Isolated DC/DC Converter Specification

Model No.:WGI20-48S05L

Input voltage	Output voltage	Output current	Output power	Efficiency	Size
36-75V DC	5V DC	20 Amps	100 Watts	91%	110*70*23mm

The WGI20-48S05L is an isolated DC-DC converter that uses a synchronous rectification technology, and features high efficiency and power density. It has the dimensions of 110mm x 70mm x 23mm (4.33 in. x 2.76 in. x 0.91 in) and provides the rated output voltage of 5 V and the maximum output current of 20 A.

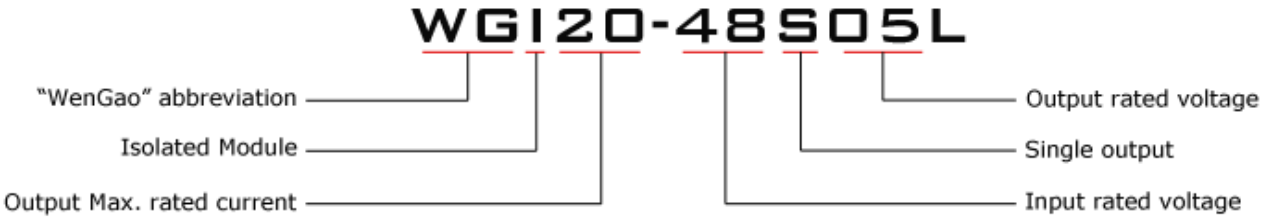
Features

- Design meeting RoHS / CE
- High efficiency: 91% (@ 48Vin, 25℃)
- Isolated between input and output
- Internal capacitor: NCC & NICHICON (high reliability)
- 100% full load burn-in test
- Short circuit, Over load, Over temperature, **Reverse** protections
- Waterproof level IP65
- 2 Years warranty

Applications

- Industrial
- Alternative Energy
- Golf Cart & Forklift
- Military
- Electromotor
- Telecommunications
- Boat & Yacht
- Medical and so on.

Model naming method



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Electrical Specifications					
Conditions: TA = 25° C (77° F), Airflow = 1.0 m/s (200 LFM), Vin = 48 V, Vout = 5 V , unless otherwise specified.					
Parameter	**Min.**	**Typ.**	**Max.**	**Units**	**Remarks**
Absolute maximum ratings					
Operating ambient temperature	-40	-	+55	° C	
Shell ambient temperature	-40	-	80	° C	
Storage temperature	-55	-	100	° C	
Operating humidity	5	-	95	%	Non-condensing
Atmospheric pressure	62	-	106	Kpa	
Altitude	-	-	4000	m	
Cooling way	-	-	-		Natural cooling
Input characteristics					
Input voltage	36	48	75	V	-
Max. input voltage	-	-	78	V	Continuous
Undervoltage shutdown	30	31.5	35	V	Automatic recovery
Undervoltage recovery	31	34	36	V	Automatic recovery
Max. input current	-	-	4	A	Vin = 36V; Iout = 20A
No load current	-	80	300	mA	Vin = 48V
Positive electrode cable	-	16	-	AWG	recommend
Negative electrode cable	-	16	-	AWG	recommend
Enable PIN cable	-	-	-	AWG	None
Fuse	-	7.5	-	A	
Output characteristics					
Efficiency	-	91	-	%	Vin = 48V; Iout = 20A
Output voltage	4.90	5.0	5.10	V	Vin = 48V; Iout = 20A
Regulator accuracy	-	±2	-	%	
Voltage regulation	-	±2	-	%	
Load Regulation	-	±2	-	%	
Overvoltage protection	5.80	6.0	6.50	V	Hiccup mode
Output current	0	-	20	A	
Overcurrent protection	21	23	27	A	
External capacitance	0	1000	6000	μF	
Output ripple and noise	-	30	150	mVp-p	Vin = 36–75 V; Oscilloscope bandwidth: 20 MHz;
Output voltage rise time	-	8	20	mS	
Boot delay time	-	30	60	mS	
Out voltage overshoot	-	-	5	%	
Over temperature protection	-	-	85	° C	Shell temperature, @ 80° C Restore working
Short circuit protection	-	-	-		Long-term (4 hours) short circuit is not damaged, Hiccup mode
Positive electrode cable	-	14	-	AWG	recommend
Negative electrode cable	-	14	-	AWG	recommend

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Safety and EMC features				
Anti-electric Strength	Input to Output	≥1500	V	Leakage current ⩽ 10mA, 1min, no breakdown, no arcing
	Input to Shell	≥1500	V	
	Output to Shell	≥500	V	
Insulation resistance	Input to Output	≥50	MΩ	Test voltage = 500V
	Input to Shell			
	Output to Shell			
Other characteristics				
Weight	≤250		g	
Package	Color box			
MTBF	≥200,000		H	Vin = 48V; Iout = 20A
Switching frequency	250±30		KHz	

Characteristic Curves

Conditions: TA = 25° C (77° F), Vin = 48 V, Vout = 5 V , unless otherwise specified.

Figure 1, Efficiency

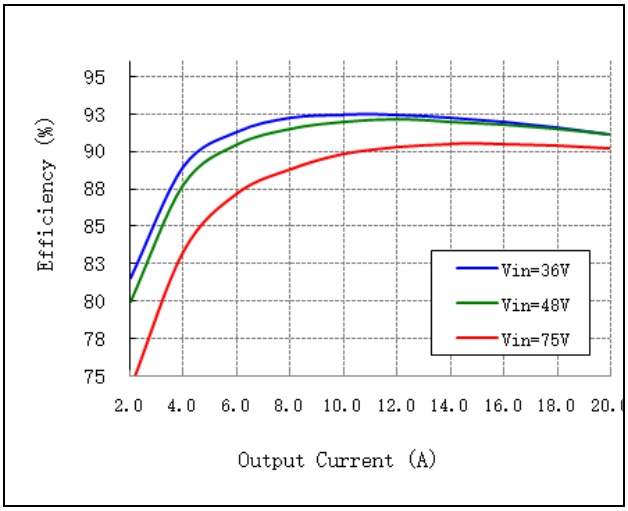


Figure 2, Power dissipation

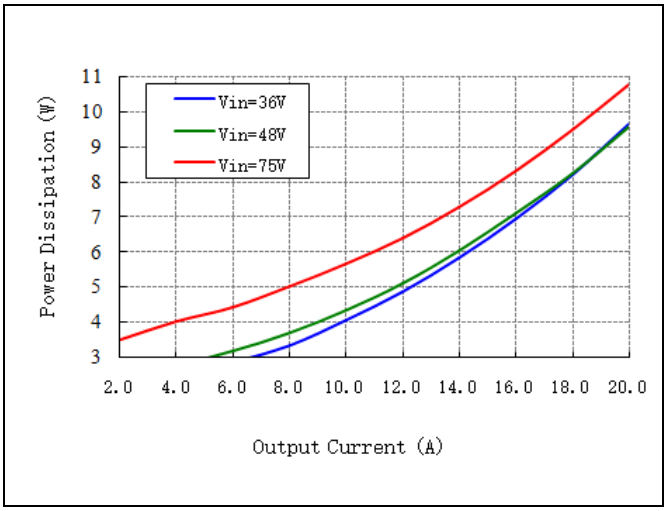
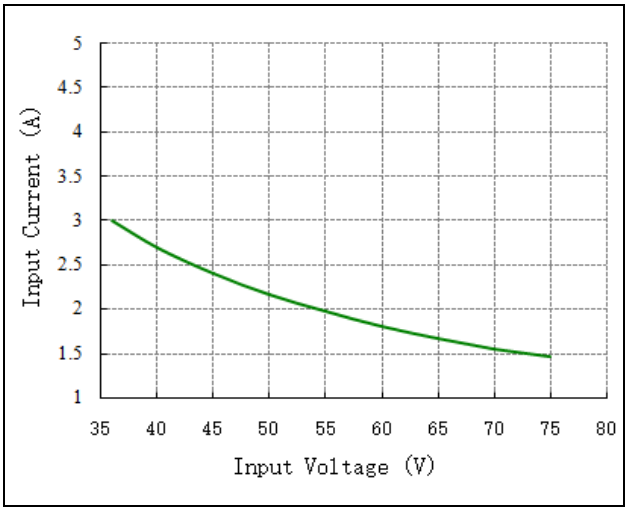


Figure 3, Input V-I



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Typical Waveforms

Conditions: TA = 25° C (77° F), Vin = 48 V, unless otherwise specified.

Figure 4, 25% - 50% load dynamic

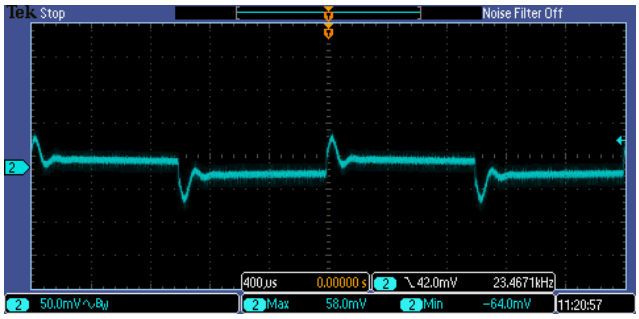


Figure 5, 50% - 75% load dynamic

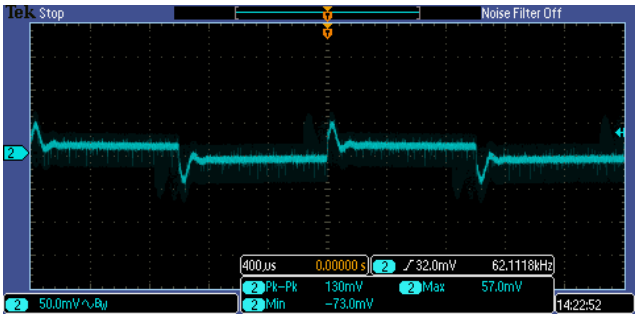


Figure 6, Output voltage established (Iout = 10A)

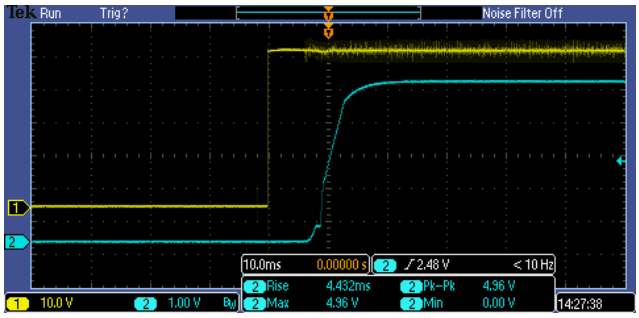
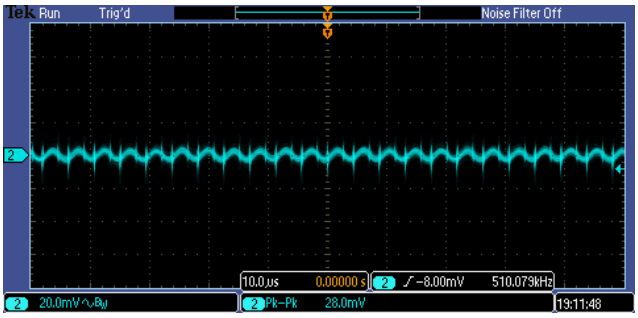


Figure 7, Output ripple & noise (Iout = 10A)

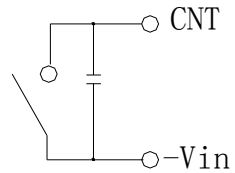


Feature Description

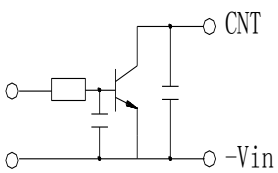
Remote On/Off (CNT) (Optional function)

Logic Enable	Low level (0 – 1.5Vdc)	High level (3.5 - 75Vdc)	Left open
Negative logic	On	Off	Off

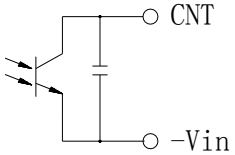
Various circuits for driving the CNT



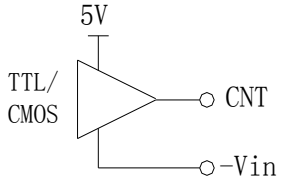
Simple control



Transistor control



Isolation control



Direct logic drive

Input Undervoltage Protection

The converter will shut down after the input voltage drops below the under voltage protection threshold for shutdown. The converter will start to work again after the input voltage reaches the input under voltage protection threshold for startup. For the Hysteresis, see the Protection characteristics.

Output Overcurrent Protection

The converter equipped with current limiting circuitry can provide protection from an output overload or short circuit condition. If the output current exceeds the output overcurrent protection set point , the converter enters hiccup mode. When the fault condition is removed, the converter will automatically restart.

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Overtemperature Protection

A temperature sensor on the converter senses the average temperature of the module. It protects the converter from being damaged at high temperatures. When the temperature exceeds the over temperature protection threshold, the output will shut down. It will allow the converter to turn on again when the temperature of the sensed location falls by the value of Over temperature Protection Hysteresis

Reverse Protection

Reverse voltage protection circuits prevent damage to power supplies and electronic circuits in the event of a reverse voltage applied at the input terminals. The protection ensures that the components are not damaged by accidental swap of the power supply connections.

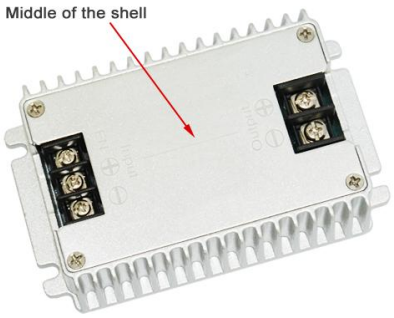
Output Overvoltage Protection

When the voltage directly across the output pins exceeds the output overvoltage protection threshold, the converter will enter hiccup mode. When the fault condition is removed, the converter will automatically restart.

Thermal Consideration

Sufficient airflow should be provided to help ensure reliable operating of the WGI20-48S05L.

Therefore, thermal components are mounted on the top surface of the WGI20-48S05L to dissipate heat to the surrounding environment by conduction, convection and radiation. Proper airflow can be verified by measuring the temperature at the middle of the base plate.



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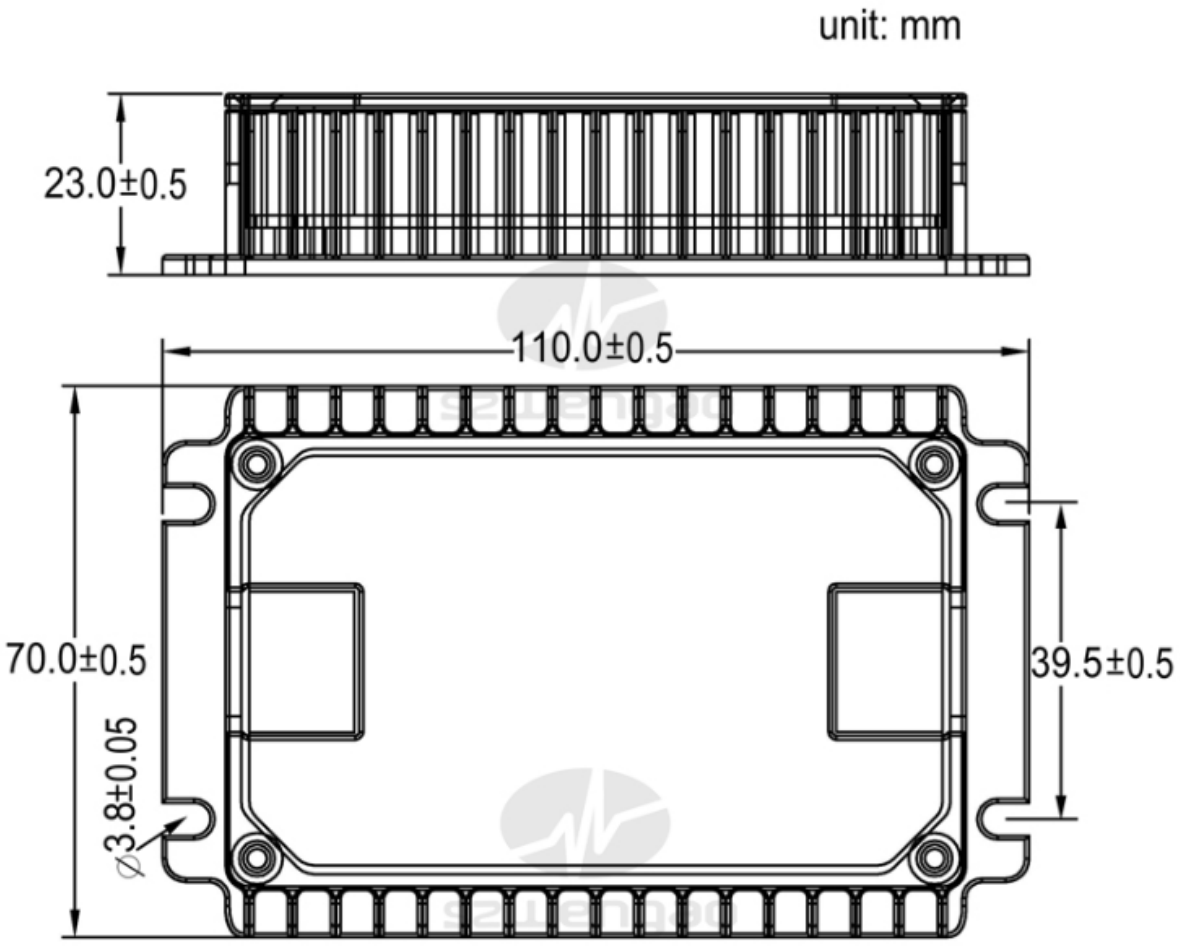
Dimension



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