

## 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<br>$V_i = 48\text{V}$                             |               | 710         |       | mA                    |
|              |                                 | GS30T48-12<br>$V_i = 48\text{V}$                            |               | 820         |       |                       |
|              |                                 | GS30T48-15<br>$V_i = 48\text{V}$                            |               | 820         |       |                       |
| $I_{iq}$     | Input Quiescent Current         | $V_i = 48\text{V}$<br>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<br>(open) |             |       | V                     |
| $I_{inh}$    | Input Inhibit Current           | $V_i = 48\text{V}$ Full Load                                |               | 1           |       | mA                    |
| $V_o$        | Output Voltage                  | GS25T48-5<br>$V_i = 48\text{V}$ Full Load                   | 4.95          | 5.00        | 5.05  | V                     |
|              |                                 | GS30T48-12<br>$V_i = 48\text{V}$ Full Load                  | 11.88         | 12.00       | 12.12 |                       |
|              |                                 | GS30T48-15<br>$V_i = 48\text{V}$ Full Load                  | 14.85         | 15.00       | 15.15 |                       |
| $V_{or}$     | Output Ripple and Noise Voltage | $V_i = 48\text{V}$<br>Full Load                             |               | 10          |       | mVpp                  |
| $\delta V_o$ | Line Regulation                 | $V_i = 36$ to $72\text{V}$<br>Full Load                     |               | $\pm 0.001$ |       | %                     |
| $\delta V_o$ | Load Regulation                 | $V_i = 48\text{V}$<br>Full Load to No Load                  |               | $\pm 0.05$  |       | %                     |
| $V_{oov}$    | Output Overvoltage Protection   | GS25T48-5<br>$V_i = 48\text{V}$ Full Load                   |               |             | 6.8   | V                     |
|              |                                 | GS30T48-12<br>$V_i = 48\text{V}$ Full Load                  |               |             | 15    |                       |
|              |                                 | GS30T48-15<br>$V_i = 48\text{V}$ 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<br>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                        | GS25T48-5<br>$V_i = 36$ to $72\text{V}$                    | 0      |     | 5    | A                    |
|            |                                       | GS30T48-12<br>$V_i = 36$ to $72\text{V}$                   | 0      |     | 2.5  |                      |
|            |                                       | GS30T48-15<br>$V_i = 36$ to $72\text{V}$                   | 0      |     | 2    |                      |
| $I_{osck}$ | Output Current Limit                  | GS25T48-5<br>$V_i = 48\text{V}$ Overload                   |        |     | 5.5  | A                    |
|            |                                       | GS30T48-12<br>$V_i = 48\text{V}$ Overload                  |        |     | 2.75 |                      |
|            |                                       | GS30T48-15<br>$V_i = 48\text{V}$ Overload                  |        |     | 2.2  |                      |
| $t_{ss}$   | Soft-start Time                       | $V_i = 48\text{V}$ Full Load                               |        | 30  |      | ms                   |
| $t_{rt}$   | Transient Recovery Time               | $V_i = 48\text{V}$<br>Step Load Change $\Delta I_o = 25\%$ |        | 75  |      | $\mu\text{s}$        |
| $V_{is}$   | Isolation Voltage                     |                                                            | 500    |     |      | Vdc                  |
| $R_{is}$   | Isolation Resistance                  |                                                            | $10^9$ |     |      | $\Omega$             |
| $f_s$      | Switching Frequency                   |                                                            |        | 150 |      | kHz                  |
| $\eta$     | Efficiency                            | GS25T48-5<br>$V_i = 48\text{V}$ Full Load                  |        | 81  |      | %                    |
|            |                                       | GS30T48-12<br>$V_i = 48\text{V}$ Full Load                 |        | 86  |      |                      |
|            |                                       | GS30T48-15<br>$V_i = 48\text{V}$ Full Load                 |        | 86  |      |                      |
| $R_{thc}$  | Thermal Resistance<br>Case to Ambient |                                                            |        | 4   |      | $^{\circ}\text{C/W}$ |



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