

Input Ranges :

18-75 VDC

Output Output:

Single Output

1.2V - 80V

Dual Output

±5.0V - ±15V;

1.2V - 15V

Triple Output

1.2V - 15V,

±5.0V - ±15V

Quad Output

±5.0V - ±15V

Output Power:

15 to 50 W



DH series is a family of 25W & 50W DC-DC converters with high power density, high efficiency, and high reliability. It provides in a compact 1.0" x 2.0" footprint. The 50W low voltage single output model is a dual phase design that achieves very low input reflected ripple current, fast output transient response and low output ripple & noise.

Integral PCB transformer / inductor is used for all models in this series. This new design technique has greatly improved the magnetic coupling, reduced switching spike and provided performance consistency. It also streamlines the production process by completely eliminating the hand-wind magnetic assembly process from production lines.

DH series provides the most extensive protection to safeguard both the power converter and the load. It includes output over-voltage protection, over-current protection, hiccup mode indefinite short circuit protection, under-voltage lockout and over-temperature protection. Over-current inception point is set at about 115% of rated load. Hiccup mode cycles at 28mSec period with 3mSec on and 25mSec off. Over-temperature shutdown activated at +115°C board temperature will recover when the temperature falls below +95°C.

DH series features low output noise, very tight line and load regulation, and high efficiency. There is no external capacitor requirement for normal operation. Output trim pin is standard. Sense pins are provided on low output voltage models for line drop compensation.

FEATURES

General:

- Small footprint : 1.0" x 2.0"
- High output power : to 50 watts
- High output current : to 25 amps
- Wide input range : 18-75Vdc
- Open frame or Encapsulated
- Integral PCB transformer
- High conversion efficiency to 88%
- Line & load regulation to ±0.1%
- Fixed operating frequency

Protection:

- Output over-voltage protection
- Output over-load protection
- Hiccup mode short circuit protection
- Over-temperature protection
- Input under-voltage lock-out

Control:

- Enable (On/Off) Control
- Remote Sense
- Output Voltage Trim

Isolation:

- Isolation Voltage > 1500V

APPLICATIONS

- Distributed Power Systems
- Workstations
- Computer Equipment
- Communications Equipment

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1. Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause performance degradation, adversely effect longterm reliability, and cause permanent damage to the device.

Parameter	Conditions / Description	Min	Max	Units
Input Voltage				
Continuous	12	-0.3	20	Vdc
	24	-0.3	36	Vdc
	48	-0.3	75	Vdc
	24W	-0.3	36	Vdc
	48W	-0.3	75	Vdc
Transient (100mSec.)	12	-0.3	22	Vdc
	24	-0.3	38	Vdc
	48	-0.3	78	Vdc
	24W	-0.3	38	Vdc
	48W	-0.3	78	Vdc
Operating Temperature	Standard temperature models, base plate temperature	-55	+105	°C
	Extended temperature models, base plate temperature	-55	+105	°C
Storage Temperature	Ambient	-55	+125	°C
Isolation Voltage	Input to Output		+2000	Vdc

2. Input Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Input Voltage					
Voltage Range (Continuous)	12	10	12	20	Vdc
	24	18	24	36	Vdc
	48	36	48	75	Vdc
	24W	10	24	36	Vdc
	48W	20	48	75	Vdc
Under-Voltage Lockout (UVLO)					
Turn-On Threshold (Ramping Up)	12		9.7		Vdc
	24		17		Vdc
	48		35		Vdc
	24W		9.7		Vdc
	48W		17		Vdc
Turn-Off Threshold (Ramping Down)	12		9.2		Vdc
	24		16		Vdc
	48		33		Vdc
	24W		9.2		Vdc
	48W		16		Vdc

3. Enable (On-Off Control)

Parameter	Conditions / Description	Min	Nom	Max	Units
Enable Pin					
Open Circuit Voltage			10		Vdc
Source Current				1	mA
Positive Logic					
Converter On when enable pin floating					
On-Control	(Logic High or Floating)	2.5		10	Vdc
Off-Control		-0.5		1.8	Vdc
Negative Logic					
Not Available					

*Enable pin can be left floating if not used)

4. Output Trim

Parameter	Conditions / Description	Min	Nom	Max	Units
Negative Trim					
Standard					
Trim Up	Trim Pin to (-)Sense or (-)Vout			10	%Vdc
Trim Down	Trim Pin to (+)sense or (+)Vout	10			%Vdc
Positive Trim					
Not Available					

*Trim pin can be left floating if not used

5. Output Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Voltage Accuracy	Please see table			±1.0	%
Output Current	Please see table				Adc
Output Trim				±10	%Vout
Over Voltage Protection				120	%Vdc
Line Regulation				0.1	%Vout
Load Regulation				0.1	%Vout
Transient Response	50% ± 25% step load change		400		µSec.
Ripple & Noise	Please see table				mVp-p
Switching Frequency			300		KHz

6. Environmental and Mechanical Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Operating Temperature :	PCB Temperature				
Standard		-25		+100	°C
Extended		-55		+100	°C
Storage Temperature		-55		+125	°C
Temperature Coefficient				±0.02	%/°C
Shock	Halfsine wave, 3 axes	50			g
Sinusoidal Vibration	GR-63-CORE, Section 5.4.2	1			g
Humidity	Relative Humidity, Non-Condensing			95	%R.H.
Weight					
Open Frame					
25W			0.6(16)		Oz(g)
50W			1.1(31)		Oz(g)
Encapsulated					
25W			2.0(56)		Oz(g)
50W			2.5(70)		Oz(g)
MTBF (calculated)	Bellcore TR-NWT-000332 method 1 - parts count	1			MHrs

7. Isolation Specifications

Parameter	Conditions / Description	Min	Nom	Max	Units
Isolation Voltage					
Input to Output		1500			Vdc
I/O to Case		500			Vdc
Isolation Resistance	Input to Output	10			MΩ
Isolation Capacitance	Input to Output		3		nF

8. Protections

Parameter	Conditions / Description	Min	Nom	Max	Units
Over-Load Protection					
Type	Current-Mode, Pulse by Pulse Current Limit				
Threshold	% Rated Load		120		%
Short-Circuit Protection					
Type	Hiccup Mode, Non-Latching, Auto-Recovery				
Threshold	Short-Circuit Resistance			65	mΩ
Over-Temperature Protection					
Type	Non-Latching, Auto-Recovery				
Threshold	PCB Temperature		115		°C
Hysteresis			15		°C
Over-Voltage Protection					
Type	Auxiliary Feedback Loop Control				
Set-Point				120	%Vout

INPUT			OUTPUT								Over Temp. Shutdown /Recover	EFF. (Typ.)	MODEL NO.		
Nominal (Range)	Under Voltage Lockout (typ.)		Max. Output Power	Voltage (V)			Current (A)		Ripple & Noise					OVP (max)	Short Circuit Protection
	On	Off		Set Point	Min.*	Max.*	Min.	Max.	Peak-Peak	R.M.S.					
24 (18-36)	17.8	17.0	15W	1.20	1.18	1.22	0	12.5	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +90°C	84%	DH25S24012
			19W	1.50	1.48	1.52	0	12.5	50mV	15mV	1.8V			84%	DH25S24015
			23W	1.80	1.78	1.82	0	12.5	50mV	15mV	2.2V			85%	DH25S24018
			25W	2.50	2.47	2.53	0	10.0	60mV	15mV	3.0V			86%	DH25S24025
			25W	3.30	3.20	3.40	0	8.0	60mV	15mV	4.0V			88%	DH25S24033
			25W	5.00	4.90	5.10	0	5.0	75mV	15mV	5.9V			88%	DH25S2405
			25W	8.00	7.90	8.10	0.3	3.1	75mV	20mV	9.6V			88%	DH25S2408
			25W	10.00	9.90	10.10	0.25	2.5	100mV	20mV	12V			88%	DH25S2410
			25W	12.00	11.88	12.12	0.2	2.1	120mV	25mV	14V			88%	DH25S2412
			25W	15.00	14.85	15.15	0.17	1.7	150mV	30mV	18V			88%	DH25S2415
			25W	24.00	23.75	24.25	0.10	1.04	150mV	30mV	29V			88%	DH25S2424
			25W	48.00	14.85	15.15	0.50	0.52	150mV	30mV	57V			88%	DH25S2448
48 (36-75)	34	33	15W	1.20	1.18	1.22	0	12.5	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +90°C	84%	DH25S48012
			19W	1.50	1.48	1.52	0	12.5	50mV	15mV	1.8V			84%	DH25S48015
			23W	1.80	1.78	1.82	0	12.5	50mV	15mV	2.2V			84%	DH25S48018
			25W	2.50	2.47	2.53	0	10.0	60mV	15mV	3.0V			86%	DH25S48025
			25W	3.30	3.20	3.40	0	8.0	60mV	15mV	4.0V			88%	DH25S48033
			25W	5.00	4.90	5.10	0	5.0	75mV	15mV	5.9V			88%	DH25S4805
			25W	10.00	9.90	10.10	0.25	2.5	100mV	20mV	12V			88%	DH25S4810
			25W	12.00	11.88	12.12	0.2	2.1	120mV	25mV	14V			88%	DH25S4812
48W (20-75)	17.8	17.0	15W	1.20	1.18	1.22	0	12.5	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +90°C	82%	DH25S48W012
			19W	1.50	1.48	1.52	0	12.5	50mV	15mV	1.8V			82%	DH25S48W015
			23W	1.80	1.78	1.82	0	12.5	50mV	15mV	2.2V			83%	DH25S48W018
			25W	2.50	2.47	2.53	0	10.0	60mV	15mV	3.0V			84%	DH25S48W025
			25W	3.30	3.20	3.40	0	8.0	60mV	15mV	4.0V			86%	DH25S48W033
			25W	5.00	4.90	5.10	0	5.0	75mV	15mV	5.9V			86%	DH25S48W05
			25W	8.00	7.90	8.10	0.3	3.1	75mV	20mV	9.6V			86%	DH25S48W08
			25W	10.00	9.90	10.10	0.25	2.5	100mV	20mV	12V			86%	DH25S48W10
			25W	12.00	11.88	12.12	0.2	2.1	120mV	25mV	14V			86%	DH25S48W12
			25W	15.00	14.85	15.15	0.17	1.7	150mV	30mV	18V			86%	DH25S48W15
			25W	24.00	23.75	24.25	0.10	1.04	150mV	30mV	29V			86%	DH25S48W24
			25W	48.00	14.85	15.15	0.50	0.52	150mV	30mV	57V			86%	DH25S48W48

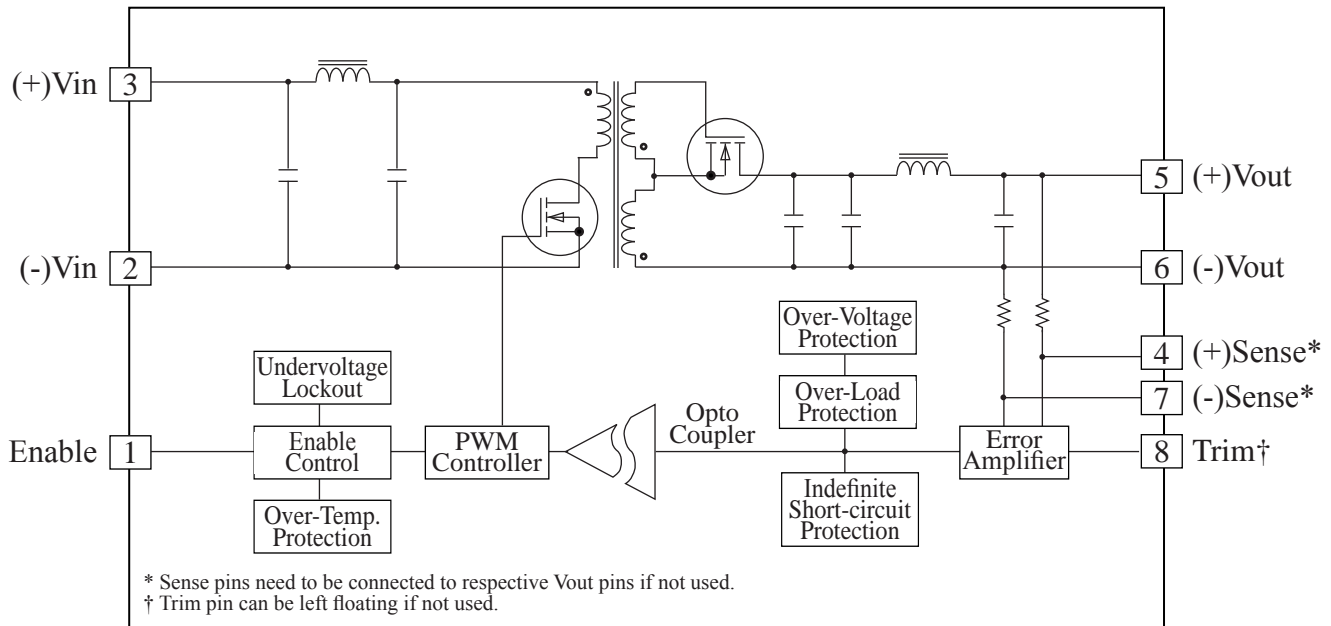
* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

Product Numbering System & Selection Guide

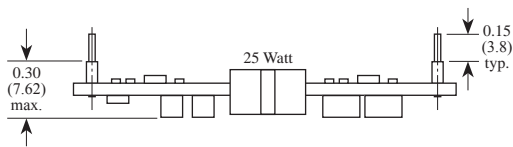
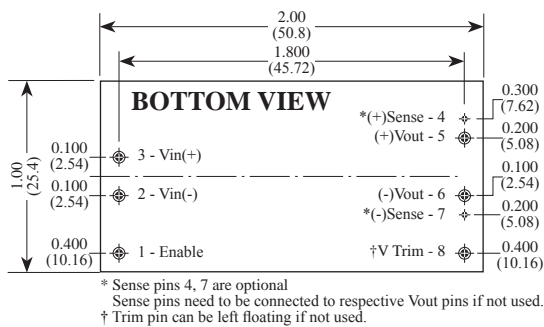
DH	25	S	48W	012	SP
Series No.	Output Power	No Output	Input Voltage	Output Voltage	Options
DH	25 : 25W 50 : 50W	S : Single	12 : 10-20V 24 : 18-36V 48 : 36-75V 24W : 10-36V 48W : 20-75V	012 : 1.2V 100 : 100V	C : Extended Temp. SP : Sense Pins MC : Encapsulated

* Full Output Power are for Vout ≥ 2.5V only

BLOCK DIAGRAM

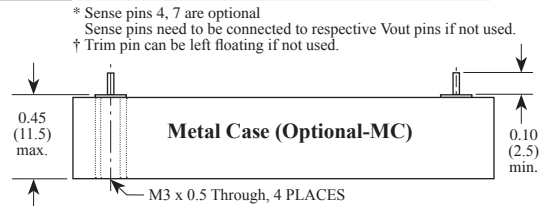
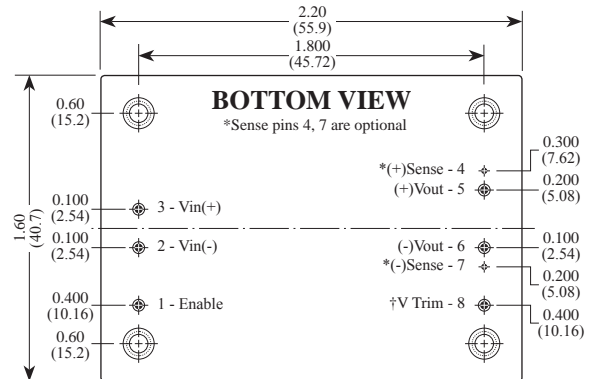


Open Frame (Standard)



1. Optional sense pins 4, 7 are 0.02" (0.5mm) dia. (Sense pins are optional and available for vout ≤ 5V only)
2. All other pins are 0.040" (1.0mm) dia. with 0.065" (1.65mm) dia. standoff shoulders.

Encapsulated (Optional, MC Suffix)



1. Optional sense pins 4, 7 are 0.02" (0.5mm) dia. (Sense pins are optional and available for vout ≤ 5V only)
2. All other pins are 0.040" (1.0mm) dia.

INPUT			OUTPUT								Over Temp. Shutdown /Recover	EFF. (typ.)	MODEL NO.		
Nominal (Range)	Under Voltage Lockout (typ.)		Max. Output Power	Voltage (V)*			Current (A)		Ripple & Noise					OVP (max)	Short Circuit Protection
	On	Off		Set Point	Min.	Max.	Min.	Max.	Peak-Peak	R.M.S.					
24 (18-36)	17.8	17.0	30W	1.2V	1.18	1.22	0	25.0A	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +95°C	84%	DH50S24012
			38W	1.5V	1.48	1.52	0	25.0A	50mV	15mV	1.8V			84%	DH50S24015
			45W	1.8V	1.78	1.82	0	25.0A	50mV	15mV	2.2V			85%	DH50S24018
			50W	2.5V	2.47	2.53	0	20.0A	60mV	15mV	3.0V			86%	DH50S24025
			50W	3.3V	3.20	3.40	0	16.0A	60mV	15mV	4.0V			88%	DH50S24033
			50W	5.0V	4.90	5.10	0	10.0A	75mV	15mV	5.9V			88%	DH50S2405
			50W	10.0V	9.90	10.10	0.5	5.0A	100mV	20mV	12V			88%	DH50S2410
			50W	12.0V	11.88	12.12	0.4	4.2A	120mV	25mV	14V			88%	DH50S2412
			50W	15.0V	14.85	15.15	0.3	3.4A	150mV	30mV	18V			88%	DH50S2415
			50W	48V	47.5	48.5	0.1	1.0A	200mV	40mV	58V			86%	DH50S2448
			50W	60V	59.0	61.0	0.08	0.84A	300mV	50mV	72V			86%	DH50S2460
			50W	80V	79.0	81.0	0.06	0.63A	500mV	60mV	95V			86%	DH50S2480
48 (36-75)	34	33	30W	1.2V	1.18	1.22	0	25.0A	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +95°C	84%	DH50S48012
			38W	1.5V	1.48	1.52	0	25.0A	50mV	15mV	1.8V			84%	DH50S48015
			45W	1.8V	1.78	1.82	0	25.0A	50mV	15mV	2.2V			85%	DH50S48018
			50W	2.5V	2.47	2.53	0	20.0A	60mV	15mV	3.0V			86%	DH50S48025
			50W	3.3V	3.20	3.40	0	16.0A	60mV	15mV	4.0V			88%	DH50S48033
			50W	5.0V	4.90	5.10	0	10.0A	75mV	15mV	5.9V			88%	DH50S4805
			50W	10.0V	9.90	10.10	0.5	5.0A	100mV	20mV	12V			88%	DH50S4810
			50W	12.0V	11.88	12.12	0.4	4.2A	120mV	25mV	14V			88%	DH50S4812
			50W	15.0V	14.85	15.15	0.3	3.4A	150mV	30mV	18V			88%	DH50S4815
			50W	48V	47.5	48.5	0.1	1.0A	200mV	40mV	58V			86%	DH50S4848
			50W	60V	59.0	61.0	0.08	0.84A	300mV	50mV	72V			86%	DH50S4860
			50W	80V	79.0	81.0	0.06	0.63A	500mV	60mV	95V			86%	DH50S4880
48W (20-75)	17.8	17.0	30W	1.2V	1.18	1.22	0	25.0A	50mV	15mV	1.5V	Hiccup Mode Indefinite	+105°C/ +95°C	82%	DH50S48W012
			38W	1.5V	1.48	1.52	0	25.0A	50mV	15mV	1.8V			82%	DH50S48W015
			45W	1.8V	1.78	1.82	0	25.0A	50mV	15mV	2.2V			83%	DH50S48W018
			50W	2.5V	2.47	2.53	0	20.0A	60mV	15mV	3.0V			84%	DH50S48W025
			50W	3.3V	3.20	3.40	0	16.0A	60mV	15mV	4.0V			86%	DH50S48W033
			50W	5.0V	4.90	5.10	0	10.0A	75mV	15mV	5.9V			86%	DH50S48W05
			50W	10.0V	9.90	10.10	0.5	5.0A	100mV	20mV	12V			86%	DH50S48W10
			50W	12.0V	11.88	12.12	0.4	4.2A	120mV	25mV	14V			86%	DH50S48W12
			50W	15.0V	14.85	15.15	0.3	3.4A	150mV	30mV	18V			86%	DH50S48W15

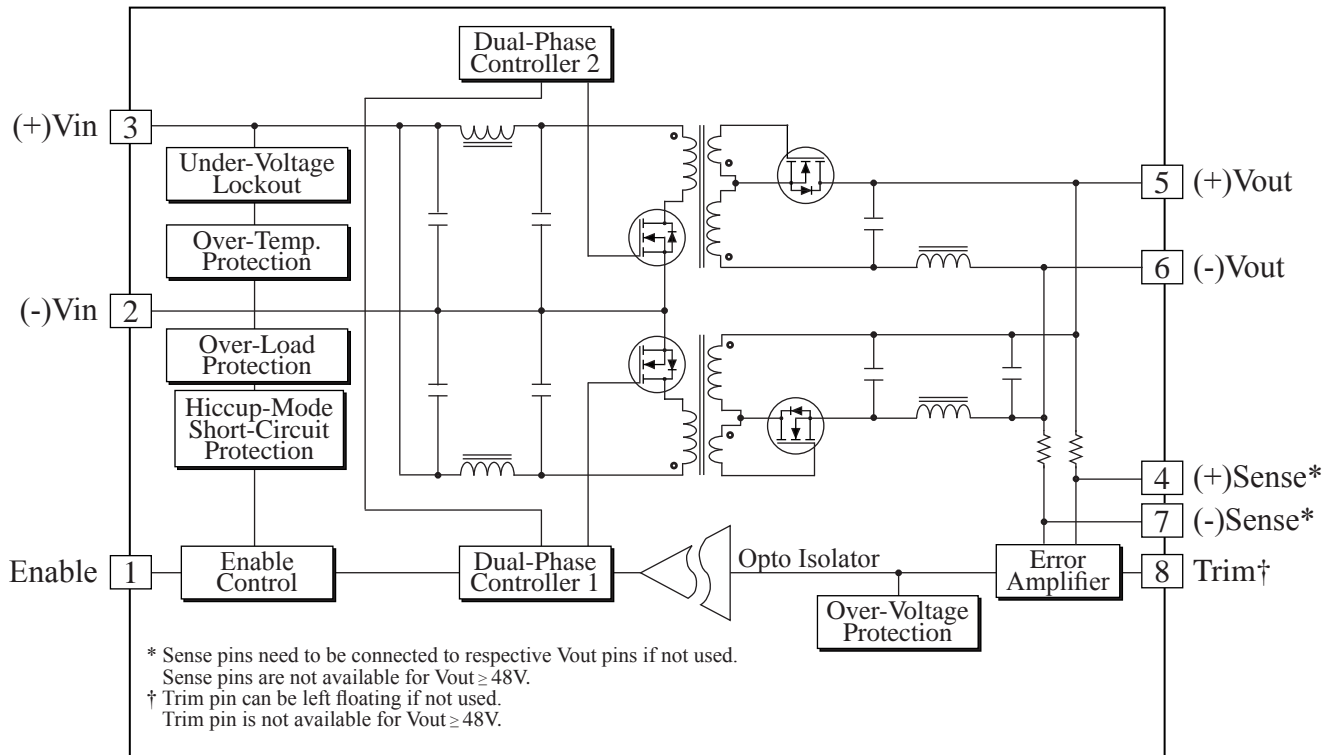
* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

Product Numbering System & Selection Guide

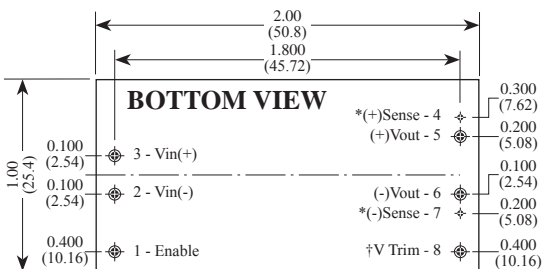
DH		50		S		24		012		SP	
Series No.	Output Power		No Output		Input Voltage		Output Voltage		Options		
DH	25	25W	S	Single	12	10-20V	012	1.2V	C	Extended Temp.	
	50	50W			24	18-36V	...		SP	Sense Pins	
					48	36-75V	...		MC	Encapsulated	
					24W	10-36V	...				
					48W	20-75V	100	100V			

* Full Output Power are for Vout ≥ 2.5V only

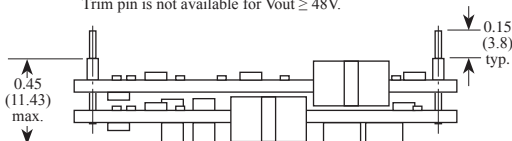
BLOCK DIAGRAM



Open Frame (Standard)

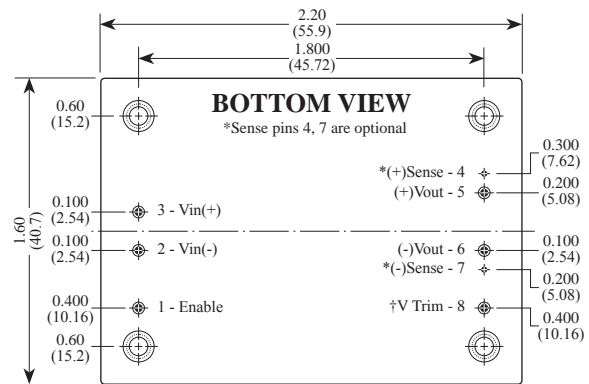


* Sense pins 4, 7 are optional
Sense pins are not available for Vout ≥ 48V.
Sense pins need to be connected to respective Vout pins if not used.
† Trim pin can be left floating if not used.
Trim pin is not available for Vout ≥ 48V.

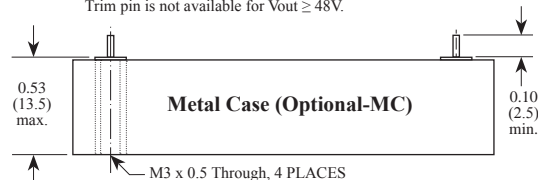


1. Optional sense pins 4, 7 are 0.02" (0.5mm) dia. (Sense pins are optional and available for vout ≤ 5V only)
2. All other pins are 0.040" (1.0mm) dia. with 0.065" (1.65mm) dia. standoff shoulders.

Encapsulated (Optional, MC Suffix)

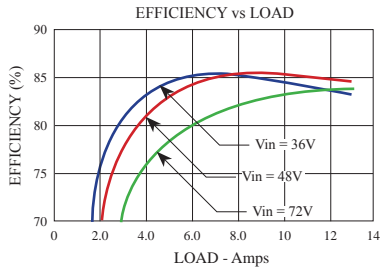


* Sense pins 4, 7 are optional
Sense pins are not available for Vout ≥ 48V.
Sense pins need to be connected to respective Vout pins if not used.
† Trim pin can be left floating if not used.
Trim pin is not available for Vout ≥ 48V.

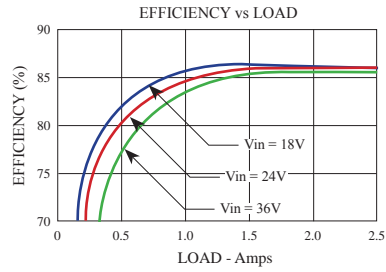


1. Optional sense pins 4, 7 are 0.02" (0.5mm) dia. (Sense pins are optional and available for vout ≤ 5V only)
2. All other pins are 0.040" (1.0mm) dia.

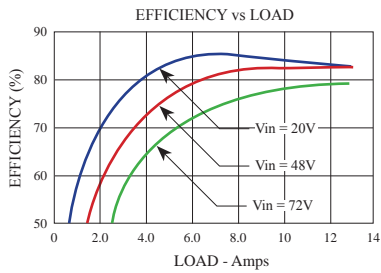
EFFICIENCY CURVES



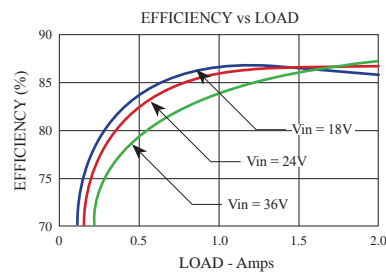
DH25S48015



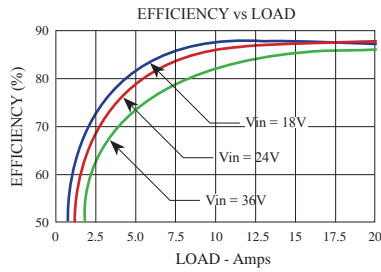
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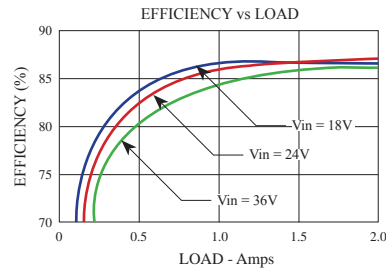
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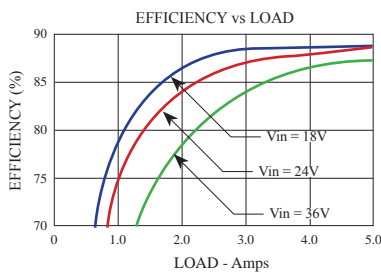
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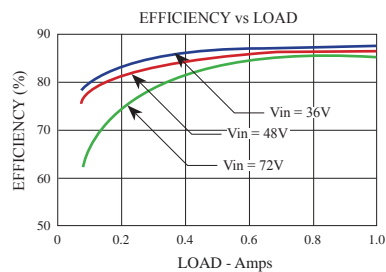
DH50S24025



DH25S4812



DH25S2405



DH50S4848

NOTE :

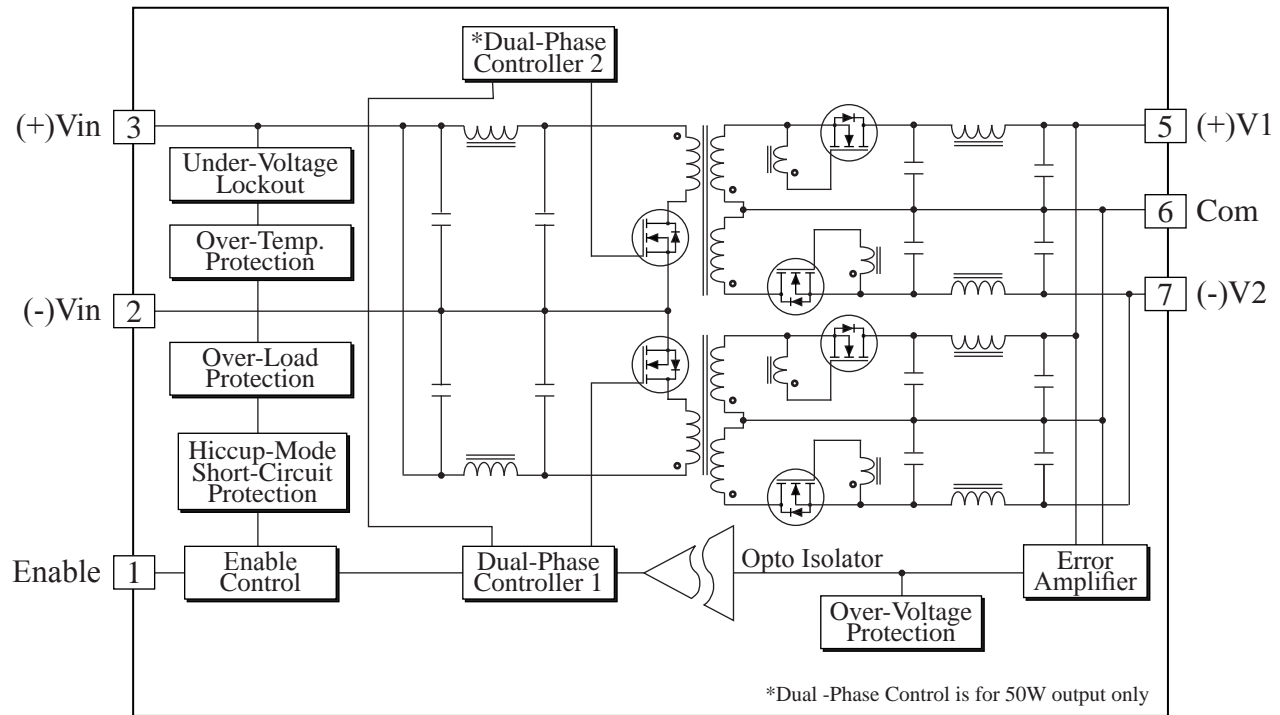
INPUT		OUTPUT										Short Circuit Protection	Over Temp. Protect	EFF. (typ.)	MODEL NO.					
Nominal (Range)	UVLO On/Off	Max Output Power	Voltage (V)				Current (A)			Ripple & Noise										
			#	Set Point	Min.*	Max.*	#	Min.	Max.	Peak-Peak	R.M.S.									
24 (18 - 36)	17V/ 16V	25W	±5.0V	+V1	+5.00	+4.90	+5.10	+11	+0.25	+2.5	75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	88%	DH25D2405				
				-V2	-5.00	-4.75	+5.25	-12	-0.25	-2.5	75mV	15mV								
		50W	±5.0V	+V1	+5.00	+4.90	+5.10	+11	+0.5	+5.0	75mV	15mV			88%	DH50D2405				
				-V2	-5.00	-4.75	+5.25	-12	-0.5	-5.0	75mV	15mV								
		25W	±10V	+V1	+10.00	+9.90	+10.10	+11	+0.12	+1.25	100mV	20mV			88%	DH25D2410				
				-V2	-10.00	-9.80	-10.20	-12	-0.12	-1.25	100mV	20mV								
		50W	±10V	+V1	+10.00	+9.90	+10.10	+11	+0.25	+2.5	100mV	20mV			88%	DH50D2410				
				-V2	-10.00	-9.80	-10.20	-12	-0.25	-2.5	100mV	20mV								
		25W	±12V	+V1	+12.00	+11.88	+12.12	+11	+0.10	+1.0	100mV	20mV			88%	DH25D2412				
				-V2	-12.00	-11.76	+12.24	-12	-0.10	-1.0	100mV	20mV								
		50W	±12V	+V1	+12.00	+11.88	+12.12	+11	+0.2	+2.1	100mV	20mV			88%	DH50D2412				
				-V2	-12.00	-11.76	+12.24	-12	-0.2	-2.1	100mV	20mV								
		25W	±15V	+V1	+15.00	+9.90	+10.10	+11	+0.08	+0.84	120mV	25mV			88%	DH25D2415				
				-V2	-15.00	-9.80	-10.20	-12	-0.08	-0.84	120mV	25mV								
		50W	±15V	+V1	+15.00	+9.90	+10.10	+11	+0.17	+1.7	120mV	25mV			88%	DH50D2415				
				-V2	-15.00	-9.80	-10.20	-12	-0.17	-1.7	120mV	25mV								
		50W	±24V	+V1	+24.00	+23.7	+24.3	+11	+0.05	+0.52	200mV	40mV			88%	DH25D2424				
				-V2	-24.00	-23.5	-24.5	-12	-0.05	-0.52	200mV	40mV								
48 (36 - 75)	34V/ 33V	25W	±5.0V	+V1	+5.00	+4.90	+5.10	+11	+0.25	+2.5	75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	88%	DH25D4805				
				-V2	-5.00	-4.75	+5.25	-12	-0.25	-2.5	75mV	15mV								
		50W	±5.0V	+V1	+5.00	+4.90	+5.10	+11	+0.5	+5.0	75mV	15mV			88%	DH50D4805				
				-V2	-5.00	-4.75	+5.25	-12	-0.5	-5.0	75mV	15mV								
		25W	±10V	+V1	+10.00	+9.90	+10.10	+11	+0.12	+1.25	100mV	20mV			88%	DH25D4810				
				-V2	-10.00	-9.80	-10.20	-12	-0.12	-1.25	100mV	20mV								
		50W	±10V	+V1	+10.00	+9.90	+10.10	+11	+0.25	+2.5	100mV	20mV			88%	DH50D4810				
				-V2	-10.00	-9.80	-10.20	-12	-0.25	-2.5	100mV	20mV								
		25W	±12V	+V1	+12.00	+11.88	+12.12	+11	+0.10	+1.0	100mV	20mV			88%	DH25D4812				
				-V2	-12.00	-11.76	+12.24	-12	-0.10	-1.0	100mV	20mV								
		50W	±12V	+V1	+12.00	+11.88	+12.12	+11	+0.2	+2.1	100mV	20mV			88%	DH50D4812				
				-V2	-12.00	-11.76	+12.24	-12	-0.2	-2.1	100mV	20mV								
		25W	±15V	+V1	+15.00	+9.90	+10.10	+11	+0.08	+0.84	120mV	25mV			88%	DH25D4815				
				-V2	-15.00	-9.80	-10.20	-12	-0.08	-0.84	120mV	25mV								
		50W	±15V	+V1	+15.00	+9.90	+10.10	+11	+0.17	+1.7	120mV	25mV			88%	DH50D4815				
				-V2	-15.00	-9.80	-10.20	-12	-0.17	-1.7	120mV	25mV								
		48W (20 - 75)	17V/ 16V	25W	±5.0V	+V1	+5.00	+4.90	+5.10	+11	+0.25	+2.5			75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	86%	DH25D48W05
						-V2	-5.00	-4.75	+5.25	-12	-0.25	-2.5			75mV	15mV				
50W	±5.0V			+V1	+5.00	+4.90	+5.10	+11	+0.5	+5.0	75mV	15mV	86%	DH50D48W05						
				-V2	-5.00	-4.75	+5.25	-12	-0.5	-5.0	75mV	15mV								
25W	±10V			+V1	+10.00	+9.90	+10.10	+11	+0.12	+1.25	100mV	20mV	86%	DH25D48W10						
				-V2	-10.00	-9.80	-10.20	-12	-0.12	-1.25	100mV	20mV								
50W	±10V			+V1	+10.00	+9.90	+10.10	+11	+0.25	+2.5	100mV	20mV	86%	DH50D48W10						
				-V2	-10.00	-9.80	-10.20	-12	-0.25	-2.5	100mV	20mV								
25W	±12V			+V1	+12.00	+11.88	+12.12	+11	+0.10	+1.0	100mV	20mV	86%	DH25D48W12						
				-V2	-12.00	-11.76	+12.24	-12	-0.10	-1.0	100mV	20mV								
50W	±12V			+V1	+12.00	+11.88	+12.12	+11	+0.2	+2.1	100mV	20mV	86%	DH50D48W12						
				-V2	-12.00	-11.76	+12.24	-12	-0.2	-2.1	100mV	20mV								
25W	±15V			+V1	+15.00	+9.90	+10.10	+11	+0.08	+0.84	120mV	25mV	86%	DH25D48W15						
				-V2	-15.00	-9.80	-10.20	-12	-0.08	-0.84	120mV	25mV								
50W	±15V			+V1	+15.00	+9.90	+10.10	+11	+0.17	+1.7	120mV	25mV	86%	DH50D48W15						
				-V2	-15.00	-9.80	-10.20	-12	-0.17	-1.7	120mV	25mV								
50W	±24V			+V1	+24.00	+23.7	+24.3	+11	+0.05	+0.52	200mV	40mV	86%	DH25D48W24						
				-V2	-24.00	-23.5	-24.5	-12	-0.05	-0.52	200mV	40mV								

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)
(+)V1 is Regulated and (-)V2 is Semi-Regulated. Please see Cross Regulation Curves on Next Page.

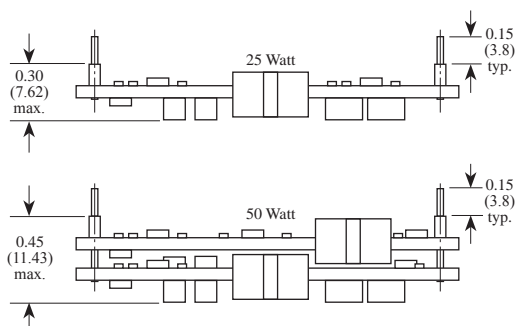
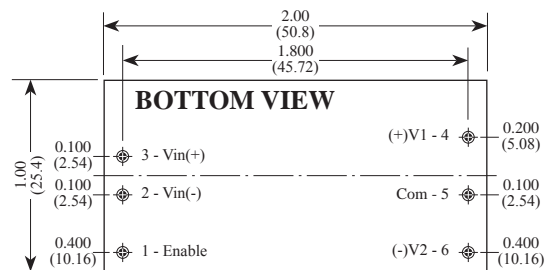
Product Numbering System & Selection Guide

DH	25	D	24	05	MC
Series No.	Output Power*	No Output	Input Voltage	Output Voltage	Options
DH	25 : 25W 50 : 50W	D : Dual	24 : 18-36V 48 : 36-75V 48W : 18-75V	05 : ±5.0V 12 : ±12V 15 : ±15V	C : Extended Temp. MC : Encapsulated

BLOCK DIAGRAM

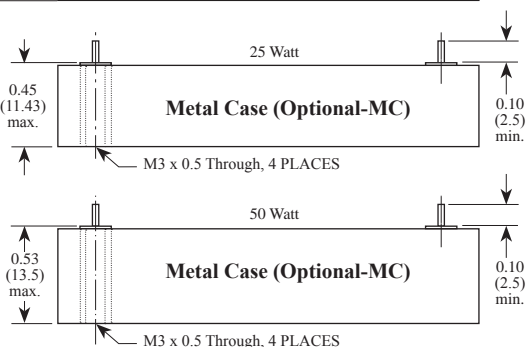
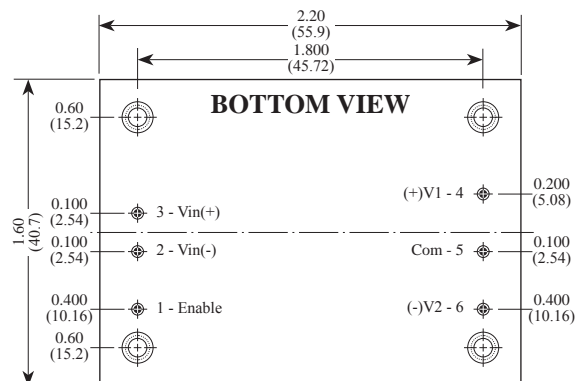


Open Frame (Standard)

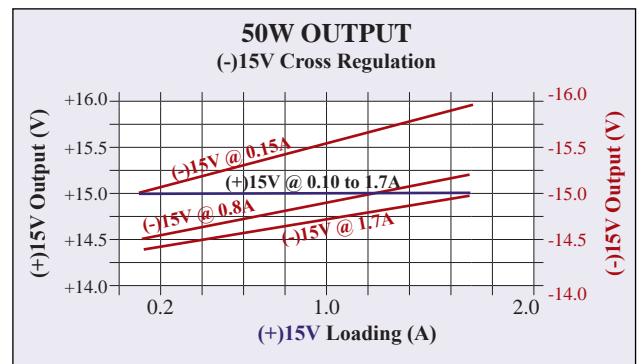
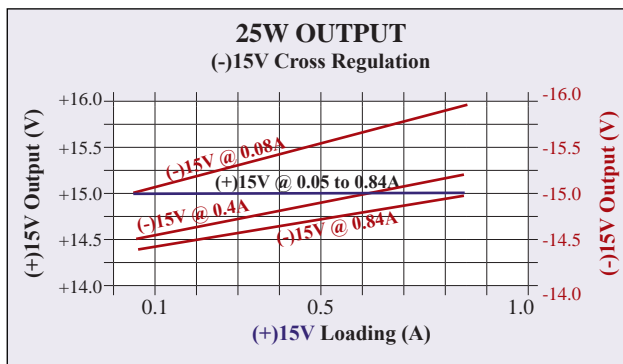
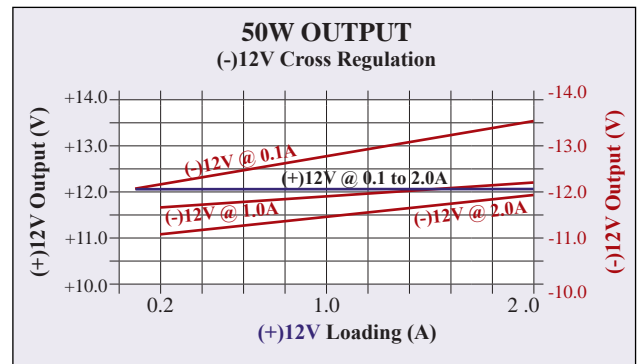
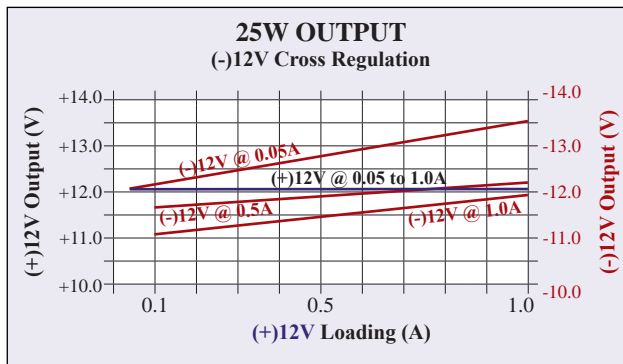
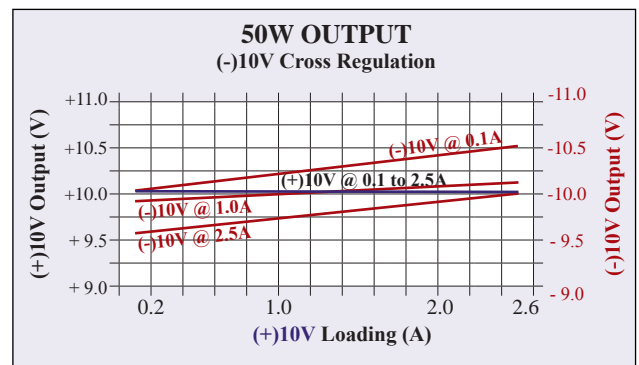
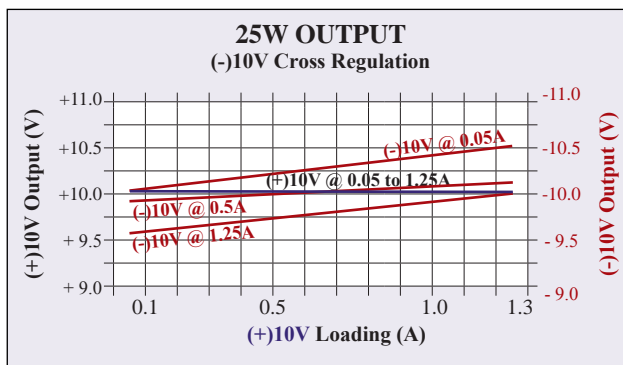
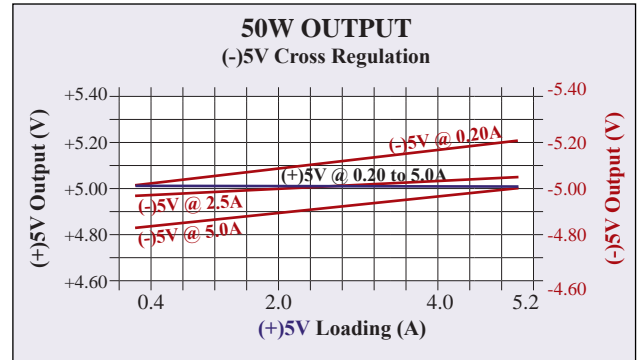
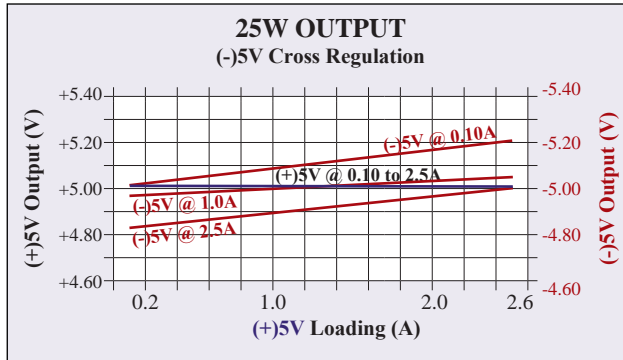


All pins are 0.040" (1.0mm) dia. with 0.065" (1.65mm) dia. standoff shoulders.

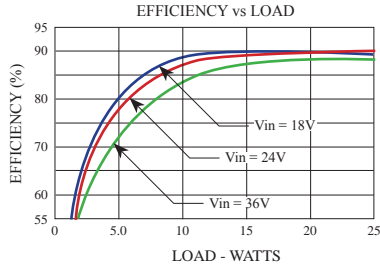
Encapsulated (Optional, MC Suffix)



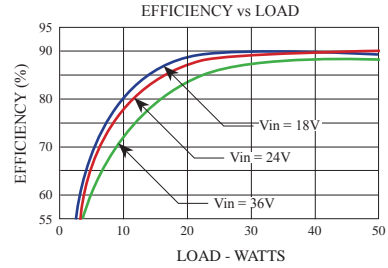
CROSS REGULATION



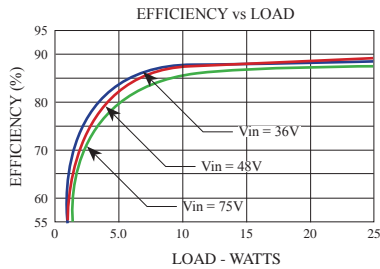
EFFICIENCY CURVES



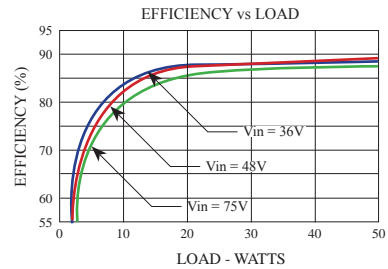
DH25D2405



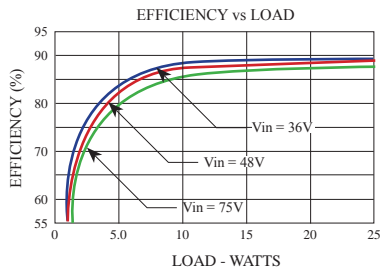
DH50D2405



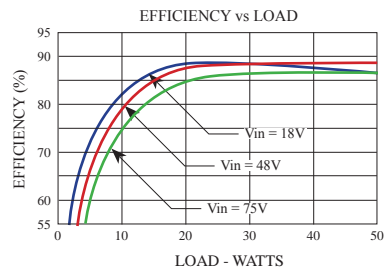
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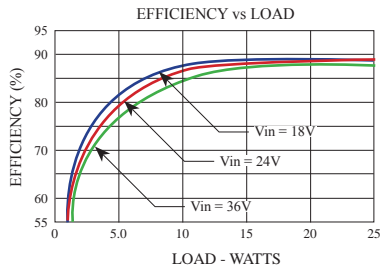
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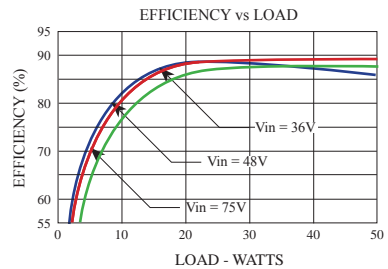
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DH50D48W12

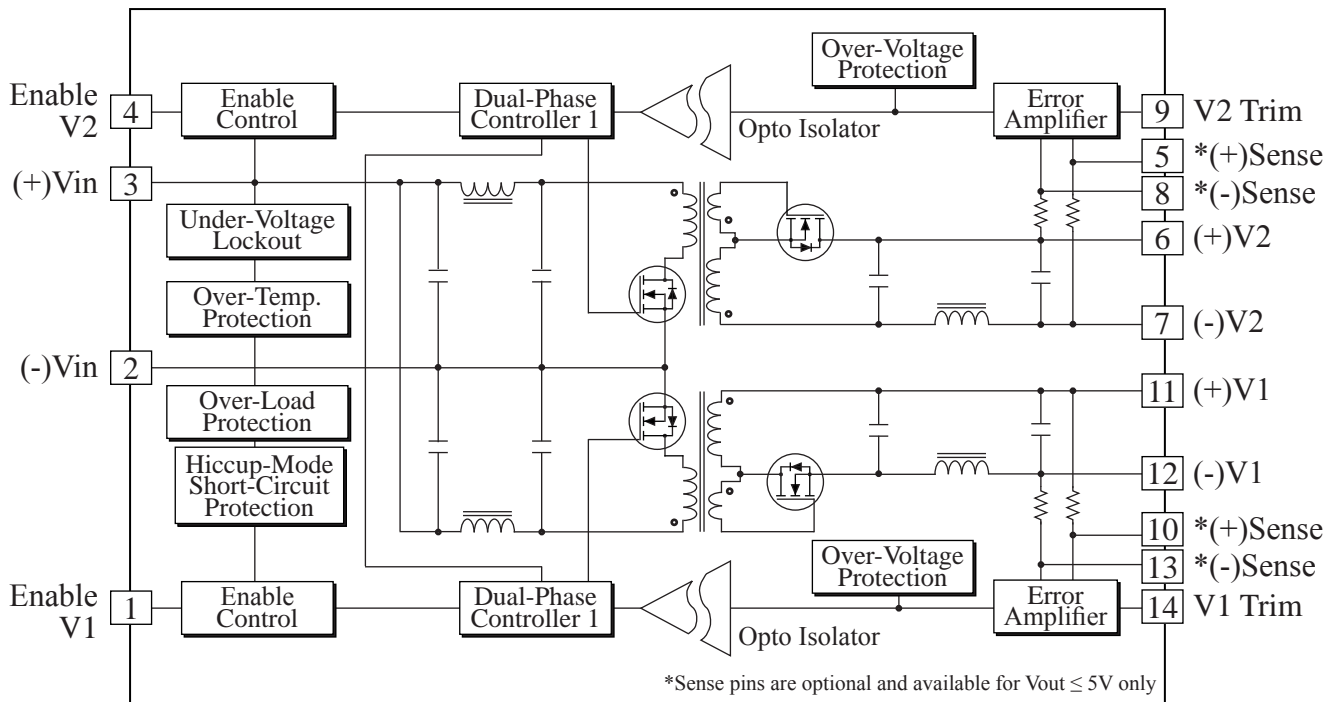


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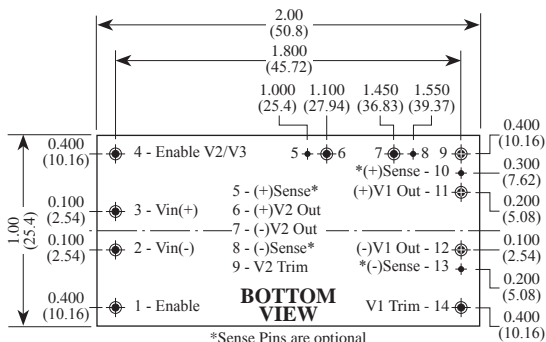


DH50D2415

BLOCK DIAGRAM

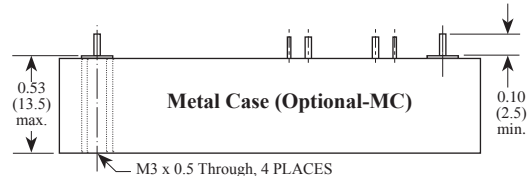
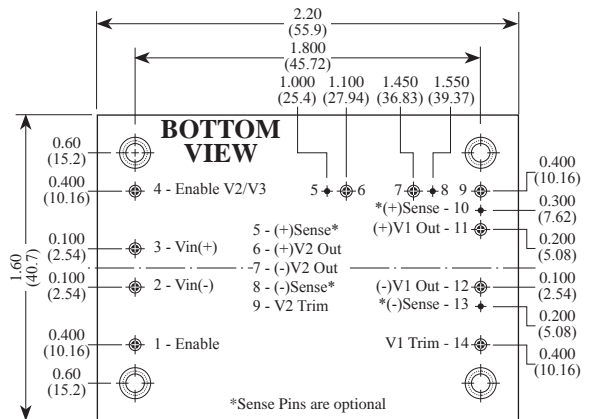


Open Frame (Standard)



1. Optional sense pins 5, 8, 10, 13 are 0.02" (0.5mm) dia. (Sense pins are optional and available for $v_{out} \leq 5V$ only)
2. All other pins are 0.040" (1.0mm) dia. with 0.065" (1.65mm) dia. standoff shoulders.

Encapsulated (Optional, MC Suffix)



1. Optional sense pins 5, 8, 10, 13 are 0.02" (0.5mm) dia. (Sense pins are optional and available for $v_{out} \leq 5V$ only)
2. All other pins are 0.040" (1.02mm) dia.

INPUT		OUTPUT 1						OUTPUT 2					Short Circuit Prot.	Eff. (%) typ. ⁽³⁾	PWR.	MODEL NO. ⁽⁴⁾				
Voltage (Range)	UVL (On/Off)	Voltage (V1)	Current (I1)	Regulation		Ripple Noise ⁽²⁾	OVP (max.)	Voltage (V2)	Current (I2)	Regulation		Ripple Noise					OVP (max.)			
				Line	Load ⁽¹⁾					Line	Load ⁽¹⁾									
24 (18 - 36)	(17V/16V)	1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	Hiccup Mode Indef. - All Outputs	85%	40W	DH50D24012-025			
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V		85%	40W	DH50D24012-033			
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		86%	40W	DH50D24012-05			
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	10V	2.5A	±0.1%	±0.2%	100mV	12V		86%	44W	DH50D24015-10			
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	12V	2.1A	±0.1%	±0.2%	120mV	15V		86%	44W	DH50D24015-12			
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	15V	1.7A	±0.1%	±0.2%	150mV	18V		86%	44W	DH50D24015-15			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V		85%	44W	DH50D24015-025			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V		85%	44W	DH50D24015-033			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		86%	44W	DH50D24015-05			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	10V	2.5A	±0.1%	±0.2%	100mV	12V		86%	44W	DH50D24015-10			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	12V	2.1A	±0.1%	±0.2%	120mV	15V		86%	44W	DH50D24015-12			
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	15V	1.7A	±0.1%	±0.2%	150mV	18V		86%	44W	DH50D24015-15			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V		85%	47W	DH50D24018-025			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V		85%	47W	DH50D24018-033			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		86%	47W	DH50D24018-05			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	10V	2.5A	±0.1%	±0.2%	100mV	12V		86%	47W	DH50D24018-10			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	12V	2.1A	±0.1%	±0.2%	120mV	15V		86%	47W	DH50D24018-12			
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	15V	1.7A	±0.1%	±0.2%	150mV	18V		86%	47W	DH50D24018-15			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V		85%	50W	DH50D24025-025			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V		85%	50W	DH50D24025-033			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		86%	50W	DH50D24025-05			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	10V	2.5A	±0.1%	±0.2%	100mV	12V		87%	50W	DH50D24025-10			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V		87%	50W	DH50D24025-12			
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V		87%	50W	DH50D24025-15			
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V		87%	50W	DH50D24033-033			
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		87%	50W	DH50D24033-05			
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	10V	2.5A	±0.1%	±0.2%	80mV	12V		88%	50W	DH50D24033-10			
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V		88%	50W	DH50D24033-12			
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V		88%	50W	DH50D24033-15			
		5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V		86%	50W	DH50D24050-05			
		5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	10V	2.5A	±0.1%	±0.2%	100mV	12V		88%	50W	DH50D24050-10			
		5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	12V	2.1A	±0.1%	±0.2%	120mV	15V		88%	50W	DH50D24050-12			
		5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	15V	1.7A	±0.1%	±0.2%	150mV	18V		88%	50W	DH50D24050-15			
		48 (36 - 75)	(35V/34V)	1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	2.5V	8.0A	±0.1%	±0.2%		80mV	3.0V	Hiccup Mode Indef. - All Outputs	85%	40W	DH50D48012-025
				1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	3.3V	8.0A	±0.1%	±0.2%		80mV	4.0V		85%	40W	DH50D48012-033
				1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	5.0V	5.0A	±0.1%	±0.2%		80mV	5.9V		86%	40W	DH50D48012-05
				1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	10V	2.5A	±0.1%	±0.2%		100mV	12V		86%	44W	DH50D48015-10
				1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	12V	2.1A	±0.1%	±0.2%		120mV	15V		86%	44W	DH50D48015-12
				1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	15V	1.7A	±0.1%	±0.2%		150mV	18V		86%	44W	DH50D48015-15
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	2.5V	8.0A	±0.1%	±0.2%		80mV	3.0V		85%	44W	DH50D48015-025
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	3.3V	8.0A	±0.1%	±0.2%		80mV	4.0V		85%	44W	DH50D48015-033
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	5.0V	5.0A	±0.1%	±0.2%		80mV	5.9V		86%	44W	DH50D48015-05
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	10V	2.5A	±0.1%	±0.2%		100mV	12V		86%	44W	DH50D48015-10
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	12V	2.1A	±0.1%	±0.2%		120mV	15V		86%	44W	DH50D48015-12
				1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	15V	1.7A	±0.1%	±0.2%		150mV	18V		86%	44W	DH50D48015-15
				1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	2.5V	8.0A	±0.1%	±0.2%		80mV	3.0V		85%	47W	DH50D48018-025
				1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	3.3V	8.0A	±0.1%	±0.2%		80mV	4.0V		85%	47W	DH50D48018-033
				1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	5.0V	5.0A	±0.1%	±0.2%		80mV	5.9V		86%	47W	DH50D48018-05
1.8V	12.5A			±0.1%	±0.1%	50mV	2.1V	10V	2.5A	±0.1%	±0.2%	100mV	12V	86%	47W	DH50D48018-10				
1.8V	12.5A			±0.1%	±0.1%	50mV	2.1V	12V	2.1A	±0.1%	±0.2%	120mV	15V	86%	47W	DH50D48018-12				
1.8V	12.5A			±0.1%	±0.1%	50mV	2.1V	15V	1.7A	±0.1%	±0.2%	150mV	18V	86%	47W	DH50D48018-15				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	85%	50W	DH50D48025-025				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	85%	50W	DH50D48025-033				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	50W	DH50D48025-05				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	10V	2.5A	±0.1%	±0.2%	100mV	12V	87%	50W	DH50D48025-10				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V	87%	50W	DH50D48025-12				
2.5V	10.0A			±0.1%	±0.1%	50mV	3.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V	87%	50W	DH50D48025-15				
3.3V	8.0A			±0.1%	±0.1%	50mV	4.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	87%	50W	DH50D48033-033				
3.3V	8.0A			±0.1%	±0.1%	50mV	4.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	87%	50W	DH50D48033-05				
3.3V	8.0A			±0.1%	±0.1%	50mV	4.0V	10V	2.5A	±0.1%	±0.2%	80mV	12V	88%	50W	DH50D48033-10				
3.3V	8.0A			±0.1%	±0.1%	50mV	4.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V	88%	50W	DH50D48033-12				
3.3V	8.0A			±0.1%	±0.1%	50mV	4.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V	88%	50W	DH50D48033-15				
5.0V	5.0A			±0.1%	±0.1%	75mV	5.9V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	50W	DH50D48050-05				
5.0V	5.0A			±0.1%	±0.1%	75mV	5.9V	10V	2.5A	±0.1%	±0.2%	100mV	12V	88%	50W	DH50D48050-10				
5.0V	5.0A			±0.1%	±0.1%	75mV	5.9V	12V	2.1A	±0.1%	±0.2%	120mV	15V	88%	50W	DH50D48050-12				
5.0V	5.0A			±0.1%	±0.1%	75mV	5.9V	15V	1.7A	±0.1%	±0.2%	150mV	18V	88%	50W	DH50D48050-15				

⁽¹⁾ Measured with sense pins for Vout ≤ 5V; 10% min. load required for Vout ≥ 10V

⁽²⁾ Ripple noise measured with X1 probe tip & ground ring.

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INPUT		OUTPUT 1						OUTPUT 2					Short Circuit Prot.	Eff. (%) typ. ⁽³⁾	PWR.	MODEL NO. ⁽⁴⁾
Voltage (Range)	UVL (On/Off)	Voltage (V1)	Current (I1)	Regulation		Ripple Noise ⁽²⁾	OVP (max.)	Voltage (V2)	Current (I2)	Regulation		Ripple Noise				
				Line	Load ⁽¹⁾					Line	Load ⁽¹⁾					
48W (20 - 75)	(17V/16V)	1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	85%	40W	DH50D48W012-025
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	85%	40W	DH50D48W012-033
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	40W	DH50D48W012-05
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	10V	2.5A	±0.1%	±0.2%	100mV	12V	86%	44W	DH50D48W015-10
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	12V	2.1A	±0.1%	±0.2%	120mV	15V	86%	44W	DH50D48W015-12
		1.2V	12.5A	±0.1%	±0.1%	50mV	1.4V	15V	1.7A	±0.1%	±0.2%	150mV	18V	86%	44W	DH50D48W015-15
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	85%	44W	DH50D48W015-025
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	85%	44W	DH50D48W015-033
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	44W	DH50D48W015-05
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	10V	2.5A	±0.1%	±0.2%	100mV	12V	86%	44W	DH50D48W015-10
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	12V	2.1A	±0.1%	±0.2%	120mV	15V	86%	44W	DH50D48W015-12
		1.5V	12.5A	±0.1%	±0.1%	50mV	1.8V	15V	1.7A	±0.1%	±0.2%	150mV	18V	86%	44W	DH50D48W015-15
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	85%	47W	DH50D48W018-025
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	85%	47W	DH50D48W018-033
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	47W	DH50D48W018-05
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	10V	2.5A	±0.1%	±0.2%	100mV	12V	86%	47W	DH50D48W018-10
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	12V	2.1A	±0.1%	±0.2%	120mV	15V	86%	47W	DH50D48W018-12
		1.8V	12.5A	±0.1%	±0.1%	50mV	2.1V	15V	1.7A	±0.1%	±0.2%	150mV	18V	86%	47W	DH50D48W018-15
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	2.5V	8.0A	±0.1%	±0.2%	80mV	3.0V	85%	50W	DH50D48W025-025
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	85%	50W	DH50D48W025-033
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	50W	DH50D48W025-05
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	10V	2.5A	±0.1%	±0.2%	100mV	12V	87%	50W	DH50D48W025-10
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V	87%	50W	DH50D48W025-12
		2.5V	10.0A	±0.1%	±0.1%	50mV	3.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V	87%	50W	DH50D48W025-15
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	3.3V	8.0A	±0.1%	±0.2%	80mV	4.0V	87%	50W	DH50D48W033-033
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	87%	50W	DH50D48W033-05
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	10V	2.5A	±0.1%	±0.2%	80mV	12V	88%	50W	DH50D48W033-10
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	12V	2.1A	±0.1%	±0.2%	120mV	15V	88%	50W	DH50D48W033-12
		3.3V	8.0A	±0.1%	±0.1%	50mV	4.0V	15V	1.7A	±0.1%	±0.2%	150mV	18V	88%	50W	DH50D48W033-15
		5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	5.0V	5.0A	±0.1%	±0.2%	80mV	5.9V	86%	50W	DH50D48W050-05
5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	10V	2.5A	±0.1%	±0.2%	100mV	12V	88%	50W	DH50D48W050-10		
5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	12V	2.1A	±0.1%	±0.2%	120mV	15V	88%	50W	DH50D48W050-12		
5.0V	5.0A	±0.1%	±0.1%	75mV	5.9V	15V	1.7A	±0.1%	±0.2%	150mV	18V	88%	50W	DH50D48W050-15		

¹⁾ Measured with sense pins for Vout ≤ 5V; 10% min. load required for Vout ≥ 10V

²⁾ Ripple noise measured with X1 probe tip & ground ring.

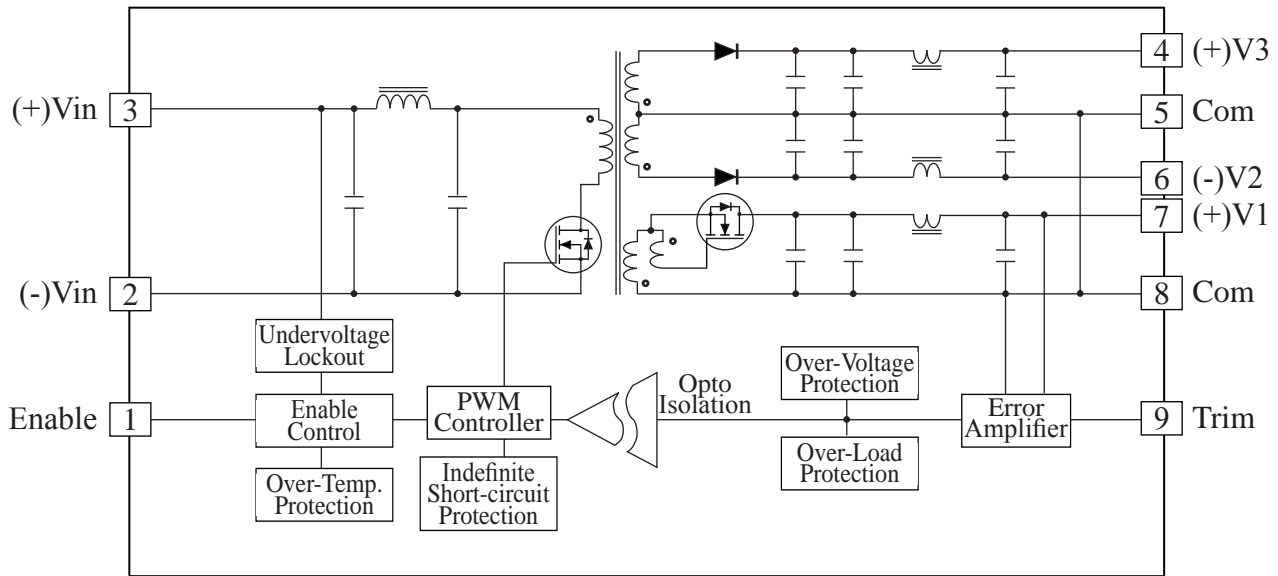
Product Numbering System & Selection Guide

DH	50	D	24	012 -	05	SP
Series No.	Output Power*	No Output	Input Voltage	V1 Output	V2/V3 Output	Options
DH	50 : 50W	D : Dual	24 : 18-36V 48 : 36-75V 48W : 18-75V	012 : 1.2V	10 : 10V 12 : 12V 15 : 15V	C : -55°C Operation SP : Sense Pins MC : Metal Case

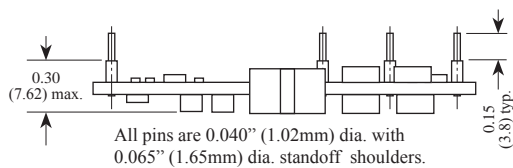
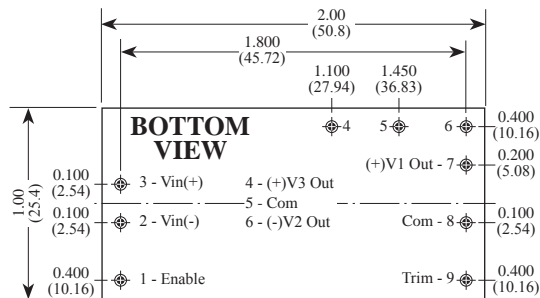
* Full 50W outputs are for Vout ≥ 2.5V only

NOTE :

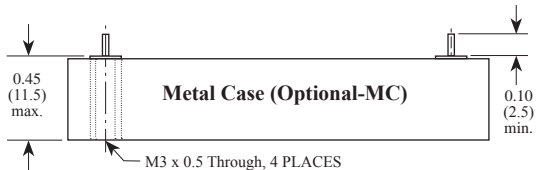
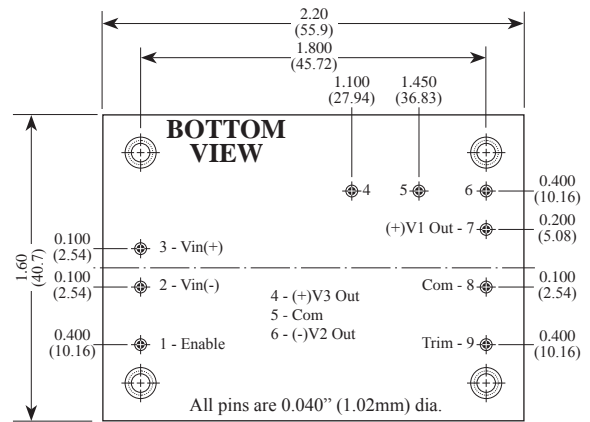
BLOCK DIAGRAM



Open Frame (Standard)



Encapsulated (Optional, MC Suffix)

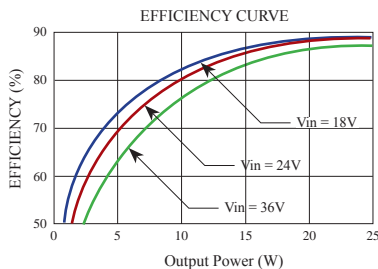
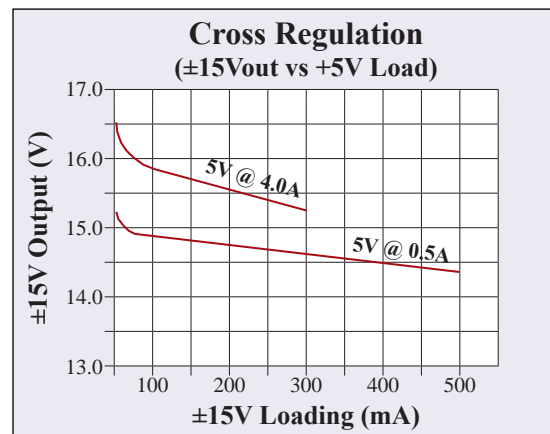
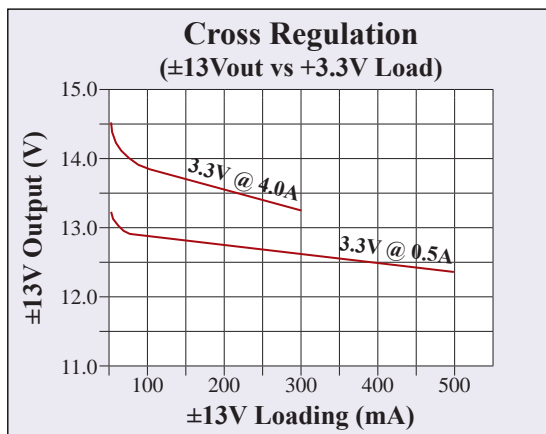


Product Numbering System

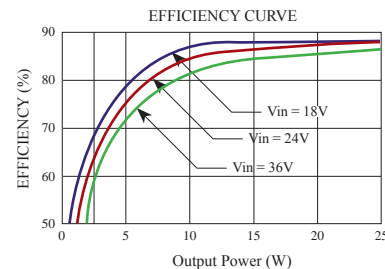
Series No.	Output Power	No Output	Input Voltage	V1 Output	V2/V3 Outputs	Options
DH	20 : 20W 25 : 25W	T : Triple	24 : 18-36V 48 : 36-75V 48W : 18-75V	033 : 3.3V 05 : 5.0V	13 : ±13V 15 : ±15V	C : Extended Temp. MC : Encapsulated

INPUT		OUTPUT										Short Circuit Protection	Over Temp. Shutdown /Recover	Max. Output Power	EFF. (typ.)	MODEL NO.				
Nominal (Range)	UVLO On/Off	Voltage (V)				Current (A)			Ripple & Noise											
		#	Set Point	Min.*	Max.*	#	Min.	Max.	Peak-Peak	R.M.S.										
12 (10 - 20)	9.5V /9.2V	+3.3V ±13V	+V1	+3.30	+3.20	+3.45	+I1	+1.0	+6.0	75mV	15mV	Hiccup Mode Indefinite	+100°C/ +90°C	20W	86%	DH20T12033-13				
			+V3	+13.0	+12.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-13.0	-12.5	-15.5	+I3	-0.01	-1.0	120mV	30mV									
		+5.0V ±15V	+V1	+5.00	+4.90	+5.10	+I1	+1.0	+5.0	75mV	15mV									
			+V3	+15.0	+14.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-15.0	-14.5	-15.5	+I3	-0.01	-1.0	150mV	30mV									
24 (18 - 36)	17V /16V	+3.3V ±13V	+V1	+3.30	+3.20	+3.45	+I1	+1.0	+6.0	75mV	15mV			Hiccup Mode Indefinite	+100°C/ +90°C	25W	88%	DH25T24033-13		
			+V3	+13.0	+12.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-13.0	-12.5	-15.5	+I3	-0.01	-1.0	120mV	30mV									
		+5.0V ±15V	+V1	+5.00	+4.90	+5.10	+I1	+1.0	+5.0	75mV	15mV									
			+V3	+15.0	+14.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-15.0	-14.5	-15.5	+I3	-0.01	-1.0	150mV	30mV									
48 (36 - 75)	34V 33V	+3.3V ±13V	+V1	+3.30	+3.20	+3.45	+I1	+1.0	+6.0	75mV	15mV					Hiccup Mode Indefinite	+100°C/ +90°C	25W	88%	DH25T24033-13
			+V3	+13.0	+12.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-13.0	-12.5	-15.5	+I3	-0.01	-1.0	120mV	30mV									
		+5.0V ±15V	+V1	+5.00	+4.90	+5.10	+I1	+1.0	+5.0	75mV	15mV									
			+V3	+15.0	+14.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-15.0	-14.5	-15.5	+I3	-0.01	-1.0	150mV	30mV									
24W (10 - 36)	9.5V 9.2V	+3.3V ±13V	+V1	+3.30	+3.20	+3.45	+I1	+1.0	+6.0	75mV	15mV	Hiccup Mode Indefinite	+100°C/ +90°C					20W	86%	DH20T24W033-13
			+V3	+13.0	+12.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-13.0	-12.5	-15.5	+I3	-0.01	-1.0	120mV	30mV									
		+5.0V ±15V	+V1	+5.00	+4.90	+5.10	+I1	+1.0	+5.0	75mV	15mV									
			+V3	+15.0	+14.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-15.0	-14.5	-15.5	+I3	-0.01	-1.0	150mV	30mV									
48W (18 - 75)	17V /16V	+3.3V ±13V	+V1	+3.30	+3.20	+3.45	+I1	+1.0	+6.0	75mV	15mV			Hiccup Mode Indefinite	+100°C/ +90°C			25W	86%	DH25T48W033-13
			+V3	+13.0	+12.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-13.0	-12.5	-15.5	+I3	-0.01	-1.0	120mV	30mV									
		+5.0V ±15V	+V1	+5.00	+4.90	+5.10	+I1	+1.0	+5.0	75mV	15mV									
			+V3	+15.0	+14.5	+15.5	+I2	+0.01	+1.0	75mV	15mV									
			-V2	-15.0	-14.5	-15.5	+I3	-0.01	-1.0	150mV	30mV									

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)
 (+)V1 is Regulated and +V3/-V2 are Semi-Regulated. Please see Cross Regulation Curves below.

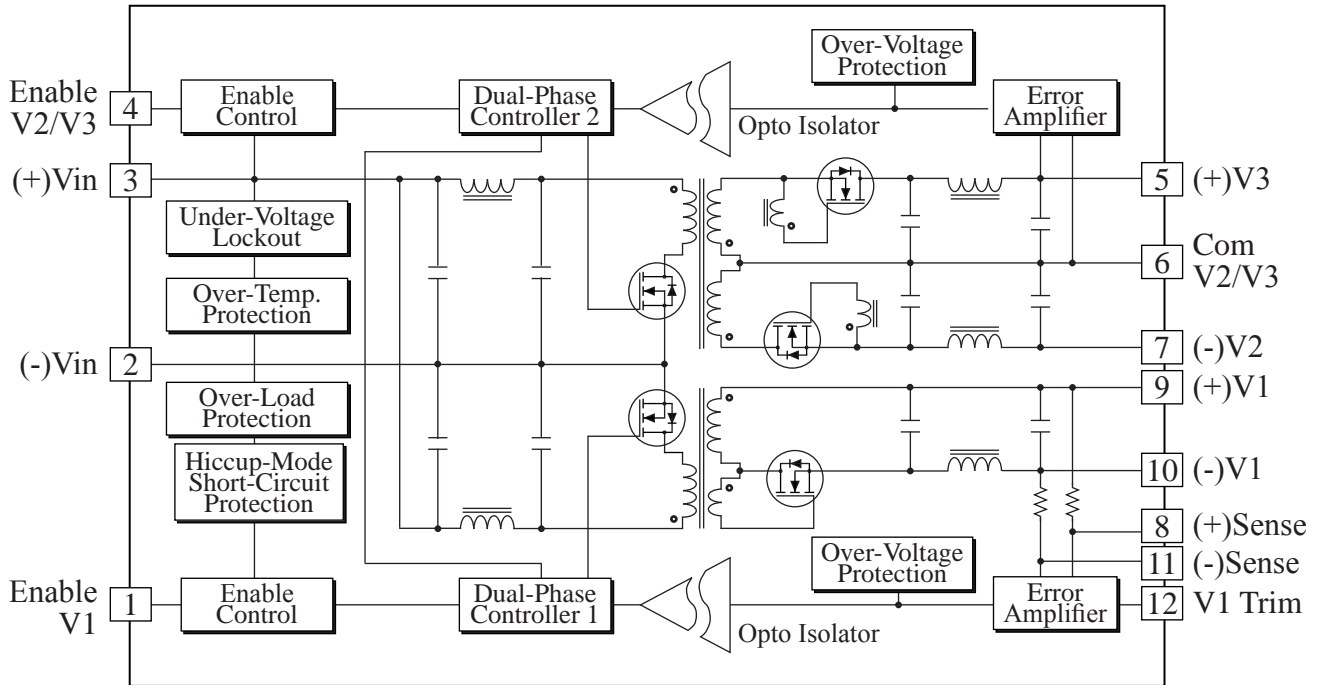


DH25T24033-13

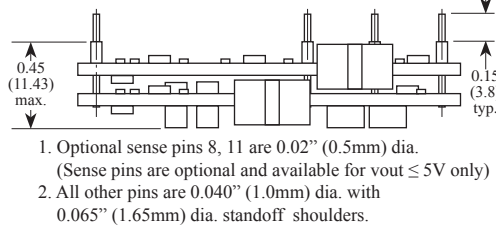
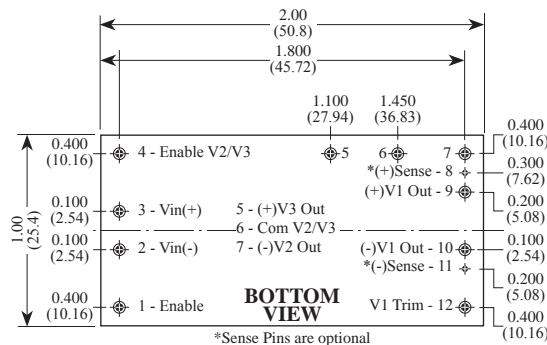


DH25T2405-15

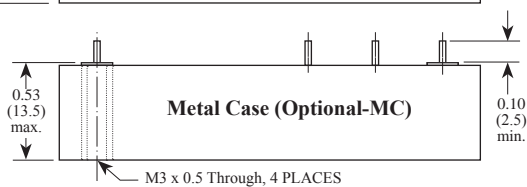
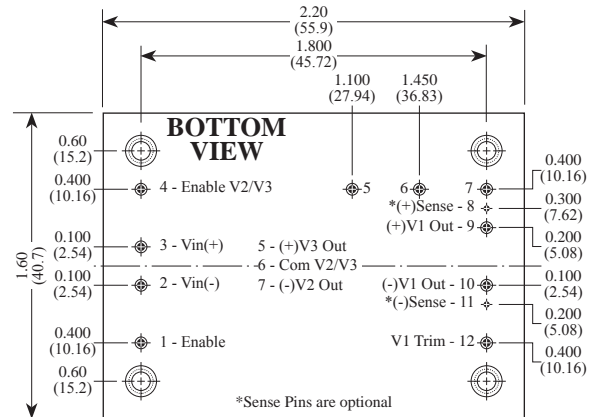
BLOCK DIAGRAM



Open Frame (Standard)



Encapsulated (Optional, MC Suffix)



1. Optional sense pins 8, 11 are 0.02" (0.5mm) dia. (Sense pins are optional and available for vout ≤ 5V only)
2. All other pins are 0.040" (1.02mm) dia.

INPUT		OUTPUT									Short Circuit Protection	Max. Output Power	EFF. (typ.)	MODEL NO.
Nominal (Range)	UVLO On/Off	Voltage (V)				Current (A)			Ripple & Noise					
		#	Set Point	Min.*	Max.*	#	Min.	Max.	Peak-Peak	R.M.S.				
24 (18 - 36)	17V/ 16V	1.5V ±5.0V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV	44W	86%	DH50T24015-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
		1.5V ±10V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		86%	DH50T24015-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV			
		1.5V ±12V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		86%	DH50T24015-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV			
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV			
		1.5V ±15V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		86%	DH50T24015-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV			
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV			
		1.5V ±24V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV	86%	DH50T24015-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.00	-25.00	-I2	-0.05	-0.52	200mV	40mV			
		1.8V ±5.0V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV	48W	86%	DH50T24018-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
		1.8V ±10V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		86%	DH50T24018-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV			
		1.8V ±12V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		86%	DH50T24018-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV			
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV			
		1.8V ±15V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		86%	DH50T24018-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV			
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV			
		1.8V ±24V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV	86%	DH50T24018-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.00	-25.00	-I2	-0.05	-0.52	200mV	40mV			
		2.5V ±5.0V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV	50W	86%	DH50T24025-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
		2.5V ±10V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV		86%	DH50T24025-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV			
		2.5V ±12V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV		86%	DH50T24025-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	15mV			
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	15mV			
		2.5V ±15V	V1	2.50	2.48	2.52	I1	0	10	50mV	10mV		86%	DH50T24025-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV			
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV			
		2.5V ±24V	V1	2.50	2.48	2.52	I1	0	10	50mV	10mV	86%	DH50T24025-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.00	-25.00	-I2	-0.05	-0.52	200mV	40mV			
		3.3V ±5.0V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	50W	88%	DH50T24033-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
3.3V ±10V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV	88%	DH50T24033-10			
	+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV					
	-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV					
3.3V ±12V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV	88%	DH50T24033-12			
	+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	15mV					
	-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	15mV					
3.3V ±15V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV	88%	DH50T24033-15			
	+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV					
	-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV					
3.3V ±24V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV	88%	DH50T24033-24			
	+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV					
	-V2	-24.00	-23.00	-25.00	-I2	-0.05	-0.52	200mV	40mV					

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

Continued on Next Page

INPUT		OUTPUT									Short Circuit Protection	Max. Output Power	EFF. (typ.)	MODEL NO.	
Nominal (Range)	UVLO On/Off	Voltage (V)				Current (A)			Ripple & Noise						
		#	Set Point	Min.	Max.	#	Min.	Max.	Peak-Peak	R.M.S.					
24 (18 - 36)	17V/ 16V	5.0V ±5.0V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV	Hiccup Mode Indefinite	50W	88%	DH50T2405-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		5.0V ±10V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV			88%	DH50T2405-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV				
		5.0V ±12V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV			88%	DH50T2405-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV				
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	120mV	20mV				
		5.0V ±15V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV			88%	DH50T2405-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	150mV	25mV				
		5.0V ±24V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV			88%	DH50T2405-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				
		8.0V ±24V	V1	8.00	7.90	8.10	I1	0.3	3.1	100mV	20mV			88%	DH50T2408-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				
		12V ±5.0V	V1	12.00	11.88	12.12	I1	0.2	2.10	100mV	20mV			88%	DH50T2412-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		12V ±10V	V1	12.00	11.88	12.12	I1	0	2.10	100mV	20mV			88%	DH50T2412-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV				
		12V ±12V	V1	12.00	11.88	12.12	I1	0.2	2.10	100mV	20mV			88%	DH50T2412-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV				
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV				
		12V ±15V	V1	12.00	11.88	12.12	I1	0	2.10	100mV	20mV			88%	DH50T2412-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	150mV	25mV				
		12V ±24V	V1	12.00	11.88	12.12	I1	0.2	2.10	100mV	20mV			88%	DH50T2412-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

Continued on Next Page

INPUT		OUTPUT									Short Circuit Protection	Max. Output Power	EFF. (typ.)	MODEL NO.	
Nominal (Range)	UVLO On/Off	Voltage (V)*				Current (A)			Ripple & Noise**						
		#	Set Point	Min.	Max.	#	Min.	Max.	Peak-Peak	R.M.S.					
48 (36 - 75)	34V /33V	1.5V ±5.0V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV	44W	86%	DH50T48015-05	
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		1.5V ±10V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		44W	86%	DH50T48015-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV				
		1.5V ±12V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		44W	86%	DH50T48015-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV				
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV				
		1.5V ±15V	V1	1.50	1.48	1.52	I1	0	12.50	50mV	10mV		44W	86%	DH50T48015-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	150mV	25mV				
		1.8V ±5.0V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV	48W	86%	DH50T48018-05	
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		1.8V ±10V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		48W	86%	DH50T48018-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV				
		1.8V ±12V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		48W	86%	DH50T48018-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV				
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV				
		1.8V ±15V	V1	1.80	1.78	1.82	I1	0	12.50	50mV	10mV		48W	86%	DH50T48018-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV				
		2.5V ±5.0V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV	50W	86%	DH50T48025-05	
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		2.5V ±10V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV		50W	86%	DH50T48025-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV				
		2.5V ±12V	V1	2.50	2.48	2.52	I1	0	10.00	50mV	10mV		50W	86%	DH50T48025-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV				
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV				
		2.5V ±15V	V1	2.50	2.48	2.52	I1	0	8.0	50mV	10mV		50W	86%	DH50T48025-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV				
		3.3V ±5.0V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV	50W	88%	DH50T48033-05	
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		3.3V ±10V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV		50W	88%	DH50T48033-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV				
		3.3V ±12V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV		50W	88%	DH50T48033-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV				
			-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV				
		3.3V ±15V	V1	3.30	3.20	3.40	I1	0	8.00	75mV	15mV		50W	88%	DH50T48033-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV				
			-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV				
5.0V ±5.0V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV	50W	88%	DH50T4805-05			
	+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV						
	-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV						
5.0V ±10V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV		50W	88%	DH50T4805-10		
	+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV						
	-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV						
5.0V ±12V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV		50W	88%	DH50T4805-12		
	+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV						
	-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV						
5.0V ±15V	V1	5.00	4.95	5.05	I1	0	5.00	75mV	15mV		50W	88%	DH50T4805-15		
	+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	150mV	25mV						
	-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	150mV	25mV						
12V ±5.0V	V1	12.00	11.88	12.12	I1	0.2	2.10	100mV	20mV	50W	88%	DH50T4812-05			
	+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV						
	-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV						
12V ±10V	V1	12.00	11.88	12.12	I1	0	2.10	100mV	20mV		50W	88%	DH50T4812-10		
	+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV						
	-V2	-10.00	-9.60	-10.40	-I2	-0.12	-1.25	100mV	20mV						
12V ±12V	V1	12.00	11.88	12.12	I1	0.2	2.10	100mV	20mV		50W	88%	DH50T4812-12		
	+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	120mV	20mV						
	-V2	-12.00	-11.50	-12.50	-I2	-0.10	-1.0	120mV	20mV						
12V ±15V	V1	12.00	11.88	12.12	I1	0	2.10	100mV	20mV		50W	88%	DH50T4812-15		
	+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV						
	-V2	-15.00	-14.40	-15.60	-I2	-0.08	-0.84	120mV	25mV						

INPUT		OUTPUT									Short Circuit Protection	Max. Output Power	EFF. (typ.)	MODEL NO.
Nominal (Range)	UVLO On/Off	Voltage (V)				Current (A)			Ripple & Noise					
		#	Set Point	Min.	Max.	#	Min.	Max.	Peak-Peak	R.M.S.				
48W (18 - 75)	17V/ 16V	1.5V ±5.0V	V1	1.50	1.48	1.52	I1	0	12.5	75mV	15mV	44W	84%	DH50T48W015-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
		1.5V ±10V	V1	1.50	1.48	1.52	I1	0	12.5	75mV	15mV		84%	DH50T48W015-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV			
		1.5V ±12V	V1	1.50	1.48	1.52	I1	0	12.5	75mV	15mV		84%	DH50T48W015-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV			
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV			
		1.5V ±15V	V1	1.50	1.48	1.52	I1	0	12.5	75mV	15mV		84%	DH50T48W015-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV			
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV			
		1.5V ±24V	V1	1.50	1.48	1.52	I1	0	12.5	75mV	15mV	84%	DH50T48W015-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV			
		1.8V ±5.0V	V1	1.80	1.78	1.82	I1	0	12.5	75mV	15mV	48W	84%	DH50T48W018-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
		1.8V ±10V	V1	1.80	1.78	1.82	I1	0	12.5	75mV	15mV		84%	DH50T48W018-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV			
		1.8V ±12V	V1	1.80	1.78	1.82	I1	0	12.5	75mV	15mV		84%	DH50T48W018-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV			
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV			
		1.8V ±15V	V1	1.80	1.78	1.82	I1	0	12.5	75mV	15mV		84%	DH50T48W018-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV			
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV			
		1.8V ±24V	V1	1.80	1.78	1.82	I1	0	12.5	75mV	15mV	84%	DH50T48W018-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV			
		2.5V ±5.0V	V1	2.50	2.48	2.52	I1	0	10.0	75mV	15mV	50W	84%	DH50T48W025-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.75	-5.25	-I2	-0.1	-2.5	75mV	15mV			
		2.5V ±10V	V1	2.50	2.48	2.52	I1	0	10.0	75mV	15mV		84%	DH50T48W025-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV			
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV			
		2.5V ±12V	V1	2.50	2.48	2.52	I1	0	10.0	75mV	15mV		84%	DH50T48W025-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV			
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV			
		2.5V ±15V	V1	2.50	2.48	2.52	I1	0	10	75mV	15mV		84%	DH50T48W025-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV			
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV			
		2.5V ±24V	V1	2.50	2.48	2.52	I1	0	10	75mV	15mV	84%	DH50T48W025-24	
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV			
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV			
		3.3V ±5.0V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	50W	86%	DH50T48W033-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV			
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV			
3.3V ±10V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	86%	DH50T48W033-10			
	+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV					
	-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV					
3.3V ±12V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	86%	DH50T48W033-12			
	+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV					
	-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV					
3.3V ±15V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	86%	DH50T48W033-15			
	+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV					
	-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV					
3.3V ±24V	V1	3.30	3.20	3.40	I1	0	8.0	75mV	15mV	86%	DH50T48W033-24			
	+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV					
	-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV					

* Combined Line & Load (Low Line to High Line, Min. Load to Full Load)

Continued on Next Page

INPUT		OUTPUT									Short Circuit Protection	Max. Output Power	EFF. (typ.)	MODEL NO.	
Nominal (Range)	UVLO On/Off	Voltage (V)				Current (A)			Ripple & Noise						
		#	Set Point	Min.	Max.	#	Min.	Max.	Peak-Peak	R.M.S.					
48W (18 - 36)	17V/ 16V	5.0V ±5.0V	V1	5.00	4.95	5.05	I1	0	5.0	75mV	15mV	Hiccup Mode Indefinite	50W	86%	DH50T48W05-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		5.0V ±10V	V1	5.00	4.95	5.05	I1	0	5.0	75mV	15mV			86%	DH50T48W05-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV				
		5.0V ±12V	V1	5.00	4.95	5.05	I1	0	5.0	75mV	15mV			86%	DH50T48W05-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV				
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV				
		5.0V ±15V	V1	5.00	4.95	5.05	I1	0	5.0	75mV	15mV			86%	DH50T48W05-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV				
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV				
		5.0V ±24V	V1	5.00	4.95	5.05	I1	0	5.0	75mV	15mV			86%	DH50T48W05-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				
		8.0V ±24V	V1	8.00	7.90	8.10	I1	0.3	3.1	90mV	15mV			86%	DH50T48W08-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				
		12V ±5.0V	V1	12.00	11.88	12.12	I1	0.2	2.1	75mV	15mV			86%	DH50T48W12-05
			+V3	+5.00	+4.90	+5.10	+I3	+0.1	+4.0	75mV	15mV				
			-V2	-5.00	-4.80	-5.20	-I2	-0.1	-2.5	75mV	15mV				
		12V ±10V	V1	12.00	11.88	12.12	I1	0	2.1	75mV	15mV			86%	DH50T48W12-10
			+V3	+10.00	+9.90	+10.10	+I3	+0.12	+1.25	100mV	20mV				
			-V2	-10.00	-9.50	-10.50	-I2	-0.12	-1.25	100mV	20mV				
		12V ±12V	V1	12.00	11.88	12.12	I1	0.2	2.1	75mV	15mV			86%	DH50T48W12-12
			+V3	+12.00	+11.88	+12.12	+I3	+0.10	+1.0	75mV	15mV				
			-V2	-12.00	-11.40	-12.60	-I2	-0.10	-1.0	75mV	15mV				
		12V ±15V	V1	12.00	11.88	12.12	I1	0	2.1	75mV	15mV			86%	DH50T48W12-15
			+V3	+15.00	+14.85	+15.15	+I3	+0.08	+0.84	120mV	25mV				
			-V2	-15.00	-14.25	-15.75	-I2	-0.08	-0.84	120mV	25mV				
		12V ±24V	V1	12.00	11.88	12.12	I1	0.2	2.1	75mV	15mV			86%	DH50T48W12-24
			+V3	+24.00	+23.70	+24.30	+I3	+0.05	+0.52	200mV	40mV				
			-V2	-24.00	-23.50	-24.50	-I2	-0.05	-0.52	200mV	40mV				

INPUT		OUTPUT									Short Circuit Protection	Over Temp. Protect	Max. Output Power	EFF. (typ.)	MODEL NO.	
Nominal (Range)	UVLO On/Off	Voltage (V)*				Current (A)			Ripple & Noise							
		#	Set Point	Min.*	Max.*	#	Min.	Max.	Peak-Peak	R.M.S.						
24 (18 - 36)	17V /16V	±5.0V ±10V	+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	50W	88%	DH50Q2405-10
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+10.00	+9.90	+10.10	+I4	+0.12	+1.25	100mV	20mV					
		±5.0V ±12V	-V3	-10.00	-9.60	-10.40	-I3	-0.12	-1.25	100mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
		±5.0V ±15V	+V4	+12.00	+11.88	+12.12	+I4	+0.10	+1.04	120mV	20mV					
			-V3	-12.00	-11.50	-12.50	-I3	-0.10	-1.04	120mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
		±5.0V ±24V	-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+15.00	+14.85	+15.15	+I4	+0.08	+0.84	150mV	25mV					
			-V3	-15.00	-14.40	-15.60	-I3	-0.08	-0.84	150mV	25mV					
48 (36 - 75)	34V /33V	±5.0V ±10V	+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	50W	88%	DH50Q4805-10
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+10.00	+9.90	+10.10	+I4	+0.12	+1.25	100mV	20mV					
		±5.0V ±12V	-V3	-10.00	-9.60	-10.40	-I3	-0.12	-1.25	100mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
		±5.0V ±15V	+V4	+12.00	+11.88	+12.12	+I4	+0.10	+1.04	120mV	20mV					
			-V3	-12.00	-11.50	-12.50	-I3	-0.10	-1.04	120mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
		±5.0V ±24V	-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+15.00	+14.85	+15.15	+I4	+0.08	+0.84	150mV	25mV					
			-V3	-15.00	-14.40	-15.60	-I3	-0.08	-0.84	150mV	25mV					
24 (20 - 75)	17V /16V	±5.0V ±10V	+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV	Hiccup Mode Indefinite	Shutdown +105°C Recover +90°C	50W	86%	DH50Q48W05-10
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+10.00	+9.90	+10.10	+I4	+0.12	+1.25	100mV	20mV					
		±5.0V ±12V	-V3	-10.00	-9.60	-10.40	-I3	-0.12	-1.25	100mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
			-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
		±5.0V ±15V	+V4	+12.00	+11.88	+12.12	+I4	+0.10	+1.04	120mV	20mV					
			-V3	-12.00	-11.50	-12.50	-I3	-0.10	-1.04	120mV	20mV					
			+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV					
		±5.0V ±24V	-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV					
			+V4	+15.00	+14.85	+15.15	+I4	+0.08	+0.84	150mV	25mV					
			-V3	-15.00	-14.40	-15.60	-I3	-0.08	-0.84	150mV	25mV					
±5.0V ±24V	+V2	+5.00	+4.90	+5.10	+I2	+0.25	+2.5	75mV	15mV							
	-V1	-5.00	-4.80	-5.20	-I1	-0.25	-2.5	75mV	15mV							
	+V4	+24.00	+23.76	+24.24	+I4	+0.05	+0.52	200mV	40mV							
		-V3	-24.00	-23.00	-25.00	-I3	-0.05	-0.52	200mV	40mV						

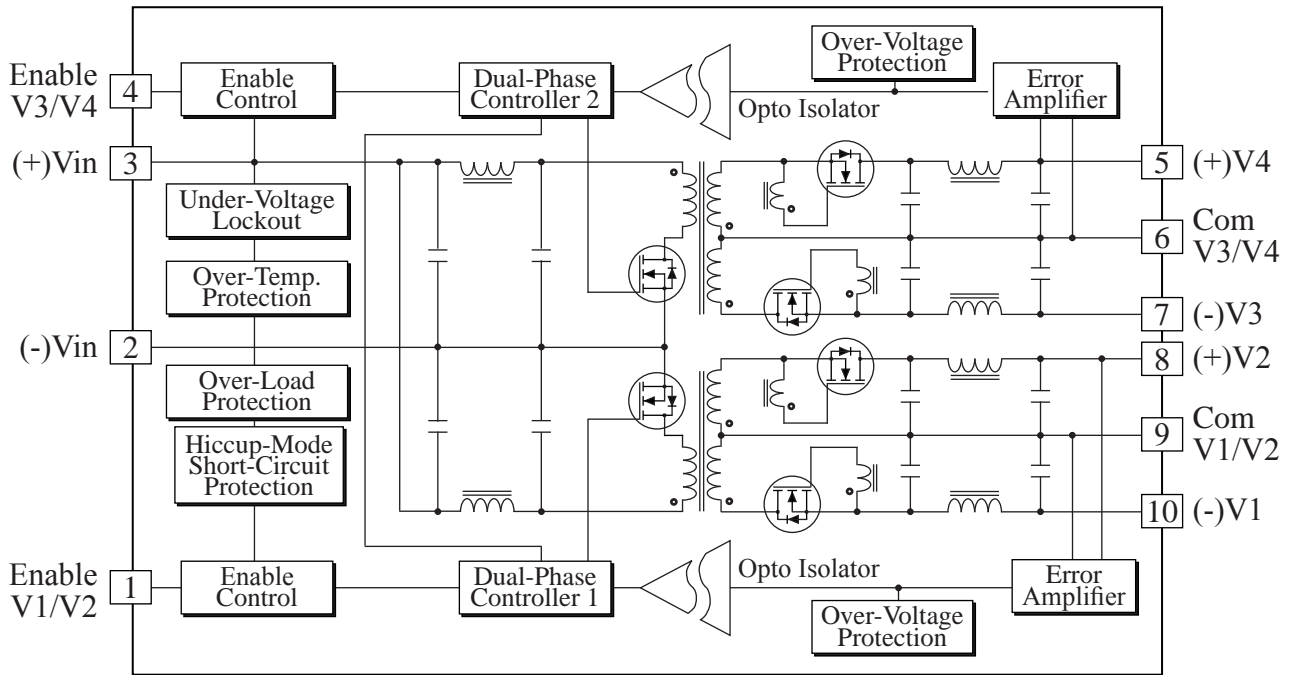
¹⁾ Measured from 10% to max. load.

²⁾ Ripple noise measured with X1 probe tip & ground ring.

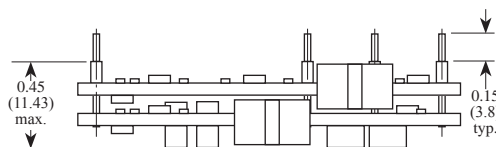
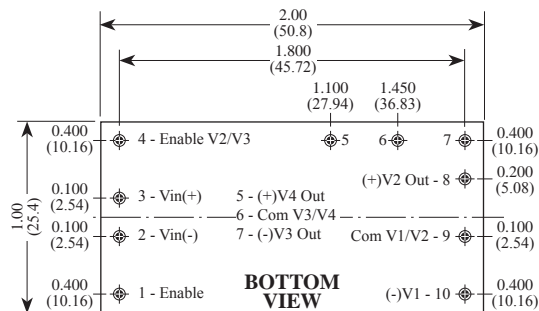
Product Numbering System & Selection Guide

DH	50	Q	24	012 -	05	MC
Series No.	Output Power*	No Output	Input Voltage	V1 Output	+V3/-V2 Output	Options
DH	50 : 50W	Q : Quad	24 : 18-36V	015 : 1.2V	05 : ±5.0V	C : Extended Temp.
			48 : 36-75V	025 : 2.5V	12 : ±12V	MC : Encapsulated
			48W : 20-75V	12 : 12V	15 : ±15V	

BLOCK DIAGRAM

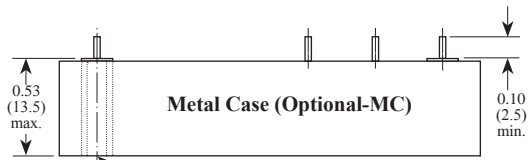
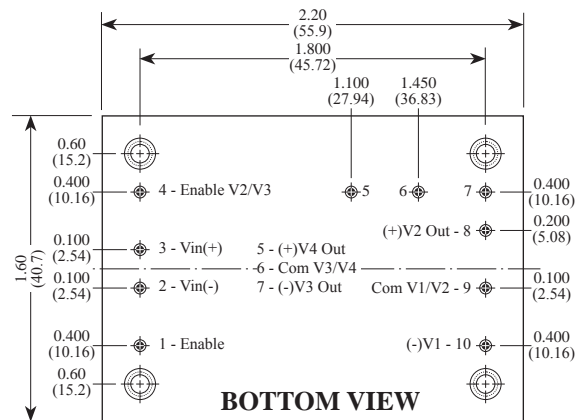


OPEN FRAME



All pins are 0.040" (1.0mm) dia. with 0.065" (1.65mm) dia. standoff shoulders.

METAL CASE



M3 x 0.5 Through, 4 PLACES
All pins are 0.040" (1.02mm) dia.