"Innovation not imitation"

ULTRA-LOW POWER CONSUMPTION HIGH VOLTAGE MODULES

ULP SERIES: 500V to 5000V Delivering 0 to 4 Watts

PRODUCT DESCRIPTION

The ULP Series of miniature high voltage power supplies offers orders of magnitude reduction in power consumption, enabling designers to reduce battery size and weight in portable, scientific instruments.

Standard output voltages are available from 500 volts through 5000 volts, with power consumption at full output voltage, no load, running just 2 milli-watts.*1,*2

The output voltage is regulated and programmable, and is capable of delivering up to 4 watts of power on demand at a typical conversion efficiency of >85%. Its proprietary packaging results in a lightweight package weighing 2.0 ounces (typical), and features a height of only one half inch. Perfect for "green" designs, these power supplies also feature a shutdown pin which drops current consumption to less than 5 uA. Standard input voltage range is 5.4 to 7.4 volts and models are available with negative output polarity.

Designed for portable, battery powered equipment, the ULP Series is offered with a standard operating temperature range of -20°C to +70°C, and an optional extended operating temperature of -55°C to + 85°C.

Generous quantity discounts are offered.
Typical delivery: stock to one week.
Call or e-mail with your requirements today!

FEATURES

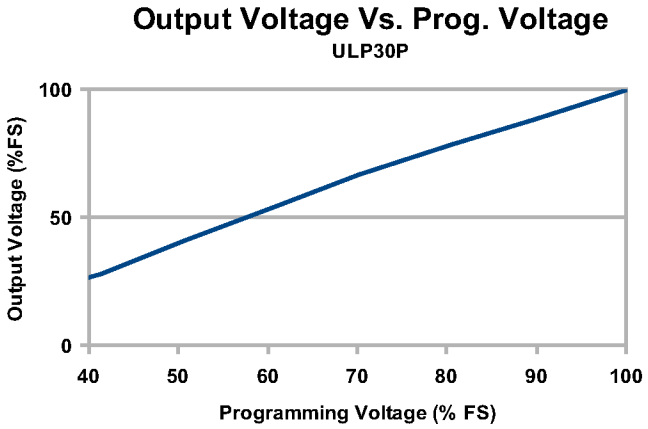
Ultra-Low Power Consumption
Can operate for up to 4500 hours, no load on 2 lithium AA Batteries
Regulated, Programmable Output
Voltage Monitor / Read-back
Arc, Overload & Short Circuit Protected
RoHS Version Available
Miniature Lightweight Package

OPTIONS

Extended Operating Temperature
Alternate Input Voltages Available: Consult factory
Negative Output versions available

PRODUCT SELECTION TABLE

MODEL	OUTPUT VOLTAGE	INPUT POWER, NO LOAD*2	OUTPUT CURRENT
ULP05P	+150 to +500VDC	2mW	0 to 8 mA
ULP10P	+300 to +1000VDC	2mW	0 to 4 mA
ULP20P	+600 to +2000VDC	2mW	0 to 2 mA
ULP30P	+900 to +3000VDC	2mW	0 to 1.33 mA
ULP50P	+1500 to +5000VDC	2mW	0 to 0.8 mA



APPLICATIONS

Portable, Battery Powered Instruments
Electrophoresis
Biological & Nuclear Detectors
Avalanche Photodiodes
Photomultiplier Tubes
Solid State Detectors
EO Lenses
Piezo Devices
Electrostatic Field Generation
Capacitor Charging

Note:
1. At maximum rated output voltage
2. Typical performance

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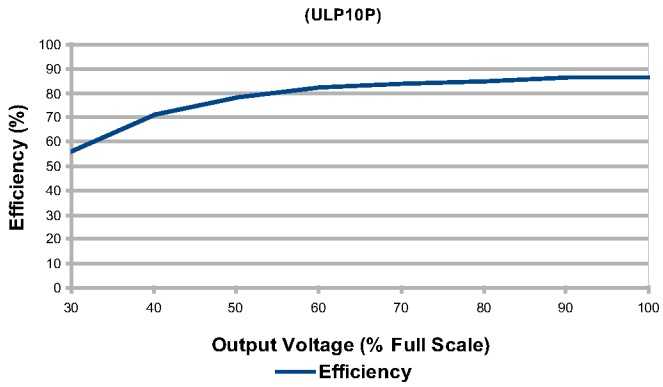
ULP05 - ULP50 (500V to 5000V)

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT
ULP05P	+150 to +500VDC	0 to 8 mA
ULP10P	+300 to +1000VDC	0 to 4 mA
ULP20P	+600 to +2000VDC	0 to 2 mA
ULP30P	+900 to +3000VDC	0 to 1.33 mA
ULP50P	+1500 to +5000VDC	0 to 0.8 mA

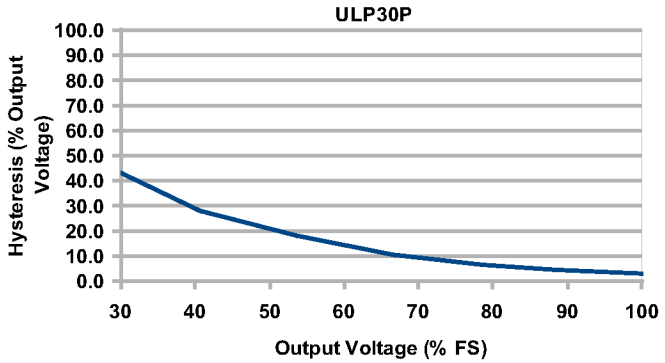
INPUT VOLTAGE: 5.4V to 7.4V
INPUT POWER, FULL LOAD: <4.75W
PROGRAMMING VOLTAGE: 0 to 2.5V (INPUT), <30uA
VOLTAGE REFERENCE: 2.5V (OUTPUT)
VOLTAGE MONITOR: 0 to 2.5V (OUTPUT)
SHUT DOWN: TTL High (INPUT)

TEMPERATURE
STANDARD:
OPERATING: -20°C to +70°C
STORAGE TEMPERATURE: -25°C to +85°C
OPTIONAL(-T):
OPERATING: -55°C to + 85°C
STORAGE: -55°C to +95°C

Efficiency vs Output Voltage



Re-fresh Hysteresis* vs. Output Voltage



*Output Variation Between Refreshes

Note:
1. Specifications after 1 hour warm-up, full load, at 25°C unless otherwise indicated

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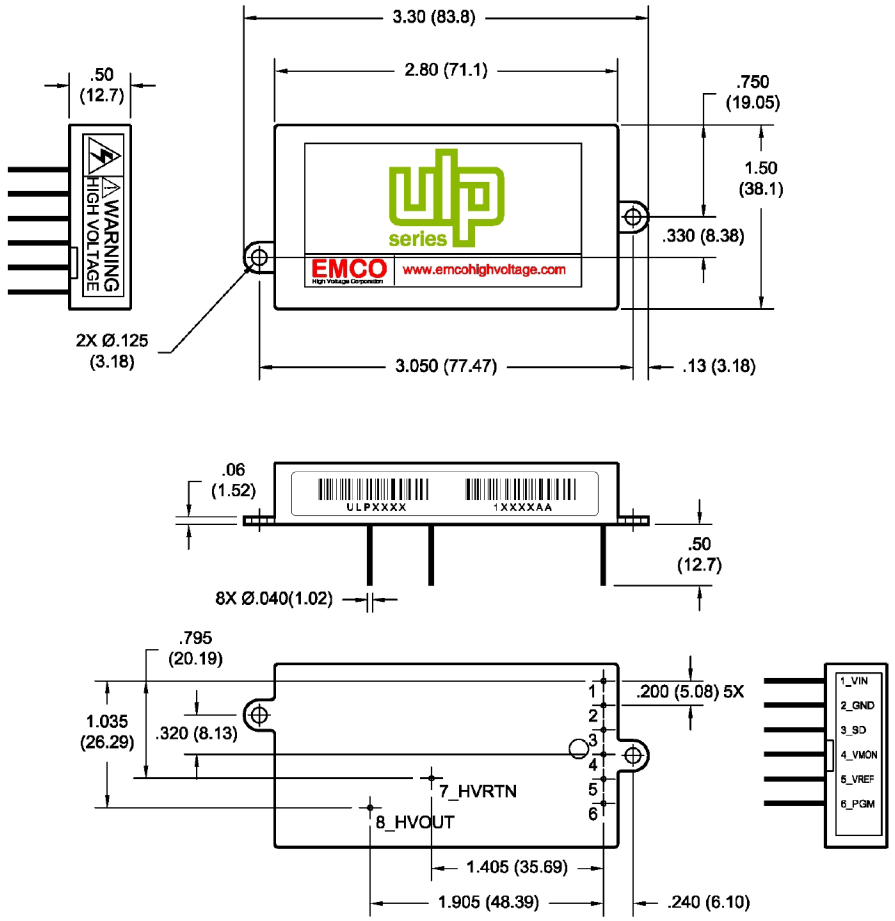
ULP05 - ULP50 (500V to 5000V)



PIN #	FUNCTION
1	Input: +5.4 to 7.4V
2	Ground
3	Input: Shut Down - TTL - Active High
4	Output: Voltage Monitor: 0 to +2.5V
5	Output: Voltage Reference: +2.5V
6	Input: Programming: 0 to +2.5V
7	Output: Return
8	Output: Voltage

Size: 3.30" x 1.50" x .50" (76.2mm x 38.1mm x 12.7mm)
Weight: 2 Ounces (51 Grams)
Case Material: Glass-filled Epoxy
Pins: .041" (1.04mm) Diameter (x8)

Dimensions are in inches (Metric Equivalents Parenthesis)
Dimensional Tolerances: +/- .03(.76mm)

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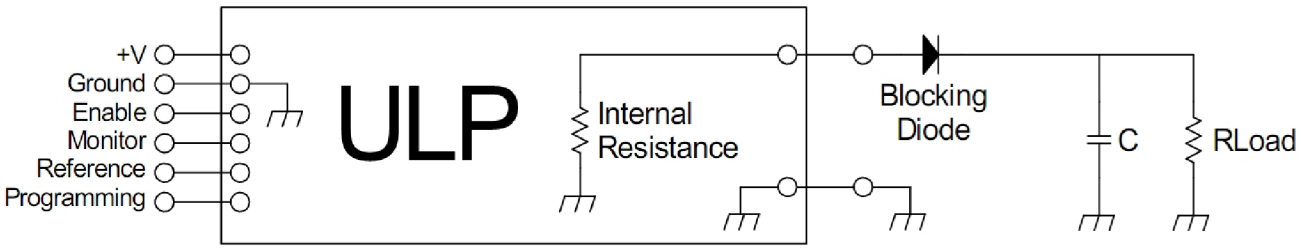
REDUCING THE RIPPLE

OUTPUT CONDITION	RIPPLE VOLTAGE	RIPPLE FREQUENCY
1 kV, 4.0 mA	21.6 V	6.6 kHz
1 kV, 0.0 mA	19.2 V	67.5 Hz
500 V, 8.0 mA	36.8 V	13.32 kHz
500 V, 0.0 mA	38.4 V	9.6 Hz

Due to the pulse-burst-mode topology used to achieve ultra-low power consumption, the output variation is larger than the other typical EMCO designs. The actual ripple amplitude and frequency depend on both the load current and the output voltage setting. The adjacent table shows the ripple characteristics of a typical ULP10P unit.

If this level of ripple is unacceptable for the application, it can be greatly attenuated with a simple output filter. If the load current is very light, a blocking diode and a capacitor can be used to greatly reduce the output variation. For heavier load currents, the internal resistance becomes a smaller percent of the load. The diode can be replaced with a resistor to form a conventional RC filter.

To prevent output overshoot, if desired, limit the programming input ramp to 600 mV/sec.



HOW TO ORDER

PART NUMBER SELECTOR:

Model Number:
ULP50P - T - R

ULP Model
Output Voltage (See table)
Polarity Designator (P for positive)
-R for RoHS (optional)
-T Extended Operating Temperature

EXAMPLE: ULP50P-R-T (ULP Series, 50-Output Voltage, P-positive, -R- RoHS, -T Extended Operating Temperature)

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