



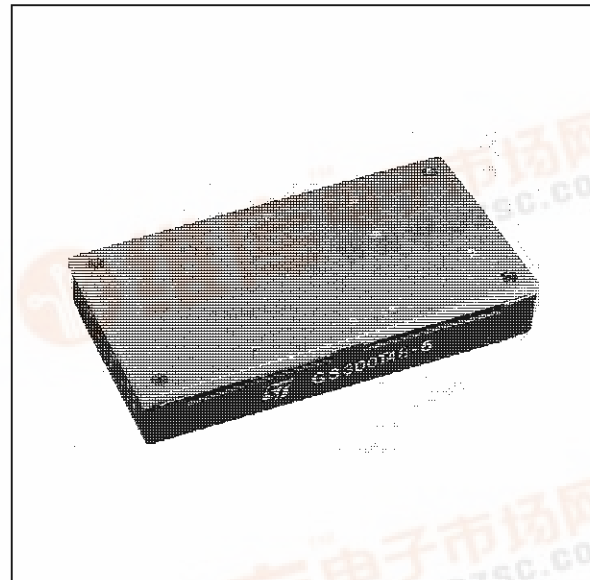
GS300T48-5

300W DC-DC CONVERTER

Type	V_i	V_o	I_o
GS300T48-5	38 to 60 V	5,075 V	60 A

FEATURES

- Very high output power (300W)
- High efficiency (80% min.)
- Parallel operation with current sharing
- Synchronization pin
- Remote ON/OFF
- Remote load voltage sense compensation
- Output short-circuit protection
- Output overvoltage protection
- Thermal protection
- Undervoltage lock-out
- Minimal overshoot during load transients
- 500 V_{DC} input to output isolation
- Internal input and output filtering
- Softstart
- PCB or chassis mountable



DESCRIPTION

The GS300T48-5 is a 300W DC-DC converters used to generate a 5.075V isolated output with a current of 60A from a wide range input voltage (38 to 60V).

SELECTION GUIDE

Type Ordering Number	Input Voltage (V)	Output Voltage (V)	Output Current (A)	Dimensions L • W • H mm (inches)
GS300T48-5 GS300T48-5E	38 to 60	5.075	60	125 • 66.5 • 20 (4.92 • 2.62 • 0.79) The suffix E identifies the metric threading on the planar heatsink (see fig. 1).

GS300T48-5

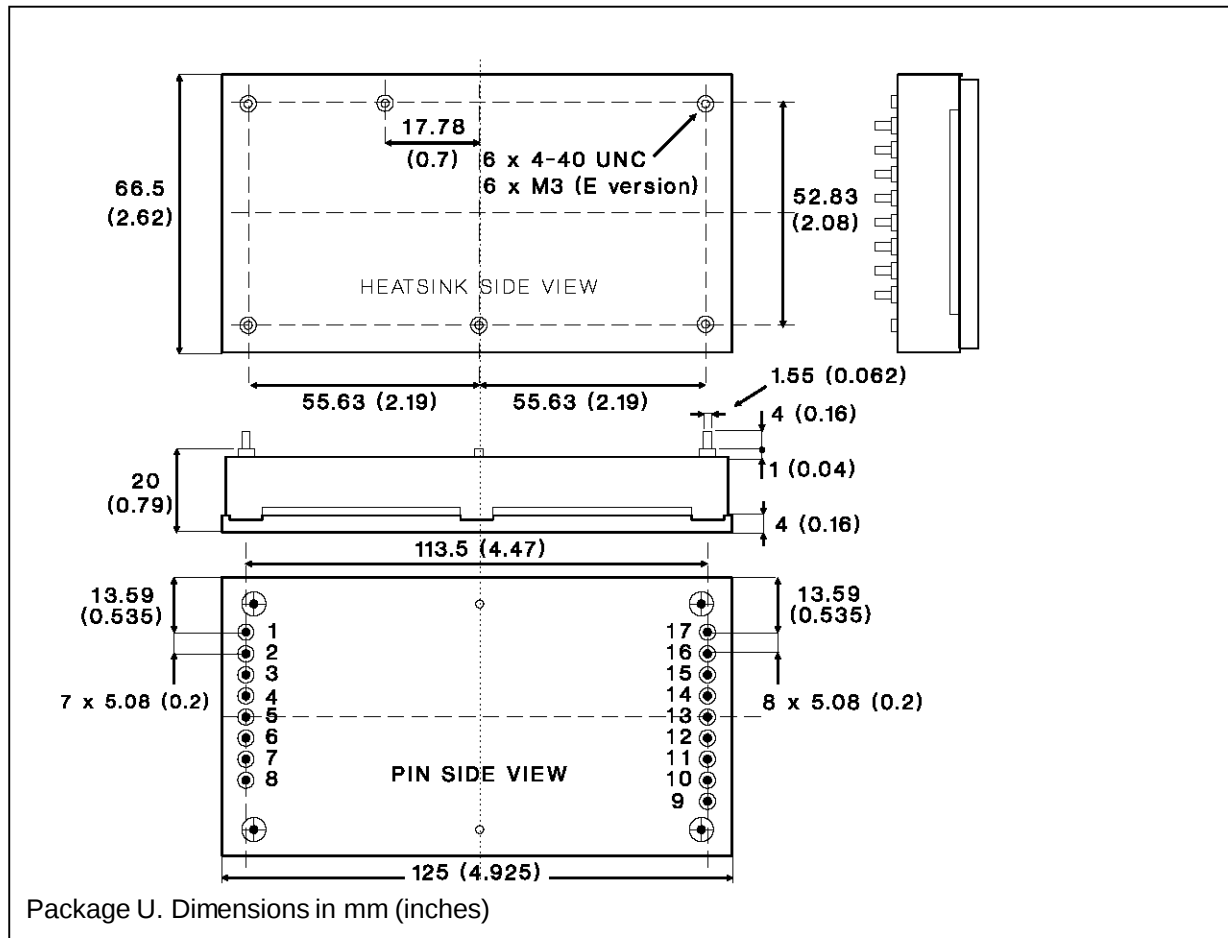
ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V _i	Input Voltage	V _O = 5.075V I _O = 0 to 30A (Operating Conditions)	38	48	60	V _{DC}
V _{IUV}	Input Undervoltage Lockout	I _O = 0 to 60A	29		36	V
I _i	Average Input Current	V _i = 48V I _O = 60A			7.8	A
I _{ipk}	Inrush Transient Peak Current	V _i = 60V I _O = 60A			0.3	A ² s
I _{ir}	Reflected Input Current	V _i = 48V I _O = 60A BW = 5Hz to 20MHz (see fig. 2)			30	mApp
V _{ien}	Enable Input Voltage	V _i = 38 to 60V I _O = 0 to 60A	0		1.2	V
I _{ien}	Enable Input Current	V _i = 38 to 60V I _O = 0 to 60A V _{ien} = 0V			-1	mA
V _{iinh}	Max Inhibit Voltage	V _i = 38 to 60V I _O = 0 to 60A V _{ien} = open	8		18	V
P _i	Input Power	V _i = 38 to 60V I _O = 0A (No Load)		1.5	2	W
V _O	Total Output Voltage Regulation	V _i = 38 to 60V I _O = 0 to 60A	4.490	5.075	5.210	V
V _{ost}	Short-term Output Voltage Regulation	V _i = 38 to 60V I _O = 0 to 60A	5.002	5.075	5.148	V
V _{ots}	Total Static Output Voltage Regulation	V _i = 38 to 60V I _O = 0 to 60A	4.970	5.075	5.180	V
V _{ol}	Output Overvoltage Limit Initiation	V _i = 38 to 60V I _O = 0 to 60A		6.3		V
V _{or}	Output Ripple Voltage	V _i = 38 to 60V I _O = 60A BW = 0 to 20 Mhz			50	mVpp
V _{on}	Output Noise Voltage	V _i = 38 to 60V I _O = 60A BW = 0 to 20 Mhz			100	mVpp
ΔV _O	Total Remote Sense Compensation	V _i = 38 to 60V			0.6	V
δV _O	Peak Load Transient Response	V _i = 48V δI _O = 10A slope = 0.1A/μs			100	mVp
I _O	Output Current	V _i = 38 to 60V V _O = 5V	0		60	A
I _{ol}	Overcurrent Limit Initiation	V _i = 48V		63		A
I _{osc}	Shortcircuit Output Current	V _i = 48V		69		A
t _s	Load Transient Setting Time	V _i = 48V δI _O = 10A slope = 0.1A/μs			250	μs
t _{on}	Turn-on Time	V _i = 38 to 60V I _O = 0 to 60A V _{ien} = from high to low			10	ms
		V _i = 0 to 60V I _O = 0 to 60A V _{ien} = low			10	
V _{is}	Isolation Voltage		500			V
f _s	Switching Frequency	V _i = 38 to 60V I _O = 0 to 60A	160	180	200	kHz
η	Efficiency	V _i = 38 to 60V I _O = 60A	80	81		%
R _{th}	Thermal Resistance	Case to Ambient		5.2		°C/W
T _{cop}	Operating Case Temperature Range*		0		+70	°C
T _{stg}	Storage Temperature Range		-40		+105	°C

* Thermal intervention @ T_{cop} = 85°C

CONNECTION DIAGRAM AND MECHANICAL DATA

Figure 1.

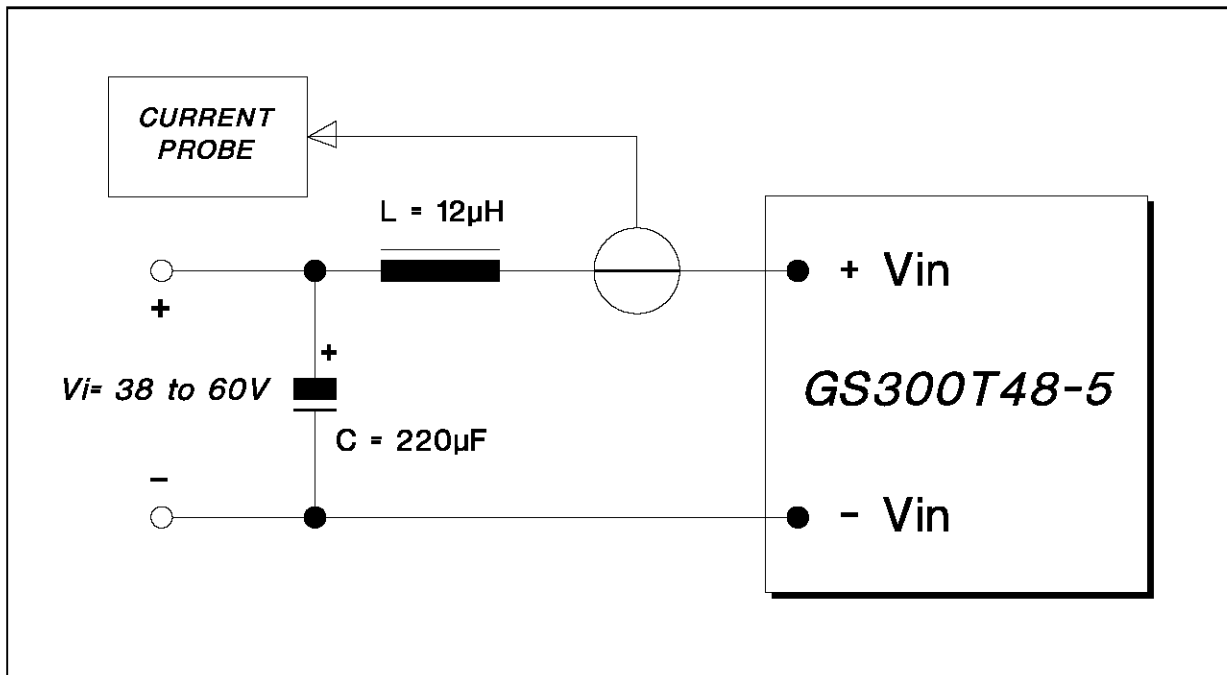


PIN DESCRIPTION

Pin	Function	Description
1,2	- Vin	Negative input voltage.
3,4	+ Vin	Positive input voltage. Unregulated input voltage (typically 48V) must be applied between pin 1,2-3,4.
5	SYNC	Synchronization pin. See figures 3, 4, 5, 6. Open when not used.
6	PARALLEL	Parallel output. See figures 3, 4, 5, 6. Open when not used.
7	ON/OFF	The converter is ON (Enable) when the voltage applied to this pin with reference to pin 1,2 is lower than 1,2 V (see V _{in}). The converter is OFF (Inhibit) for a control voltage in the range of 8 to 18V. When the pin is unconnected the converter is OFF (Inhibit).
8	CASE	Case connection pin
9	+ SENSE	Senses the remote load high side. To be connected to pin 15,16,17 when remote sense is not used.
10	- SENSE	Senses the remote load return. To be connected to pin 11,12,13,14 when remote sense is not used. In parallel configuration, take care to connect all -SENSE pins together (see figures 3,4,5,6).
11,12,13,14	- OUT	-5V voltage return.
15,16,17	+ OUT	+5V output voltage.

USER NOTES**Reflected Input Current**

The reflected input current measurement (I_{ir}, see Electrical Characteristics) is performed according to the test set-up of fig. 2.

Figure 2.**Softstart**

To avoid heavy inrush current the output voltage rise time is 10ms maximum in any condition of load.

Remote Sensing

The remote voltage sense compensation range is for a total drop of 0.6V equally shared between the load connecting wires.

It is a good practice to shield the sensing wires to avoid oscillations.

See the connection diagram on figures 3, 4, 5, 6.

Remote ON/OFF

The module is controlled by the voltage applied between the ON/OFF pin and -IN pin.

The converter is ON (Enable) when the voltage applied is lower than 1.2 V (see V_{ien} on Electrical Characteristics).

The converter is OFF (Inhibit) for a control voltage in the range of 8 to 18V (see V_{inh}).

When the pin is unconnected the converter is OFF. Maximum sinking current is 1mA.

Module Protection

The module is protected against occasional and permanent shortcircuits of the output pins to ground, as well as against output current overload. It uses a current limiting protection circuitry, avoiding latch-up problems with certain type of loads.

A latching crowbar output overvoltage protection is activated when the output voltage exceeds the typical value of 6.3V (see Electrical Characteristics). A thermal non-latching protection disables the module whenever the heatsink temperature reaches about 85°C.

Parallel Operation

To increase available output regulated power, the module features the parallel connection possibility with equal current sharing and maximum deviation of 10% (two modules in parallel).

See the connection diagram on figures 3, 4, 5, 6.

Figure 3.

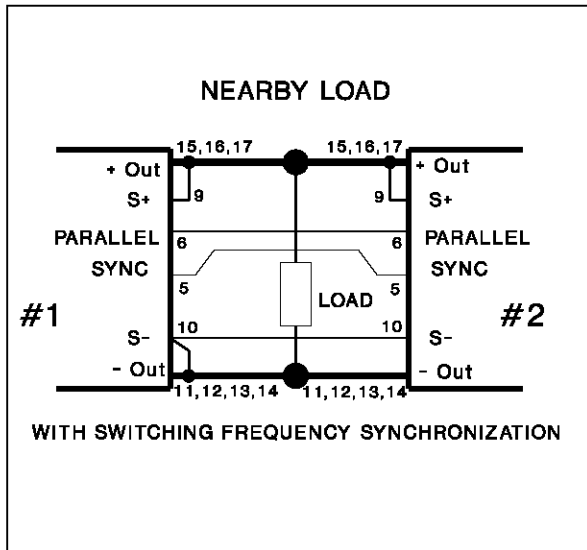


Figure 4.

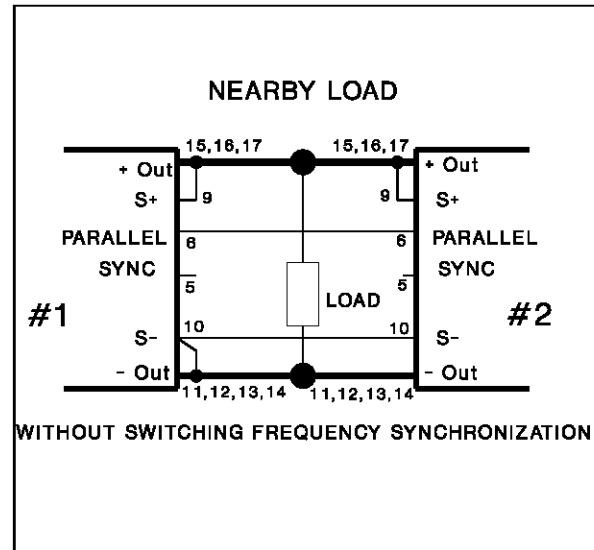


Figure 5.

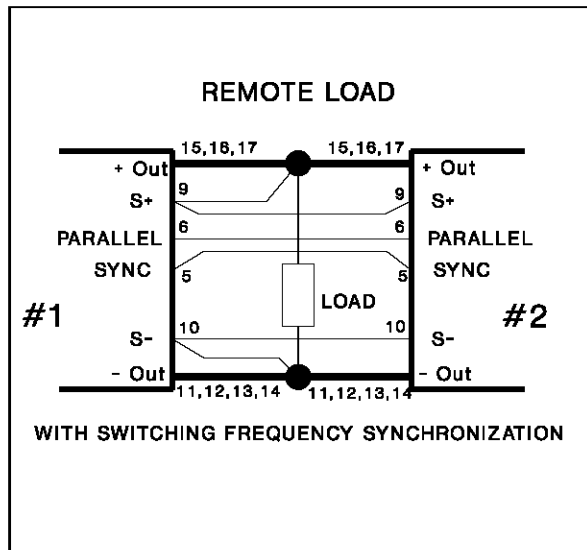
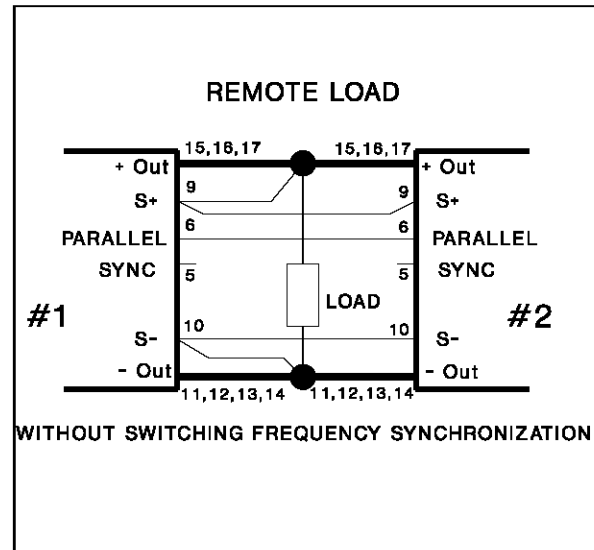


Figure 6.



Thermal Characteristics

The case-to-ambient thermal resistance of the GS300T48-5 module is 5.2°C/W typical. It may be decreased, improving the convection cooling, by mounting an external heatsink to the top of the unit heatsink (fig. 9).

Six threaded holes, # 4-40 UNC on the standard or # M3 on the E version, 5 mm (0.2") maximum deep, are provided for this purpose (see fig. 1).

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