SGS-THOMSON MICROELECTRONICS

GS25/30T48 Family

25/30 W DC-DC CONVERTER FAMILY

Type	V_{in}	V_{out}	I_{out}
GS25T48-5	36 to 72 V	5 V	5 A
GS25T48-12	36 to 72 V	12 V	2,5 A
GS25T48-15	36 to 72 V	15 V	2 A

FEATURES

- MTBF in excess of 1M hours at +45°C ambient temperature
- Wide input voltage range (36 to 72V)
- No external component required
- High efficiency (see data)
- Non latching permanent short-circuit protection
- Overvoltage protection
- Redundant operation
- Remote output voltage sense
- Remote INHIBIT/ENABLE
- Soft-start
- Minimized reflected input current
- Reverse input polarity protection
- Peak input overvoltage withstand
- No derating over the temperature range
- 500V_{DC} minimum isolation between input and output
- PCB or chassis mountable

DESCRIPTION

The GS25T48-5, GS30T48-12 and GS30T48-15 are isolated DC-DC converters designed for general purpose application.

The output power is in the range of 25W to 30W. To ensure very long life, these converters do not use electrolytic aluminum capacitors or optoelectronic feedback systems.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_i	DC Input Voltage	34 to 72V	V
V_{ipk}	Input Transient Overvoltage ($t \leq 1$sec.)	90	V
V_{ir}	Input Reverse Voltage	100	V
T_{stg}	Storage Temperature Range	-55 to +105	°C
T_{op}	Operating Temperature Range	-25 to +71	°C

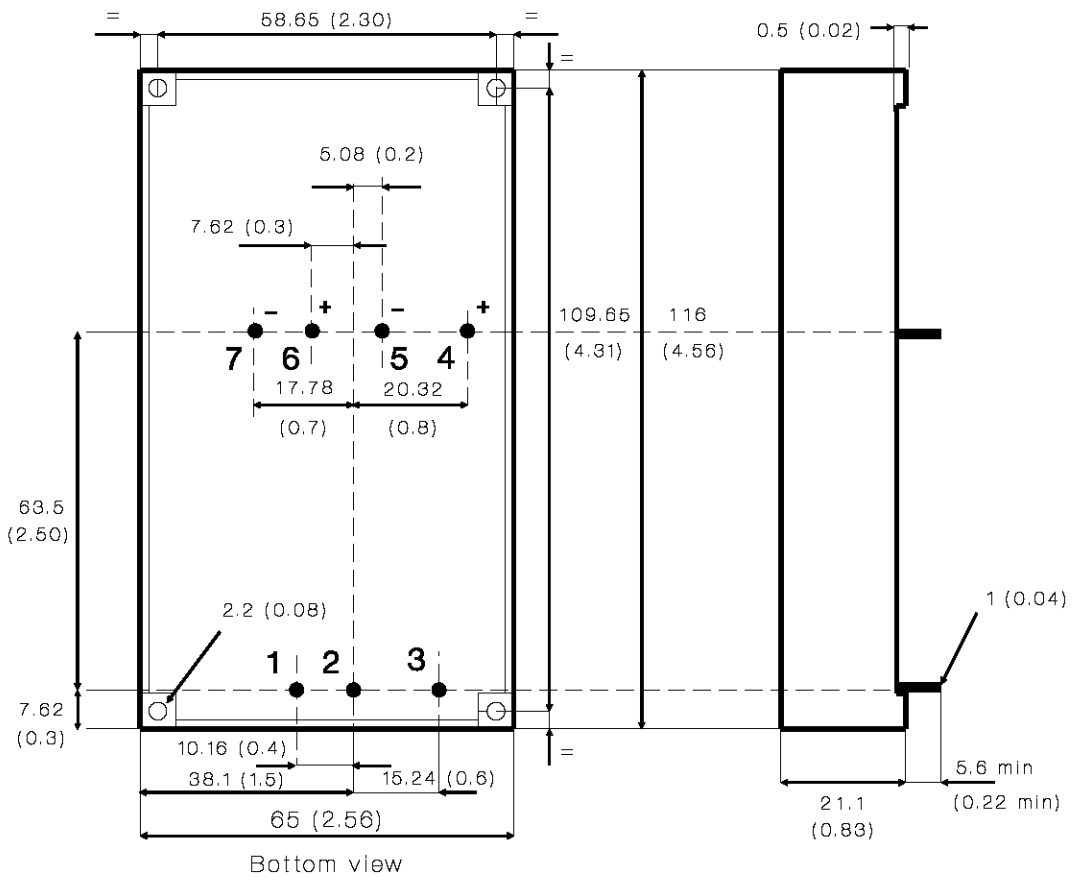
ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_i	Input Voltage	Full Load	36	48	72	V
I_i	Input Current	GS25T48-5 Full Load		640		mA
		GS30T48-12 Full Load		730		
		GS30T48-15 Full Load		730		
I_{ir}	Input Reflected Current	V_i = 48V Full Load		50		mApp
I_{isc}	Input Short-circuit Current	GS25T48-5 V_i = 48V		710		mA
		GS30T48-12 V_i = 48V		820		
		GS30T48-15 V_i = 48V		820		
I_{iq}	Input Quiescent Current	V_i = 48V Converter OFF		5		mA
V_{inhl}	Low Inhibit Voltage	V_i = 48V Full Load			1.2	V
V_{inhh}	High Inhibit Voltage	V_i = 48V Full Load	1.8 (open)			V
I_{inh}	Input Inhibit Current	V_i = 48V Full Load		1		mA
V_o	Output Voltage	GS25T48-5 V_i = 48V Full Load	4.95	5.00	5.05	V
		GS30T48-12 V_i = 48V Full Load	11.88	12.00	12.12	
		GS30T48-15 V_i = 48V Full Load	14.85	15.00	15.15	
V_{or}	Output Ripple and Noise Voltage	V_i = 48V Full Load		10		mVpp
δV_o	Line Regulation	V_i = 36 to 72V Full Load		±0.001		%
δV_o	Load Regulation	V_i = 48V Full Load to No Load		±0.05		%
V_{oov}	Output Overvoltage Protection	GS25T48-5 V_i = 48V Full Load			6.8	V
		GS30T48-12 V_i = 48V Full Load			15	
		GS30T48-15 V_i = 48V Full Load			18	
δV_o	Remote Sense per Leg	V_i = 36V			0.5	V
Tc	Temperature Coefficient	V_i = 48V Full Load Operating Temperature Range			+0.02	%/°C

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_o	Output Current	GS25T48-5 V_i = 36 to 72V	0		5	A
		GS30T48-12 V_i = 36 to 72V	0		2.5	
		GS30T48-15 V_i = 36 to 72V	0		2	
I_{osck}	Output Current Limit	GS25T48-5 V_i = 48V Overload			5.5	A
		GS30T48-12 V_i = 48V Overload			2.75	
		GS30T48-15 V_i = 48V Overload			2.2	
t_{ss}	Soft-start Time	V_i = 48V Full Load		30		ms
t_{rt}	Transient Recovery Time	V_i = 48V Step Load Change δI_o = 25%		75		µs
V_{is}	Isolation Voltage		500			Vdc
R_{is}	Isolation Resistance		10^9			Ω
f_s	Switching Frequency			150		kHz
η	Efficiency	GS25T48-5 V_i = 48V Full Load		81		%
		GS30T48-12 V_i = 48V Full Load		86		
		GS30T48-15 V_i = 48V Full Load		86		
R_{thc}	Thermal Resistance Case to Ambient			4		°C/W

CONNECTION DIAGRAM AND MECHANICAL DATA



Package F. Dimensions in mm. (inches)

PIN DESCRIPTION

Pin	Function	Description
1	- IN	Negative input voltage.
2	+ IN	Positive input voltage. Unregulated input voltage (typically 48V) must be applied between pins 1-2. The input section of the DC-DC converter is protected against reverse polarity by a series diode. No external fuse is required. Input is filtered by a Pi network.
3	ON/OFF	Logically compatible with CMOS or open collector TTL. The converter is ON (Enable) when the voltage applied to this pin with reference to pin 1 is higher than 1.8V. The converter is OFF (Inhibit) for a control voltage lower than 1.2V. When the pin is unconnected the converter is ON (Enable).
4	+ SENSE	Senses the remote load high side. To be connected to pin 6 when remote sense is not used.
5	- SENSE	Senses the remote load return. To be connected to pin 7 when remote sense is not used.
6	+ OUT	Output voltage.
7	- OUT	Output voltage return.