

## 25/30 W DC-DC CONVERTER FAMILY

Type	V <sub>in</sub>	V <sub>out</sub>	I <sub>out</sub>
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<sub>DC</sub> 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 <sub>i</sub>	DC Input Voltage	34 to 72V	V
V <sub>ipk</sub>	Input Transient Overvoltage (t ≤ 1sec.)	90	V
V <sub>ir</sub>	Input Reverse Voltage	100	V
T <sub>stg</sub>	Storage Temperature Range	-55 to +105	°C
T <sub>op</sub>	Operating Temperature Range	-25 to +71	°C

## GS25/30T48 FAMILY

### ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

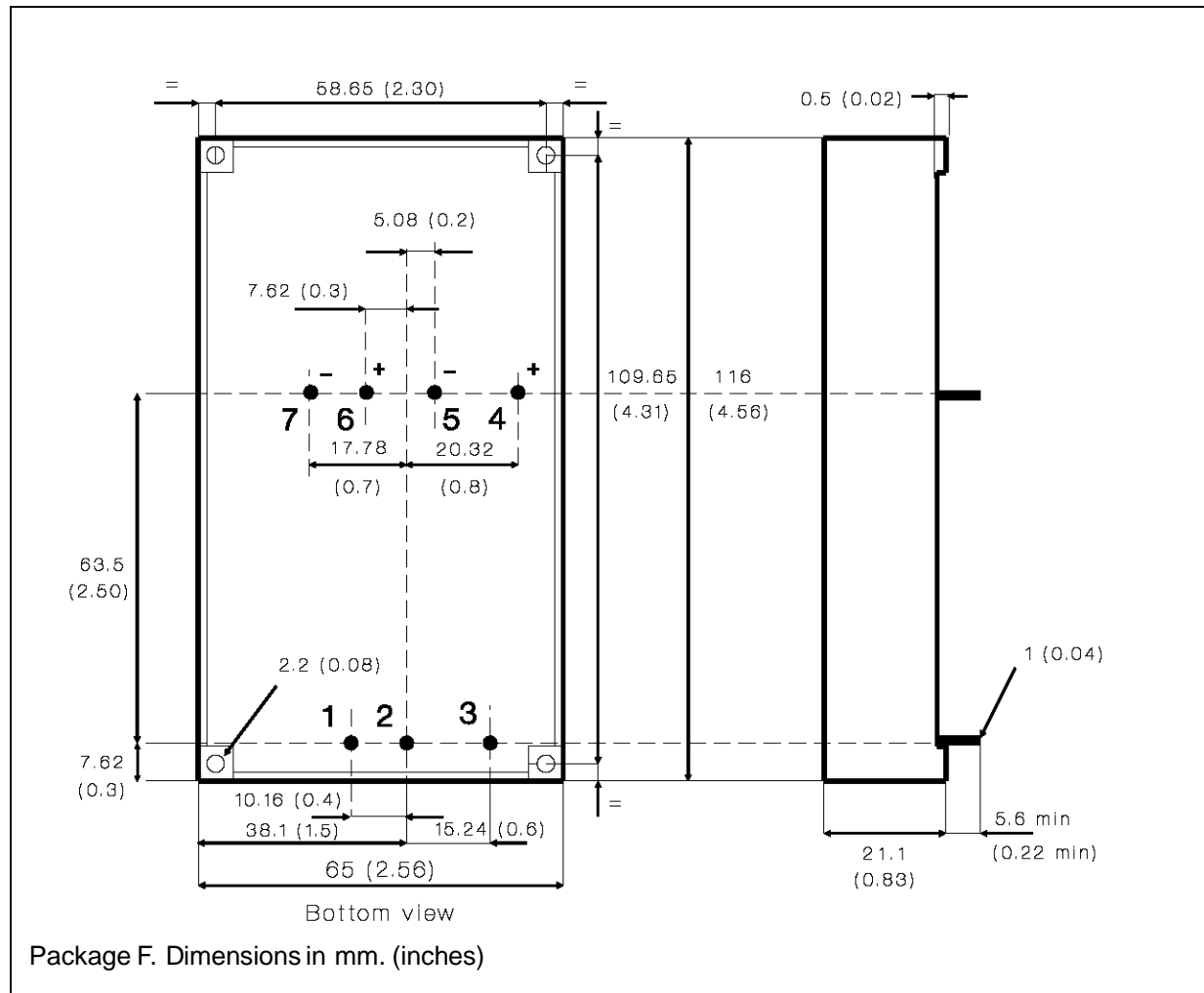
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_i$	Input Voltage	Full Load	36	48	72	V
$I_i$	Input Current	GS25T48-5 Full Load		640		mA
		GS30T48-12 Full Load		730		
		GS30T48-15 Full Load		730		
$I_{ir}$	Input Reflected Current	$V_i = 48\text{V}$ Full Load		50		mApp
$I_{isc}$	Input Short-circuit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

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}\text{C}$  unless otherwise specified) (cont'd)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I <sub>o</sub>	Output Current	GS25T48-5 V <sub>i</sub> = 36 to 72V	0		5	A
		GS30T48-12 V <sub>i</sub> = 36 to 72V	0		2.5	
		GS30T48-15 V <sub>i</sub> = 36 to 72V	0		2	
I <sub>osck</sub>	Output Current Limit	GS25T48-5 V <sub>i</sub> = 48V      Overload			5.5	A
		GS30T48-12 V <sub>i</sub> = 48V      Overload			2.75	
		GS30T48-15 V <sub>i</sub> = 48V      Overload			2.2	
t <sub>ss</sub>	Soft-start Time	V <sub>i</sub> = 48V      Full Load		30		ms
t <sub>rt</sub>	Transient Recovery Time	V <sub>i</sub> = 48V Step Load Change $\delta I_o = 25\%$		75		$\mu\text{s}$
V <sub>is</sub>	Isolation Voltage		500			Vdc
R <sub>is</sub>	Isolation Resistance		10 <sup>9</sup>			$\Omega$
f <sub>s</sub>	Switching Frequency			150		kHz
$\eta$	Efficiency	GS25T48-5 V <sub>i</sub> = 48V      Full Load		81		%
		GS30T48-12 V <sub>i</sub> = 48V      Full Load		86		
		GS30T48-15 V <sub>i</sub> = 48V      Full Load		86		
R <sub>thc</sub>	Thermal Resistance Case to Ambient			4		$^{\circ}\text{C/W}$

## GS25/30T48 FAMILY

### CONNECTION DIAGRAM AND MECHANICAL DATA



### 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.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1994 SGS-THOMSON Microelectronics – All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.