

25/30 W DC-DC CONVERTER FAMILY

| Type | V _{in} | V _{out} | I _{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/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 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 |
|------------------|---|-------------|------|
| V _i | DC Input Voltage | 17 to 38V | V |
| V _{ipk} | Input Transient Overvoltage (t ≤ 1sec.) | 45 | V |
| V _{ir} | Input Reverse Voltage | 50 | V |
| T _{stg} | Storage Temperature Range | -55 to +105 | °C |
| T _{op} | Operating Temperature Range | -25 to +71 | °C |

GS25/30T24 FAMILY

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

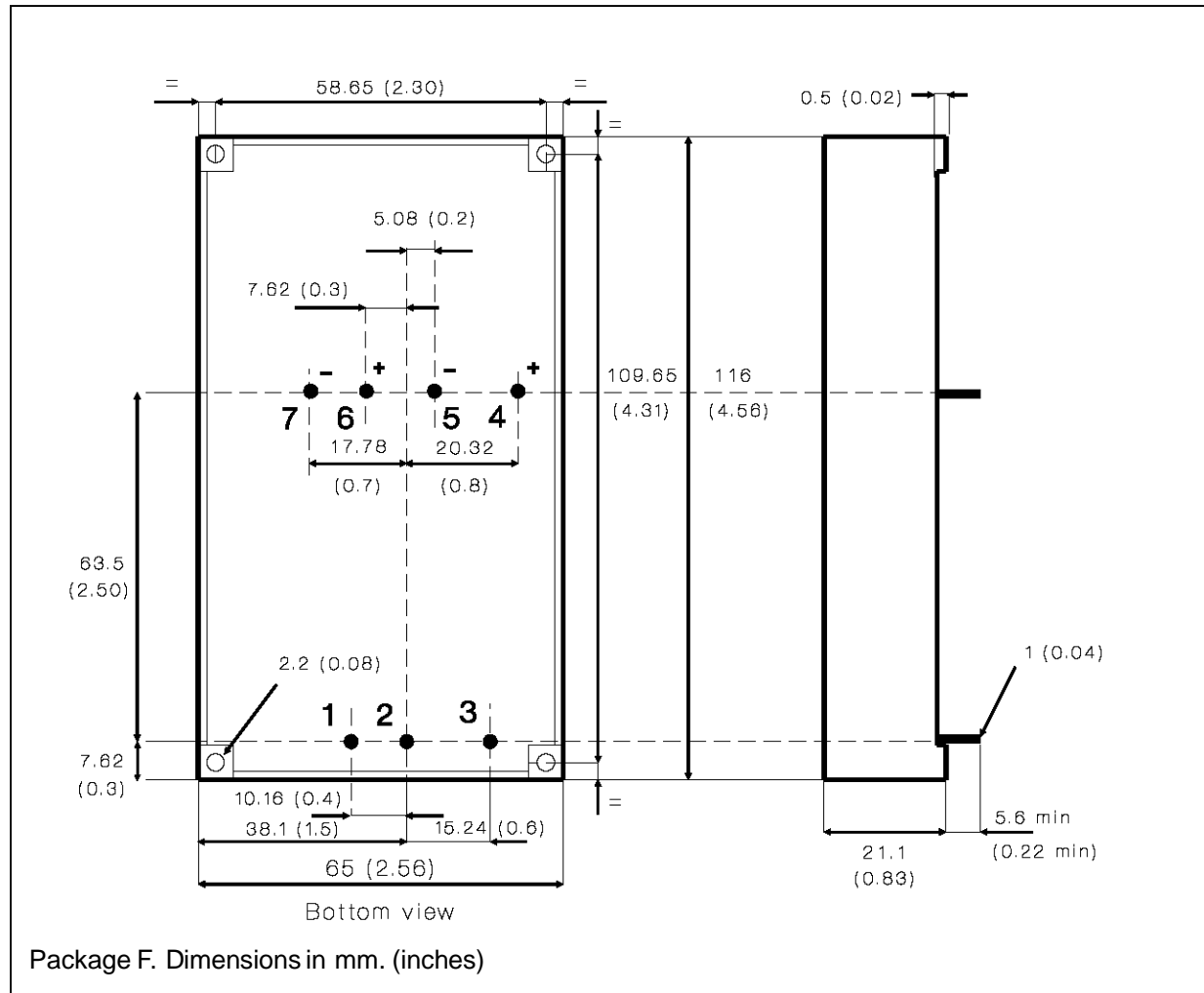
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|--------------|---------------------------------|---|---------------|-------------|-------|-----------------------|
| V_i | Input Voltage | Full Load | 18 | 24 | 36 | V |
| I_i | Input Current | GS25T24-5 Full Load | | 1370 | | mA |
| | | GS30T24-12 GS30T24-15 Full Load | | 1600 | | |
| I_{ir} | Input Reflected Current | $V_i = 24\text{V}$ Full Load | | 40 | | mApp |
| I_{isc} | Input Short-circuit Current | GS25T24-5 $V_i = 24\text{V}$ | | 360 | | mA |
| | | GS30T24-12 $V_i = 24\text{V}$ | | 220 | | |
| | | GS30T24-15 $V_i = 24\text{V}$ | | 200 | | |
| I_{iq} | Input Quiescent Current | $V_i = 24\text{V}$ Converter OFF | | 5 | | mA |
| V_{inhl} | Low Inhibit Voltage | $V_i = 24\text{V}$ Full Load | | | 1.2 | V |
| V_{inhh} | High Inhibit Voltage | $V_i = 24\text{V}$ Full Load | 1.8 (open) | | | V |
| I_{inh} | Input Inhibit Current | $V_i = 24\text{V}$ Full Load | | 1 | | mA |
| V_o | Output Voltage | GS25T24-5 $V_i = 24\text{V}$ Full Load | 4.95 | 5.00 | 5.05 | V |
| | | GS30T24-12 $V_i = 24\text{V}$ Full Load | 11.88 | 12.00 | 12.12 | |
| | | GS30T24-15 $V_i = 24\text{V}$ Full Load | 14.85 | 15.00 | 15.15 | |
| V_{or} | Output Ripple and Noise Voltage | $V_i = 24\text{V}$ Full Load | | 10 | | mVpp |
| δV_o | Line Regulation | $V_i = 18$ to 36V Full Load | | ± 0.001 | | % |
| δV_o | Load Regulation | $V_i = 24\text{V}$ Full Load to No Load | | ± 0.05 | | % |
| V_{oov} | Output Overvoltage Protection | GS25T24-5 $V_i = 24\text{V}$ Full Load | | | 6.8 | V |
| | | GS30T24-12 $V_i = 24\text{V}$ Full Load | | | 15 | |
| | | GS30T24-15 $V_i = 24\text{V}$ Full Load | | | 18 | |
| δV_o | Remote Sense per Leg | $V_i = 18\text{V}$ | | | 0.5 | V |
| T_c | Temperature Coefficient | $V_i = 24\text{V}$ 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 _o | Output Current | GS25T24-5 V _i = 18 to 36V | 0 | | 5 | A |
| | | GS30T24-12 V _i = 18 to 36V | 0 | | 2.5 | |
| | | GS30T24-15 V _i = 18 to 36V | 0 | | 2 | |
| I _{osck} | Output Current Limit | GS25T24-5 V _i = 24V Overload | | | 5.5 | A |
| | | GS30T24-12 V _i = 24V Overload | | | 2.75 | |
| | | GS30T24-15 V _i = 24V Overload | | | 2.2 | |
| t _{ss} | Soft-start Time | V _i = 24V Full Load | | 30 | | ms |
| t _{rt} | Transient Recovery Time | V _i = 24V Step Load Change $\delta I_o = 25\%$ | | 75 | | μs |
| V _{is} | Isolation Voltage | | 500 | | | V _{dc} |
| f _s | Switching Frequency | | | 150 | | kHz |
| η | Efficiency | GS25T24-5 V _i = 24V Full Load | 75 | 78 | | % |
| | | GS30T24-12 V _i = 24V Full Load | 79 | 82 | | |
| | | GS30T24-15 V _i = 24V Full Load | 80 | 83 | | |
| R _{is} | Isolation Resistance | | 10 ⁹ | | | Ω |
| R _{thc} | Thermal Resistance Case to Ambient | | | 4 | | $^{\circ}\text{C/W}$ |

GS25/30T24 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 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. |

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