

**42094**

**POSITIVE HIGH TEMPERATURE REGULATOR**

**Mii**

**HYBRID MICROELECTRONICS  
PRODUCTS DIVISION**

**Features:**

- Output current to 1.5 amps
- Input voltage to 38V
- Internal short circuit protection, foldback and current limiting
- Storage Temperature 225°C
- 200°C Operating Temperature
- Output voltage to 30 VDC

**Applications:**

- Logging while drilling
- Measuring while drilling (down-hole applications)
- Other harsh environments
- Designed to use in high temperature environments 200°C

**DESCRIPTION**

The 42094 series of regulators covers the voltage range from 5 VDC through 30 VDC. These regulators are fabricated using hybrid techniques and will operate at temperatures up to 200°C case. These devices are complete with internal short circuit protection which includes voltage shutdown and current foldback. The 42094 series regulators normally do not require any additional components. However, for good design practice, an external filter cap should be installed at the input, as close to the case as possible.

**ABSOLUTE MAXIMUM RATINGS AT 200°C**

Output Current (I <sub>OUT</sub> ) .....	1.5A
Input Voltage (V <sub>IN</sub> ) .....	+38VDC
Operating Temperature (T <sub>C</sub> ).....	200°C
Storage Temperature .....	-65°C to 200°C
Power Dissipation (P <sub>d</sub> ).....	25W

**TABLE 1 (see note)**

TYPE	V <sub>OUT</sub> VDC	MAX I <sub>OUT</sub> A	TYP I <sub>KNEE</sub> A
42094-005	5	1.5	2.0
42094-012	12	1.5	2.0
42094-015	15	1.5	2.0
42094-018	18	1.5	2.0
42094-024	24	1.5	2.0
42094-030	30	1.5	2.0

NOTE: Under condition (V<sub>IN</sub> - V<sub>OUT</sub>) x I<sub>OUT</sub> ≤ 25 watts at 200°C case. Micropac can provide custom output voltages between 5VDC and 30VDC.

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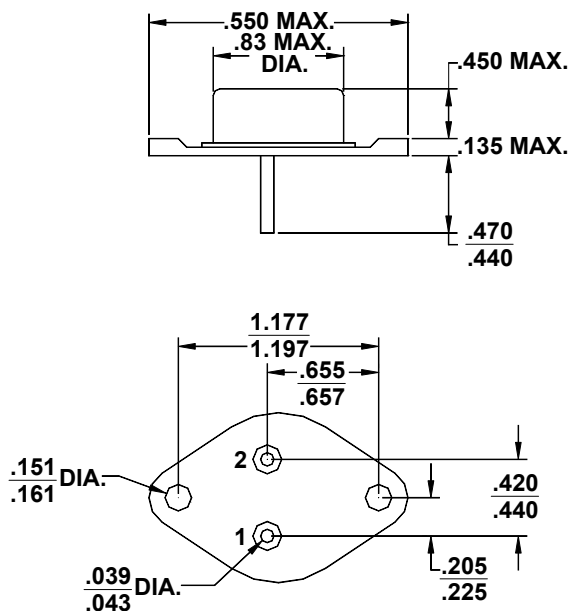
## ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITIONS	TEMPERATURE CASE TEMP	TYPICAL
*Output Voltage	$I_{OUT} = 300 \text{ mA}$ $V_{IN} = V_{OUT} + 3\text{VDC}$	+25°C to +200°C	$V_{OUT} \pm 1.0\%$
*Line Regulation	$V_{IN} = V_{OUT} + 3\text{VDC}$ to $V_{IN} = 38 \text{ VDC}$ $I_{OUT} = 50 \text{ mA}$	+25°C to +200°C	$V_{OUT} \pm 0.3\%$
Load Regulation	$V_{IN} = V_{OUT} + 5\text{VDC}$ $I_{OUT} = 50 \text{ to } 300\text{mA}$	+25°C to +200°C	$V_{OUT} \pm 0.5\%$
Ripple Rejection at 120 Hz	$V_{IN} = V_{OUT} + 5\text{VDC}$	+25°C	-60db
Standby Current	$V_{IN} = V_{OUT} + 5\text{VDC}$ $I_{OUT} = 0$	+25°C	30mA
Short Circuit Current	$V_{IN} = V_{OUT} + 5\text{VDC}$	+25°C	400mA
Short Circuit Current	$V_{IN} = V_{OUT} + 5\text{VDC}$	+200°C	200mA
Foldback Current (knee)	$V_{IN} = V_{OUT} + 5\text{VDC}$	+25°C	2A
Foldback Current (knee)	$V_{IN} = V_{OUT} + 5\text{VDC}$	+200°C	1.5A
Noise Output	$V_{IN} = V_{OUT} + 5\text{VDC}$ $I_{OUT} = 300 \text{ mA}$	+25°C	2mVRMS
Differential Voltage * ( $\Delta V = V_{IN} - V_{OUT}$ )	$I_{OUT} = 300 \text{ mA}$	+25°C to +200°C	3VDC MIN

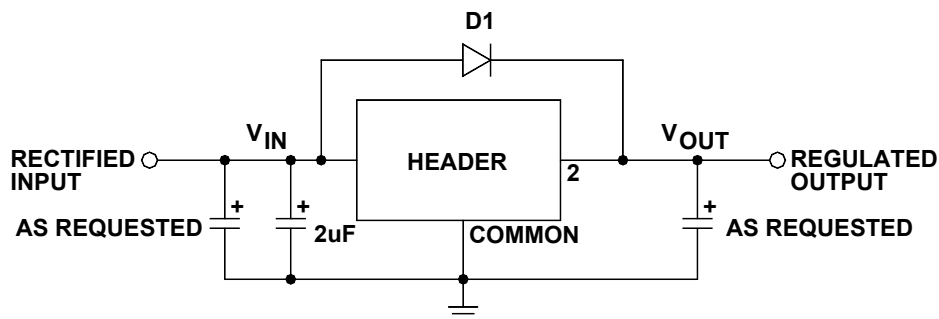
\*  $V_{IN} = 10\text{V Min}$ 

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## Mechanical Configuration



## Typical Connection Diagram



**Note:** D1 should be installed for input safety.

Electrical Connections	
Case	$V_{IN}$
Pin 1	Ground
Pin 2	$V_{OUT}$

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