

GS25/30T24 Family

25/30 W DC-DC CONVERTER FAMILY

Туре	V _{in}	V _{out}	l _{out}	
GS25T24-5	18 to 36 V	5 V	5 A	
GS30T24-12	18 to 36 V	12 V	2,5 A	
GS30T24-15	18 to 36 V	15 V	2 A	

FEATURES

- MTBF in excess of 1M hours at +45°C ambient temperature
- Wide input voltage range (18 to 36V)
- No external component required
- High efficiency (see data)
- Non latching permanent short-circuit protection
- Overvoltage protection
- Redundant operation
- Remote output voltage sense
- Remote INHIBIT/ENĂBLE
- 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 GS25T24-5, GS30T24-12 and GS30T24-15 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
Vi	DC Input Voltage	17 to 38V	V
Vipk	Input Transient Overvoltage (t ≤ 1sec.)	45	V
Vir	Input Reverse Voltage	50	V
T _{stg}	Storage Temperature Range	-55 to +105	°C
Тор	Operating Temperature Range	-25 to +71	°C

December 1993 1/5

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

Symbol	Parameter	Test Conditions		Min	Тур	Max	Unit
Vi	Input Voltage	Full Load		18	24	36	V
li	Input Current	GS25T24-5	Full Load		1370		mA
		GS30T24-12 GS30T24-15	Full Load		1600		
lir	Input Reflected Current	Vi = 24V	Full Load		40		mApp
lisc	Input Short-circuit Current	GS25T24-5 Vi = 24V			360		mA
		GS30T24-12 Vi = 24V			220		
		GS30T24-15 V _i = 24V			200		
liq	Input Quiescent Current	V _i = 24V Converter OFF			5		mA
Vinhl	Low Inhibit Voltage	Vi = 24V	Full Load			1.2	V
Vinhh	High Inhibit Voltage	Vi = 24V	Full Load	1.8 (open)			V
linh	Input Inhibit Current	Vi = 24V	Full Load		1		mA
Vo	Output Voltage	GS25T24-5 V _i = 24V	Full Load	4.95	5.00	5.05	V
		GS30T24-12 V _i = 24V	Full Load	11.88	12.00	12.12	
		GS30T24-15 V _i = 24V	Full Load	14.85	15.00	15.15	
Vor	Output Ripple and Noise Voltage	Vi = 24V Full Load			10		mVpp
δVo	Line Regulation	Vi = 18 to 36V Full Load			±0.001		%
δV_{0}	Load Regulation	V _i = 24V Full Load to No L	oad		±0.05		%
Voov	Output Overvoltage Protection	GS25T24-5 Vi = 24V	Full Load			6.8	V
		GS30T24-12 Vi = 24V	Full Load			15	
		GS30T24-15 V _i = 24V	Full Load			18	
δVο	Remote Sense per Leg	Vi = 18V				0.5	V
Тс	Temperature Coefficient	V _i = 24V F Operating Tempe	ull Load rature Range			+0.02	%/°C

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

Symbol	Parameter	Test Cond	ditions	Min	Тур	Max	Unit
lo	Output Current	GS25T24-5 Vi = 18 to 36V		0		5	А
		GS30T24-12 Vi = 18 to 36V		0		2.5	
		GS30T24-15 Vi = 18 to 36V		0		2	
losck	Output Current Limit	GS25T24-5 Vi = 24V	Overload			5.5	А
		GS30T24-12 Vi = 24V	Overload			2.75	
		GS30T24-15 V _i = 24V	Overload			2.2	
tss	Soft-start Time	Vi = 24V	Full Load		30		ms
trt	Transient Recovery Time	Vi = 24V Step Load Chang	ge δlo = 25%		75		μs
Vis	Isolation Voltage			500			Vdc
f _S	Switching Frequency				150		kHz
η	Efficiency	GS25T24-5 Vi = 24V	Full Load	75	78		%
		GS30T24-12 Vi = 24V	Full Load	79	82		
		GS30T24-15 Vi = 24V	Full Load	80	83		
Ris	Isolation Resistance			10 ⁹			Ω
Rthc	Thermal Resistance Case to Ambient				4		°C/W

58.65 (2.30) 0.5 (0.02) \bigcirc 5.08 (0.2) 7.62 (0.3) 109.65 116 (4.31)(4.56)6 | 5 4 17.78 20.32 (0.7) $\{0.8\}$ 63.5 (2.50)1 (0.04) 2.2 (0.08) 3 1 | 2 7.62 (0.3)10.16 (0.4) 5.6 min 38.1 (1.5) 15.24 (0.6) 21.1 (0.22 min) 65 (2.56) (0.83)Bottom view Package F. Dimensions in mm. (inches)

CONNECTION DIAGRAM AND MECHANICAL DATA

PIN DESCRIPTION

Pin	Function	Description
1	- IN	Negative input voltage.
2	+ IN	Positive input voltage. Unregulated input voltage (typically 24V) must be applied between pin 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.

