GLOSSARY

AMBIENT TEMPERATURE

The still-air temperature in the immediate vicinity of a power supply, measured a minimum of 4 inches(100mm) from the supply.

BURN-IN

In power supplies, a period during which a supply is energized and loaded to peak output, with the intent of finding potentially weak components. Typical burn-in tests can include temperature cycling, input cycling, and/or load cycling.

CROSS-REGULATION

In a multiple output power supply, the percent voltage change at one output caused by the load change on another output.

CROWBAR

An overvoltage protection circuit which rapidly places a low resistance shunt across the power supply output terminals if a predetermined voltage is exceeded. Crowbar typically used for linear power supplies for they fail with a high output voltage. Modern switch mode power supplies fail with low output voltages making a "crowbar circuit" unnecessary.

DERATING

The specified reduction in an operating parameter to improve reliability. Generally for power supplies, it is the reduction in output power at elevated temperatures.

EFFICIENCY

Ratio of output power to input power, generally measured at full load with nominal line conditions.

EMI (ELECTROMAGNETIC INTERFERENCE)

Unwanted energy, generally emitted from switching power supplies, which may be conducted or radiated.

ESR(EQUIVALENT SERIES RESISTANCE)

The amount of resistance in series with an ideal capacitor. In high frequency application low ESR is very important.

FLYBACK CONVERTER

A power supply switching circuit which normally used a single transistor. During the first half of the switching period the transistor is on and energy is stored in a transformer primary; during the second half period this energy is transferred to the transformer secondary and the load.

FORWARD CONVERTER

A power supply switching circuit in which energy is transferred to the transformer secondary when the switching transistor is on. In the circuit minimal energy is stored in the transformer.

HI-POT TEST (HIGH POTENTIAL TEST)

A test to determine if the breakdown voltage of a transformer or power supply exceeds the minimum requirement. It is performed by applying a high voltage between the two isolated test points.

HOLD-UP TIME

The time during which a power supply's output voltage remains within specification following the loss of input power.

INPUT FILTER

A low-pass or band-reject filter at the input of a power supply which reduces line noise fed to the supply. this filter may be external to the power supply.

INPUT VOLTAGE RANGE

The high and low input voltage limits within which a power supply or DC/DC converter meets its specifications.

ISOLATION

The electrical separation between input and output of a power supply by means of the power transformer. The isolation resistance (normally in mega-ohms) and the isolation capacitance (normally in pico-Farads) are generally specified and are a function of materials and spacing employed throughout the power supply.

ISOLATION VOLTAGE

The maximum AC or DC voltage which may be continuously applied from input to output and/or chassis of a power supply.

LINE REGULATION

The change in value of DC output voltage resulting from a change in AC input voltage over a specified range, or from low line to high line or from high line to low line. Normally specified as the + or - change from the nominal DC output voltage.

LOAD REGULATION

The change in value of DC output voltage resulting from a change in load resistance from open circuit to a value that yields maximum rated output current, or from full load to open circuit.

MINIMUM LOADING

Minimum current required for voltages to be in specified range. Generally in multiple output power supplies, a minimum load is required on the main output to ensure regulation of auxiliary outputs.

MTBF (MEAN TIME BETWEEN FAILURE)

The failure rate of a power supply, expressed in hours, established by the actual operation or calculation from a known standard such as MIL-HDBK-217.

GLOSSARY

NOMINAL VALUE

The stated or objective value for a quantity, such as output voltage, which may not be the actual value measured.

OPERATING TEMPERATURE

The range of ambient or case temperatures within which a power supply may be safely operated and meet its specifications.

OUTPUT CURRENT LIMITING

An output protection feature which limits the output current to a predetermined value in order to prevent damage to the power supply or the load under overload conditions. The supply is automatically restored to normal operation following removal of the overload.

OUTPUT VOLTAGE

The nominal value of the DC voltage at the output terminals of a power supply.

OUTPUT VOLTAGE ACCURACY

For a fixed output supply, the tolerance in percent of the output voltage with respect to its nominal value under all minimum or maximum conditions.

OVERLOAD PROTECTION

Protection of the power supply and associated equipment against excessive output current, including short-circuit current. Protection circuitry is electronic with automatic recovery. Current characteristic is normally fold-back type.

OVERVOLTAGE PROTECTION

A power supply feature which shuts down the supply, or crowbars or clamps the output, when its voltage exceeds a preset level.

PARALLEL OPERATION

The connection of the outputs of two or more power supplies of the same output voltage to obtain a higher output current than from either supply alone. This requires power supplies specification designed to share the load.

PI FILTER

A commonly used filter at the input of a switching supply or DC/DC converter to reduce reflected ripple current. The filter usually consists of two parallel capacitors and a series inductance and is generally built into the supply.

PWM(PULSE-WIDTH MODULATION)

A method of voltage regulation used in switching supplies whereby the output is controlled by varying the width, but not the height, of a train of pulses which drive a power switch.

PUSH-PULL CONVERTER

A power switching circuit which uses a center-tapped transformer and two power switches which are driven on and off alternately. This circuit does not provide regulation by itself.

RATED OUTPUT CURRENT

The maximum load current which a power supply was designed to provide at a specified ambient temperature.

RIPPLE AND NOISE

The magnitude of AC voltage on the output of a power supply, expressed in milli-volts peak-to-peak or RMS, at a specified band width. This is the result of feed through of the rectified line frequency, internal switching transients, and other random noise.

SHORT-CIRCUIT PROTECTION

A feature which limits the output current of a power supply under short-circuit conditions so that the supply will not be damaged.

SOFT START

A feature that lowers the peak inrush current during power supply turn-on.

STORAGE TEMPERATURE RANGE

The range of ambient temperatures within which a power supply may be safely stored, non-operating, with no degradation in its subsequent operation.

STANDBY CURRENT

The input current drawn by a power supply under no load or when shut down by a control input.

SWITCHING FREQUENCY

The rate at which the DC voltage is switched in a DC-DC converter or switching power supply.

TEMPERATURE COEFFICIENT

A ratio by which the changes in power supply output voltage caused by temperature changes can be calculated. Usually output decreases as ambient temperature rises.

TRANSIENT RESPONSE

Time required for output voltage to return to regulated value after a step change of output current, usually specified in microseconds for a specified percentage of load change.