FEATURES

- **–55°C to 100°C**
- **4 to 6.5, 9 to 15, or 20 to 32 VDC input**
- Fully isolated
- Output regulated from input side
- 100 kHz typical switching frequency
- Topology – Push-Pull DC/DC Converter
- Up to 75% efficiency
- No minimum load
- Output capacitor suggested

DC/DC CONVERTERS 5, 12, OR 28 VOLT INPUT

DCH SERIES 3 WATT

MODELS VDC OUTPUT	
SINGLES	DUALS
5	±12
12	±15
28	±28

Size (max.): 0.975 x 0.800 x 0.350 inches (24.77 x 20.32 x 8.89 mm)
See section B8, case A3, for dimensions.
Weight: 20 grams typical
Screening: Standard or ES. See Section C2 for screening options, see Section A5 for ordering information.

DESCRIPTION

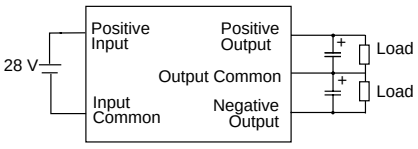
The DCH Series™ offers isolated, unregulated DC/DC converters with up to 3 watts of output power in a low profile (0.350 max.) metal package. Single and dual output models are available with input voltages of 5, 12, or 28 VDC. DCH Series converters operate over a –55°C to +100°C temperature range.

DCH Series converters use a non-saturating core circuit operating at a frequency of approximately 100 kHz, which reduces reflected input ripple and minimizes EMI/RFI problems. For applications requiring MIL-STD-461C, CEO3, reflected input ripple levels, refer to Section B5 or contact your Interpoint representative for matching EMI filters.

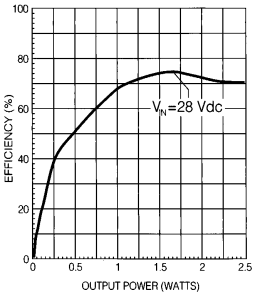
Figure 1 shows a standard connection scheme for a dual output model. Users may also elect to use a dual output device to provide a single output at double the rated output voltage. The double voltage connection is achieved by leaving the normal output common pin (Pin 15) unconnected and using either the positive or negative Vout pin for the output common connection.

On all DCH Series models, a tantalum capacitor with a minimum value of 22 µF and an appropriate voltage rating should be connected between the output common and the output line(s) to minimize output ripple.

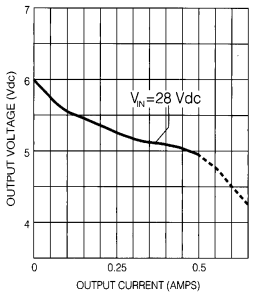
FIGURE 1:
DUAL DCH CONVERTER WITH EXTERNAL CAPACITORS



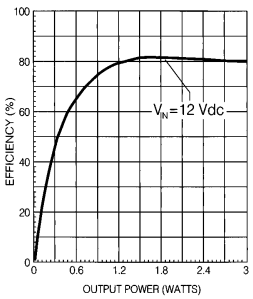
Typical Performance Curves: 25°C Tc ,nominal Vin



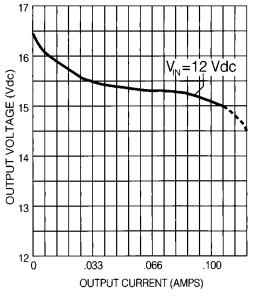
Efficiency
DCH2805S
FIGURE 2



Output Current vs Output Voltage
DCH2805S
FIGURE 3



Efficiency
DCH1215D
FIGURE 4



Output Current vs Output Voltage
DCH1215D
FIGURE 5

DCH SERIES
3 WATT

DC/DC CONVERTERS

ABSOLUTE MAXIMUM RATING

Output Power
- 3 watts

Lead Soldering Temperature (10 sec per lead)
- 300°C

Storage Temperature Range (Case)
- –55°C to +125°C

RECOMMENDED OPERATING CONDITION

Input Voltage Range (VDC)
- 5 volt input models 4.0 to 6.5
- 12 volt input models 9.0 to 15.0
- 28 volt input models 20.0 to 32.0

Case Operating Temperature (Tc)
- –55°C to +100°C full power

TYPICAL CHARACTERISTIC

Output Voltage Tolerance (Full Load)
- 5 volt output models ±0.25
- 12 volt output models ±0.4
- 15 volt output models ±0.5
- 28 volt output models ±0.6

Line Regulation
- Output is directly proportional to input voltage.

Output Voltage Temperature Coefficient
- 0.02%/°C maximum

Converter Frequency
- 100 kHz typical

Isolation
- 100 megohm minimum at 500 V

Electrical Characteristics: 25°C Tc, 28 VDC Vin, 100% load, unless otherwise specified.

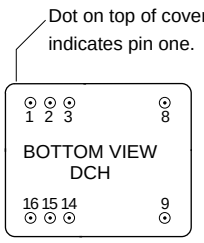
MODEL NUMBER	INPUT VOLTAGE NOMINAL VDC	OUTPUT VOLTAGE [1] NOMINAL VDC	OUTPUT CURRENT Tc = –55°C TO +100°C MAX mA	OUTPUT POWER Tc = –55°C TO +100°C MAX W	EFFICIENCY FULL LOAD MIN %	LOAD REGULATION 50% TO FULL LOAD TYP mV	INPUT CURRENT[2] 10% LOAD MAX mA	OUTPUT RIPPLE[2] MAX mVp-p
DCH0505S	5	5	400	2.0	67	470	220	300
DCH0512S	5	12	208	2.5	72	830	250	200
DCH0512D	5	±12	±104	2.5	72	830	250	100
DCH0515D	5	±15	±83	2.5	72	830	250	100
DCH1205S	12	5	500	2.5	70	500	110	300
DCH1212S	12	12	250	3.0	72	440	70	200
DCH1228S	12	28	107	3.0	75	870	110	300
DCH1212D	12	±12	±125	3.0	72	440	110	100
DCH1215D	12	±15	±100	3.0	72	440	110	100
DCH1228D	12	±28	±53	3.0	75	870	110	200
DCH2805S	28	5	500	2.5	68	450	50	300
DCH2812S	28	12	250	3.0	75	375	50	200
DCH2812D	28	±12	±125	3.0	75	375	50	100
DCH2815D	28	±15	±100	3.0	75	375	50	100

Notes
1. Nominal output voltage is correct only for nominal input voltage. Output voltage changes in proportion to input voltage.
2. Output ripple results require the connection of a tantalum capacitor (22 µF minimum) across each output.

PIN OUT

Pin	Designation
1	Positive Input
2	No Connection
3	Input Common
8	No Connection
9	Case
14	Negative Output[1]
15	Output Common[1]
16	Positive Output

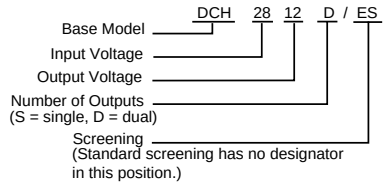
Note
1. Pins 14 and 15 are connected internally on single output models.



See Section B8, case A3, for dimensions

FIGURE 6: PIN OUT

MODEL NUMBERING KEY



24600-001-DTS Rev A DQ# 1024

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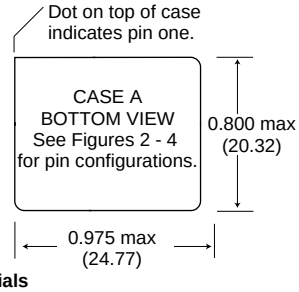
CASES



Materials

Header	Kovar/Nickel/Gold (Case A3, Kovar/Nickel)
Cover	Kovar/Nickel
Pins	Kovar/Nickel/Gold, matched glass seal

Case dimensions in inches (mm)

Tolerance ±0.005 (0.13) for three decimal places
±0.01 (0.3) for two decimal places
unless otherwise specified

CAUTION

Heat from reflow or wave soldering may damage the device. Solder pins individually with heat application not exceeding 300°C for 10 seconds per pin.

FIGURE 1: CASE A MAXIMUM DIMENSIONS

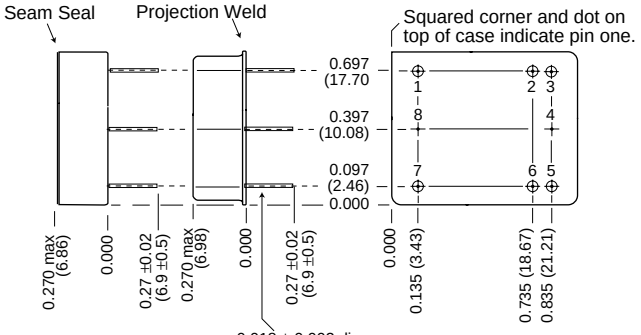


FIGURE 2: CASE A1

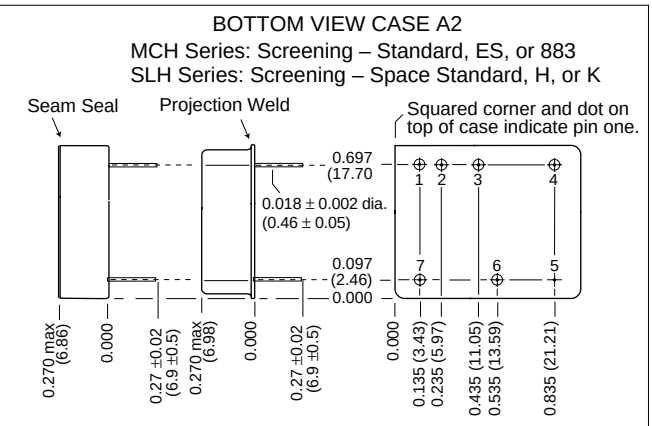


FIGURE 3: CASE A2

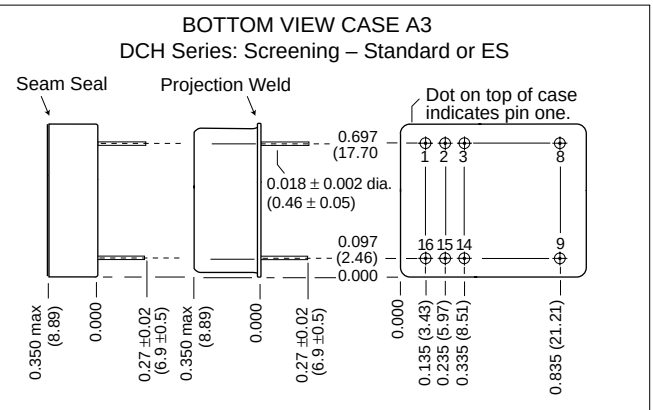


FIGURE 4: CASE A3

Note: Although every effort has been made to render the case drawings at actual size, variations in the printing process may cause some distortion. Please refer to the numerical dimensions for accuracy.

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85°C PRODUCTS

TEST (85°C Products excluding HR products)	STANDARD	/ES
PRE-CAP INSPECTION		
Method 2017	yes	yes
TEMPERATURE CYCLE (10 times)		
Method 1010, Cond. B, -55°C to 125°C	no	yes
CONSTANT ACCELERATION		
Method 2001, 500 g	no	yes
BURN-IN		
96 hours at 70°C ambient (typical)	no	yes
FINAL ELECTRICAL TEST MIL-PRF-38534, Group A		
Subgroups 1 and 4: +25°C case	yes	yes
HERMETICITY TESTING		
Fine Leak, Method 1014, Cond. A	no	yes
Gross Leak, Method 1014, Cond. C	no	yes
Gross Leak, Dip (1×10^{-3})	yes	no
FINAL VISUAL INSPECTION		
Method 2009	yes	yes

Test methods are referenced to MIL-STD-883 as determined by MIL-PRF-38534.

Applies to the following products:

MFW Series
MTW Series
MHE/MLP Series
MHL Series
MRH Series
MTO Series
MSR Series
DCH Series
FM/FMA/FMB EMI Filters
MSF EMI Filter