHSA010-05A-S150067	5	28	253	15	67	79	3000	B
DHSA010-12A-S033300	12	11	112	3.3	300	74	3000	B
DHSA010-12A-S050200	12	11	112	5	200	74	3000	B
DHSA010-12A-S090111	12	11	107	9	111	78	3000	B
DHSA010-12A-S120084	12	10	102	12	84	82	3000	B
DHSA010-12A-S150067	12	11	103	15	67	81	3000	B
DHSA010-24A-S033300	24	9	57	3.3	300	73	3000	D
DHSA010-24A-S050200	24	9	57	5	200	73	3000	D
DHSA010-24A-S090111	24	8	56	9	111	75	3000	D
DHSA010-24A-S120084	24	8	54	12	84	77	3000	D
DHSA010-24A-S150067	24	10	52	15	67	80	3000	D

## DUAL OUTPUT

MODEL NO.	INPUT Vdc	INPUT CURRENT		OUTPUT (Vdc)		OUTPUT (mA)		EFF (%)	Isolation	Package
		N. L. (mA)	F.L.	+VO1	-VO2	+VO1	-VO2			
DHSA010-05A-D050E	5	21	274	+5	-5	+100	-100	73	3000	B
DHSA010-05A-D120I	5	28	253	+12	-12	+42	-42	79	3000	B
DHSA010-05A-D150K	5	28	253	+15	-15	+34	-34	79	3000	B
DHSA010-12A-D050E	12	11	112	+5	-5	+100	-100	74	3000	B
DHSA010-12A-D120I	12	10	101	+12	-12	+42	-42	83	3000	B
DHSA010-12A-D150K	12	15	101	+15	-15	+34	-34	83	3000	B
DHSA010-24A-D050E	24	9	57	+5	-5	+100	-100	73	3000	D
DHSA010-24A-D120I	24	8	54	+12	-12	+42	-42	77	3000	D
DHSA010-24A-D150K	24	7	52	+15	-15	+34	-34	80	3000	D

## MECHANICAL DIMENSIONS: MM [INCHES]

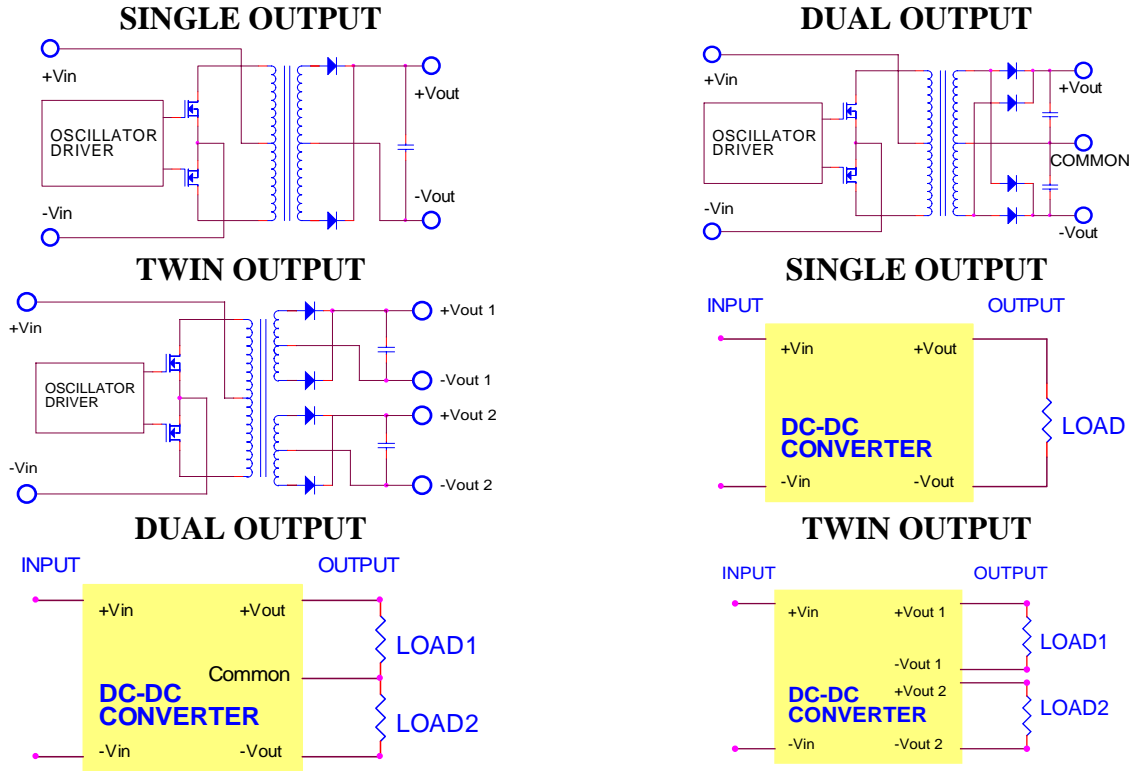
WEIGHT: 2.1g



## PIN ASSIGNMENT

PIN NO.	1	2	5	6	7
SINGLE	+Vin	-Vin	-Vout	NP	+Vout
DUAL	+Vin	-Vin	-Vout	COMMON	+Vout

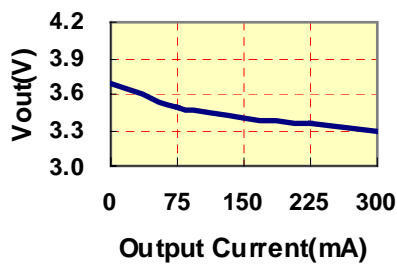
## SIMPLIFIED SCHEMATIC AND TYPICAL APPLICATIONS



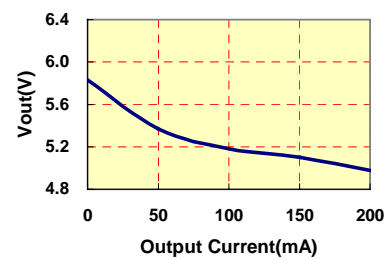
## TYPICAL PERFORMANCE CURVES

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

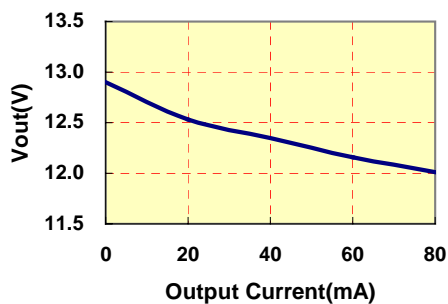
**VOUT VS LOAD(3.3Vout Models)**



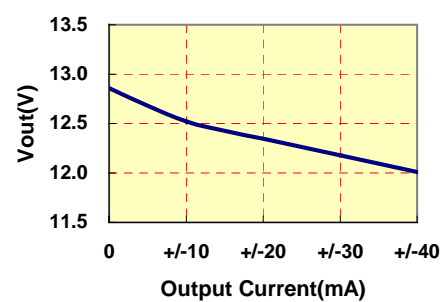
**VOUT VS LOAD(5Vout Models)**



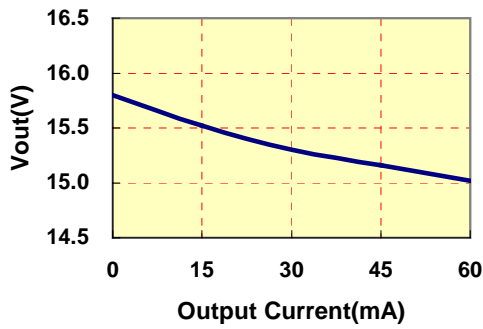
**VOUT VS LOAD(12Vout Models)**



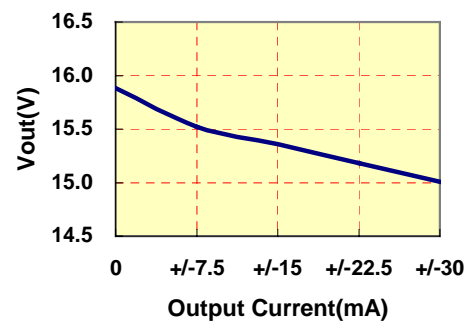
**VOUT VS LOAD(+/- 12Vout Models)**



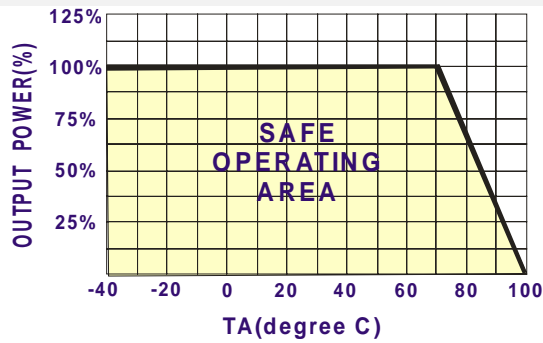
### VOUT VS LOAD(15Vout Models)



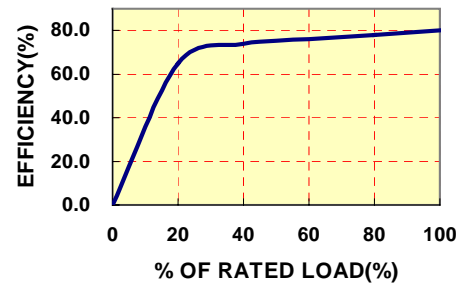
### VOUT VS LOAD(+/- 15Vout Models)



### DERATING CURVE

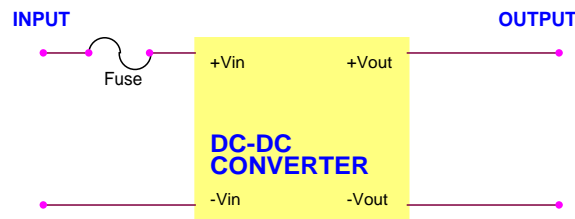


### EFFICIENCY VS LOAD



### INPUT FUSE SELECTION GUIDE

4.5-5.5V INPUT VOLTAGE(VDC))	10.8-13.2V INPUT VOLTAGE(VDC)	21.6-26.4V INPUT VOLTAGE(VDC)
400mA Slow-Blow Type	200mA Slow-Blow Type	90mA Slow-Blow Type



- Note: (1) Certain applications may require the installation of external fuse in front of the input.  
 (2) External capacitance requirement: 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.  
 (3) Negative Outputs: A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.