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Oil 4 Less® LLC™

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Lake Oswego OR 97035

info@oil4lessllc.com http://oil4lessllc.com

Codatron HT®*

High Voltage Regulators

General Description – Oil 4 Less® LLC is the sole exclusive manufacturer of the Codatron® HT high voltage shunt regulators. They are designed to give superior regulation over rapid temperature changes, and are for use in high temperature environments. The regulation of the Codatron® HT over rapid temperature changes is superior to any other currently manufactured high voltage regulator. The Codatron® HT regulator acts like a high voltage zener, but with low noise and a low temperature coefficient (TC). The regulated voltages offered include those available for the original, now discontinued, Victoreen Corotron, and many more. The Codatron® HT regulator has been optimized to operate at approximately 60 microamps, the current favored by many well logging tool technicians, but functions well over a wide range of currents up to a maximum current rating of 500 microamps. A much higher pulse or transient current rating is allowed due to the unique electrical characteristics of the Codatron HT. A small positive temperature coefficient has been included in the design to partly compensate downhole logging detector temperature response characteristics. The Codatron HT was designed for high temperature downhole well logging tools, but can be used as a direct replacement for the Victoreen Corotron in most applications. Shunt capacitors may be used, since the Codatron® HT has a positive resistance characteristic at all operating currents. The Codatron® HT is the high temperature member of the Codatron® family, a different design than the original Codatron®, and with extended temperature capability.

- **Available in standard Victoreen Corotron voltages (custom voltages also)**
- ***Standard* model specifications good from -55°C (-67°F) to +177°C (350°F)**
- ***Grade "A"* model specifications good from -75°C (-103°F) to +204°C (400°F)**
- **Nominal voltage rating specified at 100°C (212°F)**
- **Operating current range: 20mA to 200mA, -75°C (-103°F) to +204°C (400°F)**
- **Minimum shunt current for regulation: 2mA, 0°C (32°F) to 75°C (167°F)**
- **Maximum shunt current: 500mA, -75°C (-103°F) to +177°C (350°F)**
- **Recommended operating current: 60mA**
- **Excellent peak current rating**
- **Stable at all operating currents by design**
- **Precision tolerance; available to ±5V on selected values**
- **Excellent voltage regulation 20mA to 500mA**
- **Low noise generation and no self-oscillation**
- **Slight positive temperature coefficient added for downhole detector compensation**

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ORDERING GUIDE

Model[1,2,3]	Voltage[4]	Part Number
Codatron® HT	100 Volts	Codatron® HT - 100
Codatron® HT	In 50 Volt Steps To	Codatron® HT - xxxx
Codatron® HT	1250 Volts	Codatron® HT - 1250
Codatron® HT[2]	1300 Volts	Codatron® HT - 1300
Codatron® HT[2]	In 50 Volt Steps To	Codatron® HT - xxxx
Codatron® HT[2]	2500 Volts	Codatron® HT - 2500

Notes:

1. Specify ***Standard*** to 177°C (350°F), or ***Grade "A"*** to 204°C (400°F).
2. A surcharge applies to models over 1250 volts.
3. An additional surcharge applies to models over 2500 volts.
4. Custom voltages available on special order.
5. Selectable dual voltage models available on special order. A surcharge applies. Two close voltages can be selected for tuning nuclear detector response, or more removed voltages can be selected making it possible to stock one regulator to repair two-detector well logging tools (the 1050 volt / 1250 volt version is ideal for many gamma-ray / neutron tools).
6. ECCN number (export commodity control number): EAR99
7. Harmonized Tariff number: 8541100050
8. Schedule B Trade Number: 9032.89.3000
9. Approximate weight (to 1250V): 0.2 oz.

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ELECTRICAL CHARACTERISTICS*

Standard Models

Parameter[5]	Conditions[1]	Min	Typ	Max	Units
Temperature Range	***Standard*** Models	-55/-67		177/350	°C/°F
Operating Current Range	-55°C to +177°C (350°F)	20	60	500	µA
Minimum Shunt Current	0°C (32°F) to 75°C (167°F)		2		µA
Maximum Shunt Current	-55°C to +177°C (350°F)		500		µA
Suggested Current			60		µA
Peak Current	PW<300µSec, <0.1% Duty	0		+30	mA
Temperature Coefficient	60µA, 20°C to 177°C (350°F)		3		%
Tolerance[2]	60µA, 100°C (212°F)		1	2	%
Voltage Regulation[3]	At Constant Temperature		1.6	2	%
Voltage Regulation[4]	Over Temperature Range		4.3	5	%

Notes:

1. Ta = -55°C (-67°F) to +177°C (350°F), unless otherwise specified.
2. Voltage is specified at 100°C (212°F), not at 25°C (77°F).
3. From 20µA to 500µA at constant temperature.
4. From 25°C (77°F) at 20µA to 177°C (350°F) at 500µA (absolute worst case scenario).
5. Specifications are preliminary and subject to change. Beware of "tin pest" at very low temperatures.

ELECTRICAL CHARACTERISTICS*

Grade "A" Models

Parameter[6]	Conditions[1]	Min	Typ	Max	Units
Temperature Range	***Grade "A"*** Models	-75/-103		204/400	°C/°F
Operating Current Range	-75°C to +204°C (400°F)	20	60	200	µA
Minimum Shunt Current	0°C (32°F) to 75°C (167°F)		2		µA
Maximum Shunt Current[2]	-75°C to +177°C (350°F)		500		µA
Suggested Current			60		µA
Peak Current	PW<300µSec, <0.1% Duty	0		+30	mA
Temperature Coefficient	60µA, 20°C to 204°C (400°F)		3		%
Tolerance[3]	60µA, 100°C (212°F)		1	2	%
Voltage Regulation[4]	At Constant Temperature		2.0	2.5	%
Voltage Regulation[5]	Over Temperature Range		5.2	7	%

Notes:

1. Ta = -75°C (-103°F) to +204°C (400°F) for grade "A" models, unless otherwise specified.
2. From -75°C (-103°F) to +177°C (250°F); derate to 200µA above 177°C (350°F).
3. Voltage is specified at 100°C (212°F), not at 25°C (77°F).
4. From 20µA to 200µA at constant temperature.
5. From 25°C (77°F) at 20µA to 204°C (400°F) at 200µA (absolute worst case scenario).
6. Specifications are preliminary and subject to change. Beware of "tin pest" at very low temperatures.

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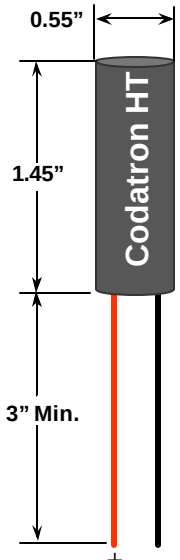
PACKAGING INFORMATION



Single Voltage

Depth Dimension:
Up to 1250 volts 0.24”.
1300-2500 volts 0.36”.

Notes:

1. 24 gauge stranded EE grade Teflon insulated leads (colors may vary).
2. Ends stripped and tinned with lead-free high temperature solder.
3. Custom lead lengths available on special order.
4. Viton shrink tubing with Kapton film over-wrap standard packaging.
5. Dual voltage units discontinued due to lack of interest.

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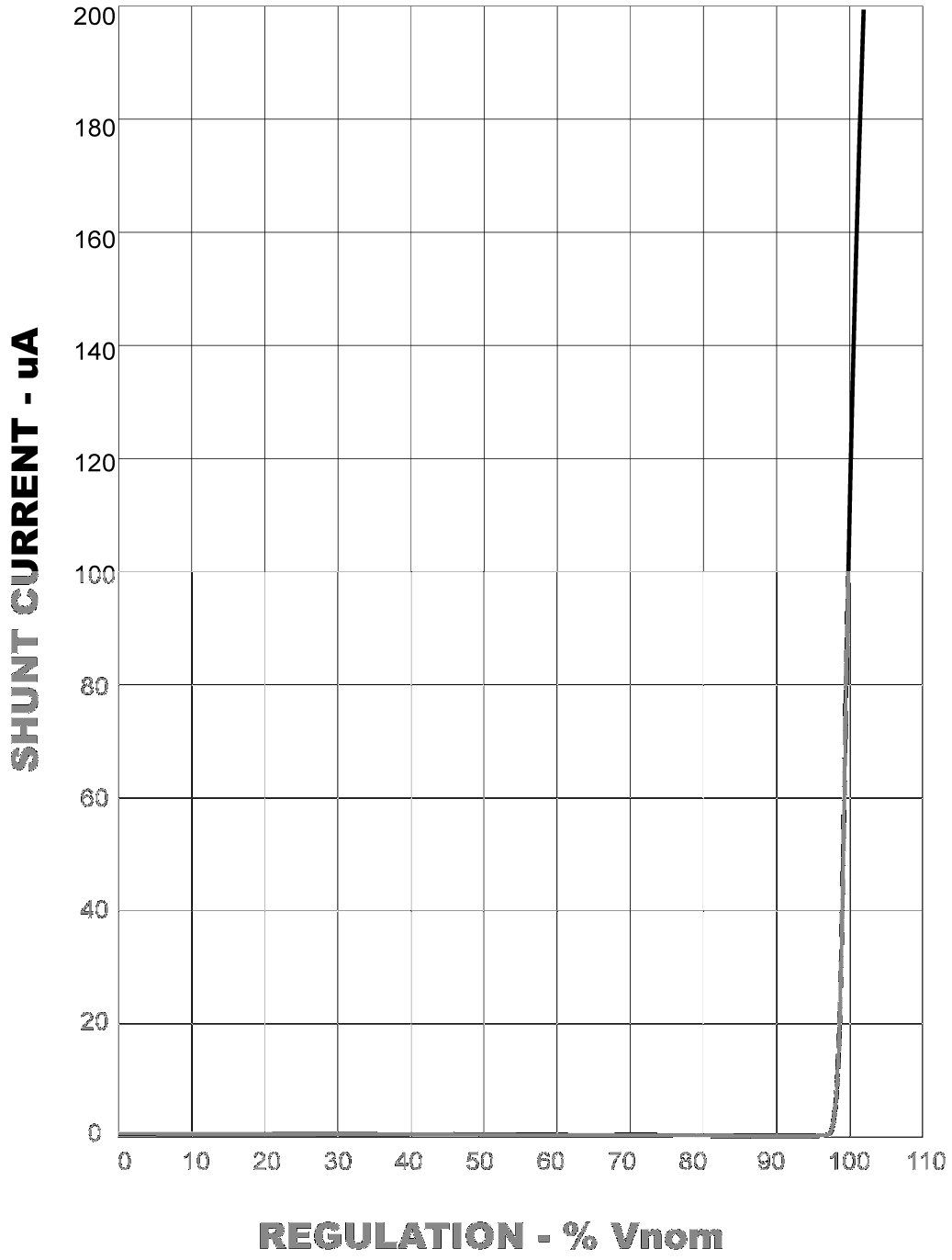
TYPICAL CURRENT AS A FUNCTION OF VOLTAGE



NOTE: I/V curve sharp and behaved into nanoamp region at 25ºC

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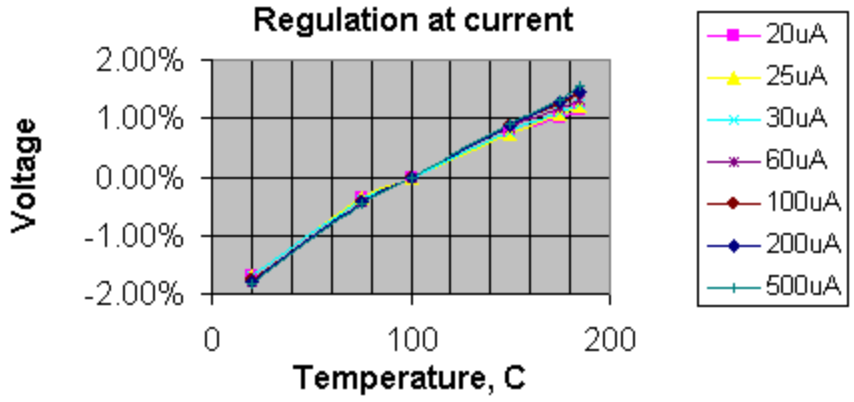
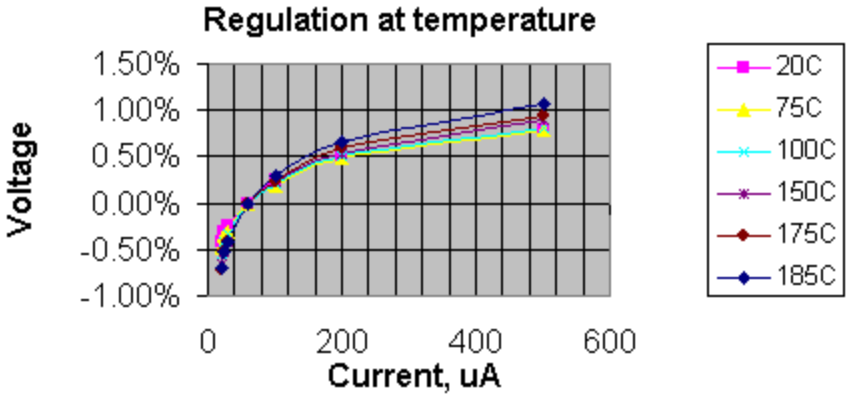
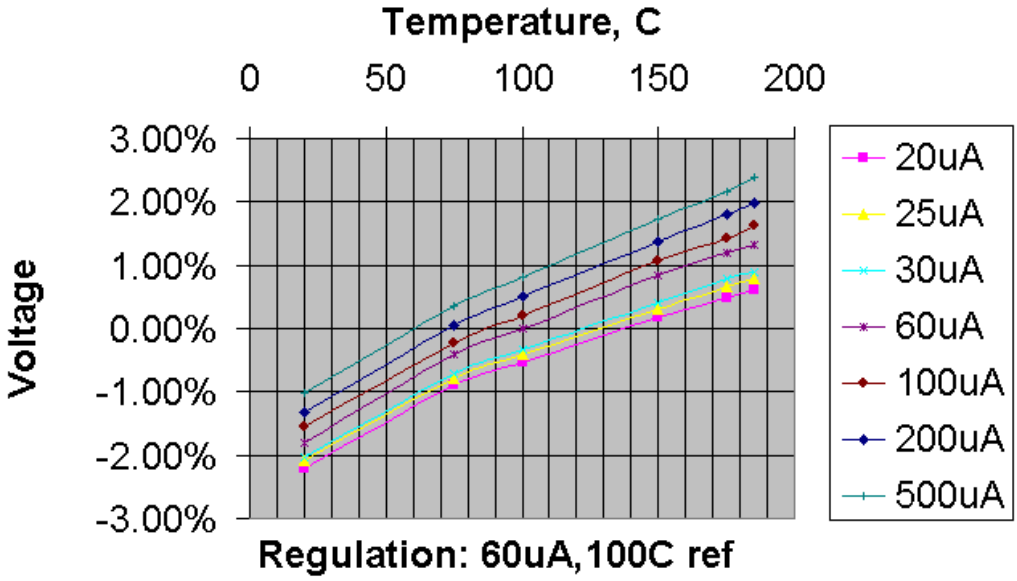
TYPICAL PERFORMANCE CURVES



Note: Voltage seen at 100C used as reference.



Note: Voltage seen at 60uA used as reference.



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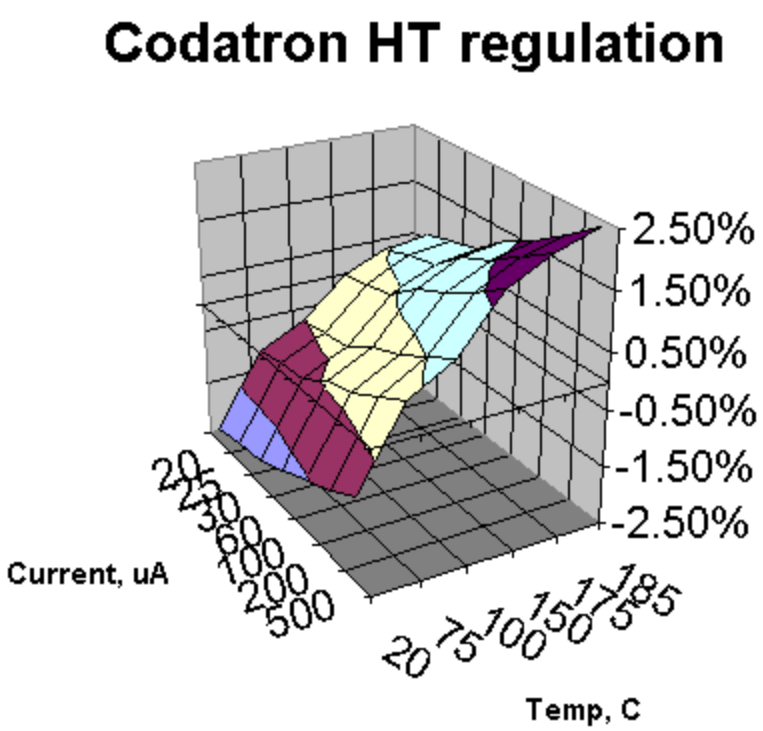
Note: Voltage seen at 60uA and 100C is used as reference.



Note: Voltage seen at 60uA and 100C is used as reference.

*Formerly called the TitanTwo.