

DC - DC Converters



Features:

- 50 W to 60 W DC / DC Converter
- 2 : 1 input range, Pi input filter
- Isolation input and output
- High performance up to 86%
- Short circuit protection

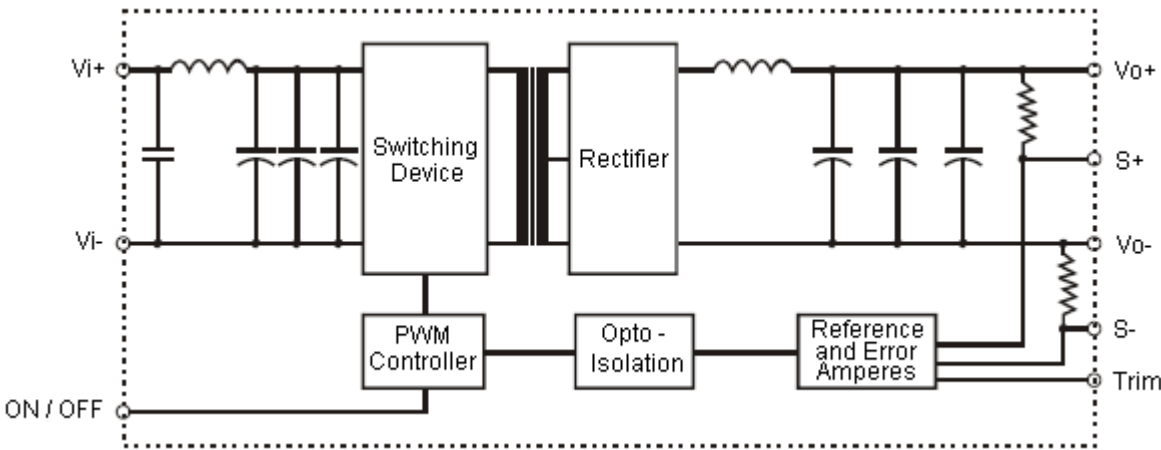
Model List

Model No.	Input Voltage	Output Wattage	Output Voltage	Output Current	EFF. (Minimum)
Single Output Models					
HDD60-12S05T	9 to 18 V dc	60 W	+5 V dc	12,000 mA	79%
HDD60-12S12T			+12 V dc	5,000 mA	82%
HDD60-12S24T			+24 V dc	2,500 mA	84%
HDD60-24S12T	18 to 36 V dc		+12 V dc	5,000 mA	
HDD60-48S12T	36 to 72 V dc				85%
HDD60-48S24T			+24 V dc	2,500 mA	86%

Suffix “T” : Chassis mounting type : (Terminal Block), no heat sink
Use chassis as heat sink or fan force cooling

Circuit Schematic

Block diagram for HDD60 series with single output



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Specifications

All specifications typical at nominal line, full load, 25°C unless otherwise noticed

General					
Characteristics	Conditions	Minimum	Typical	Maximum	Unit
Switching Frequency	Vi nom, Io nom	-	80	-	KHz
Isolation Voltage	Input / Output	1,500	-	-	V dc
Isolation Resistance	Input / Output, at 500 V dc	1G	-	-	Ω
Ambient Temperature	Operating at Vi nom, Io nom	-25	-	+71	°C
Case Temperature	Operating at Vi nom, Io nom	-	-	+95	
Derating	Vi nom	See derating curve			% / °C
Storage Temperature	Non operational	-25	-	100	°C
M.T.B.F.	According to MIL-HDBK-217F, GF40	-	122,500	-	Hours
Dimension	L88.9 × W139.7 × H35.6 for "P" type				mm
	L88.9 × W139.7 × H32.9 for "T" type				
Cooling	Free air convection				
Case Material	Metal				

Input Specifications

Characteristics	Conditions		Minimum	Typical	Maximum	Unit
Input Voltage Range	Ta minimum to Ta maximum, Io nom		9	12	18	V dc
			18	24	36	
			36	48	72	
No Load Input Current	Vi nom, Io = 0	12 V Models	-	-	20	mA
		24 V Models	-	-	15	
		48 V Models	-	-	10	
Input Voltage w/o Damage	Io nom	12 V Models	-	-	20	V dc
		24 V Models	-	-	40	
		48 V Models	-	-	75	
Input Filter	Pi type					

Output Specifications

Characteristics	Conditions	Minimum	Typical	Maximum	Unit
Output Voltage accuracy	Vi nom, Io nom	-	-	±1	%
Minimum load	Vi nom	0	-	-	
Line Regulation	Io nom, Vi minimum to Vi maximum	-	-	±1	
Load Regulation	Vi nom, Io minimum to Io nom	-	-	±2	
Transient Recovery Time	25% load, step changed	-	500	-	μs
Temperature Coefficient	Vi nom, Io nom	-	-	±0.02	% / °C
Ripple and Noise	Vi nom, Io nom, BW = 20 MHz	-	-	Vout × ±1%	mV
Voltage Trim Range	Vi nom	-	10	-	%
Efficiency	Vi nom, Io nom, Po / Pi	Up to 86%, see model list			

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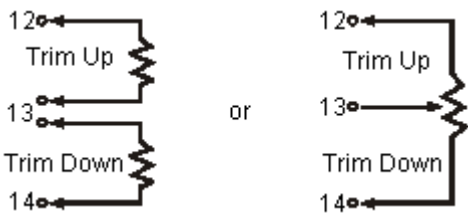
Control and Protection	
Remote ON / OFF	ON : opened or +5.5 V dc applied, reference to input GND
	OFF : -1.8 V dc applied, reference to input GND
Input Reversed	Shunt diode built in, external fuse recommended
Output Short Circuit	Continuous

Mechanism and Pin Configuration

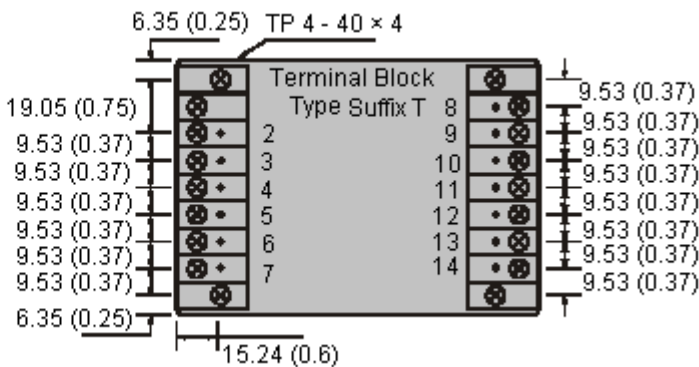
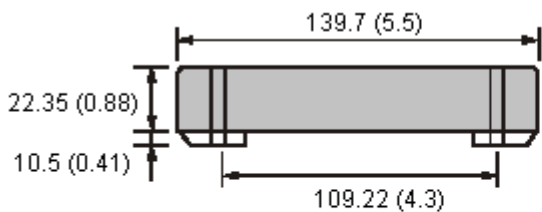
Remote ON / OFF Control

Terminal 6 control
Logic compatibility :open collector TTL
Control voltage ON +5.5 V minimum or open circuit
OFF+1.8 V maximum
Converter shutdown idle current10 mA
Control common input terminal 2

External Output Trimming



Case : HH- T



Bottom View

Dimensions : Millimetres (Inches)

Physical Characteristics

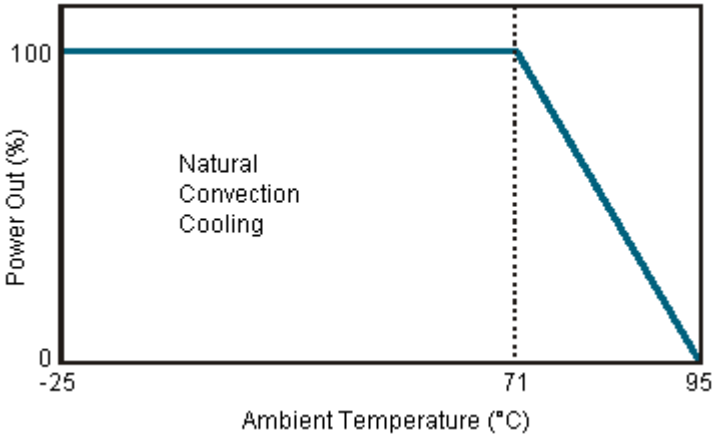
Case Size	88.9 × 139.7 × 32.9 mm 3.5 × 5.5 × 1.29 inches for "T" type
Case Material	Metal
Weight	570 g for "T" type



Pin Assignment

General	
Pin No.	Single
1	No Pin
2 and 3	Vi -
4 and 5	Vi +
6	-
7	N. C.
8	Vo -
9	Vo -
10	Vo +
11	Vo +
12	Sensor -
13	Trim
14	Sensor +

Derating



Part Number Table

Description	Part Number
Converter, DC / DC, Chassis, 60 W, 5 V	HDD60-12S05T
Converter, DC / DC, Chassis, 60 W, 12 V	HDD60-12S12T
Converter, DC / DC, Chassis, 60 W, 24 V	HDD60-12S24T
Converter, DC / DC, Chassis, 60 W, 12 V	HDD60-24S12T
Converter, DC / DC, Chassis, 60 W, 12 V	HDD60-48S12T
Converter, DC / DC, Chassis, 60 W, 24 V	HDD60-48S24T

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