Notes:

(1) Refer to the CALEX Application Notes for the definition of terms, measurement circuits, and other information.

(2) Refer to the CALEX Application Notes for information of fusing. For inrush current, refer to the specifications above.

(3) Connect a 100µF capacitor between the two “Input” pins. Then connect a current sensor in series with 12µH inductor between the capacitor and the source. The reflected ripple current is measured over a 5Hz to 20MHz bandwidth (the current sensor is located between the converter input pin and the inductor).

(4) Line regulation is defined as the output voltage changes when changing input (line) voltage from minimum to maximum.

(5) Load Regulation is defined as the output voltage change when changing load current from 10% of maximum load to 90% of maximum load.

(6) Load Transient Recovery Time is defined as the time for the output to settle from a 25% to 75% step load change to a 1% error band (rise time of step = 2µs).

(7) Load Transient Overshoot is defined as the peak overshoot during a transient as defined in the Note 6 above.

(8) Noise is measured per the CALEX Application Notes. Output noise is measured with a 10µF tantalum capacitor in parallel with a 0.1µF ceramic capacitor connected across the output pins. Measurement bandwidth is 20MHz.

(9) When an external ON/OFF switch is used, such as an open collector switch, logic high requires the switch to be high-impedance. Switch leakage currents greater than 10µA may be sufficient to trigger the ON/OFF to the logic-low state.

(10) Most switches would be suitable for the logic ON/OFF control. In case there is a problem make the following estimations and then leave some margin.
When open collector is used for logic high, “Open Circuit Voltage at ON/OFF Pin”, “Output Resistance” and “External Leakage Current Allowed for Logic High” are used to estimate the high impedance requirement of open collector.
When switch is used for logic low, “Open Circuit Voltage at ON/OFF Pin”, “Output Resistance” and “LOW Logic Level” are used to estimate the low impedance requirement of the switch.

(11) Thermal impedance is tested with the converter mounted vertically and facing another printed circuit board 1/2 inch away. If the converter is mounted horizontally with no obstructions, thermal impedance is approximately 7°C/W.

(12) Water Washability - Calex DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.

(13) Source impedance of these units needs to be kept to a minimum. The GX series operates between 16-40Vdc and requires a maximum source impedance of 0.44 ohms. It is recommended to have 5.0 µF of capacitance (low ESR) for every 1.0µH of inductance between the power source and the DC/DC converter. Inductance includes all sources and should take into account input power lines.

(14) Power sources which drive the converter must be capable of sourcing the required amount of current for the converter to operate correctly. If there are any conditions that may keep the source from supplying the required amount of current, the user must incorporate shutdown circuitry and/or power shedding. The source voltage should be measured at the input pins of the DC/DC converter. The primary referenced ON/OFF pin can be used to assist in implementing this function.

(15) Frequency synchronization is obtained by tying pin A of all converters together. Driving the Sync pin with an external clock is not recommended. Synchronization may result in a slight reduction in an individual converter’s efficiency. Failure of this pin will not compromise the performance of a free running unit.

(16) Load sharing is accomplished by tying the load share pins of each module directly to each other. This creates a load share bus with a typical voltage as listed. However, it will vary with varying loads. No external components are needed.
It is well-known that accurate load sharing prevents good load regulation as well as trim functionality. In order to overcome these design constraints Calex has chosen an implementation that allows the user to choose which features are needed in a particular application. This is achieved by characterizing the application in one of two modes of operation.
Load sharing- When using the converter in a load sharing application the sense pins must be connected directly to the output pins. This connection MUST be as short as possible - preferably directly underneath the unit. The reason for this is related to the concept of load sharing, where each converter adjusts its voltage slightly to equalize the current distribution. In short, load sharing requires load regulation to be sacrificed. The sense pins of each unit in a load share configuration should NOT be connected to the sense pins of the other units in the configuration. Load and supply wires should be kept as short as possible and always at the same length between modules.
Stand-alone - When the converter is used as a stand-alone power source the sense pins can be connect to the point-of-load to compensate for any line voltage drops. In addition, the trim function of the converter can be utilized to adjust the output voltage to the desired level. Overall load regulation is within the specified limit.

(17) The converter will continue normal operation even when the DC input voltage is superimposed with an AC signal of magnitude up to 10% of the Input Voltage as RMS Ripple Noise, as long as the peak voltages or frequencies do not exceed the specified parameters.
Due to the peak-to-peak amplitude of an AC signal, the specified minimum RMS ripple noise of the input voltage is only guaranteed a minimum attenuation of 40dB within the voltage range: 18VDC to 36VDC.

(18) RoHS Compliance means conformity to EU Directive 2002/95/EC of 27 January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ethers are not present in quantities exceeding the following maximum concentrations in any homogeneous material, except for applicable exemptions.
0.1% (by weight of homogeneous material) lead, mercury, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers, or 0.01% (by weight of homogeneous material) cadmium. The RoHS marking is as follows.

Pb RoHS

Vitec POWER GmbH
Bahnstraße 65-67/2/2, 2230 Gänserndorf, AUSTRIA
Tel.: +43 (0) 2282 3144, E-Mail: office@vitecpower.com