

42095**NEGATIVE HIGH TEMPERATURE REGULATOR***Mii*

MICROCIRCUITS DIVISION

Features:

- Output current to 1.5 amps
- Input voltage to -38V
- Output voltage to -30V
- Internal short circuit protection, foldback and current limiting
- Storage Temperature +250°C
- 200°C Operating temperature

Applications:

- Logging while drilling
- Measuring while drilling (down-hole applications)
- Other harsh environments
- Used as military and industrial devices
- Designed for use in high temperature environments

DESCRIPTION

The 42095 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. It is strongly recommended that input and output capacitors be added as close to the case as possible. A 2µf capacitor should be added to the input and a minimum of 1.5 µf should be added to the output. See typical connection diagram.

ABSOLUTE MAXIMUM RATINGS AT 200°C Case temperature

Output Current (I_{OUT})	1.5A
Input Voltage (V_{IN})	-38VDC
Operating Temperature (T_C).....	200°C
Storage Temperature	-65°C to 200°C
Power Dissipation (P_d).....	25W

TABLE 1 (see note)

TYPE	V_{OUT} VDC	MAX I_{OUT} A	I_{KNEE} TYP A
42095-005	-5	1.5	2.0
42095-012	-12	1.5	2.0
42095-015	-15	1.5	2.0
42095-018	-18	1.5	2.0
42095-024	-24	1.5	2.0
42095-030	-30	1.5	2.0

Note: Under condition ($V_{IN} - V_{OUT} \times I_{OUT}$) \leq 25 watts at 200°C.
Micropac can provide custom output voltages between -5VDC and -30VDC.

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Micropac reserves the right to make changes at any time in order to improve design and to supply the best product possible.

ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITIONS	TEMPERATURE ⁽²⁾ CASE TEMP	TYPICAL
Output Voltage ⁽¹⁾	$I_{OUT} = 300 \text{ mA}$ $V_{IN} = V_{OUT} + 3\text{VDC}$	+25°C to +200°C	$V_{OUT} \pm 1.0\%$
Line Regulation ⁽¹⁾	$V_{IN} = V_{OUT} + 3\text{VDC}$ to $V_{IN} = 38 \text{ V}$ $I_{OUT} = 50 \text{ mA}$	+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	3 VDC min

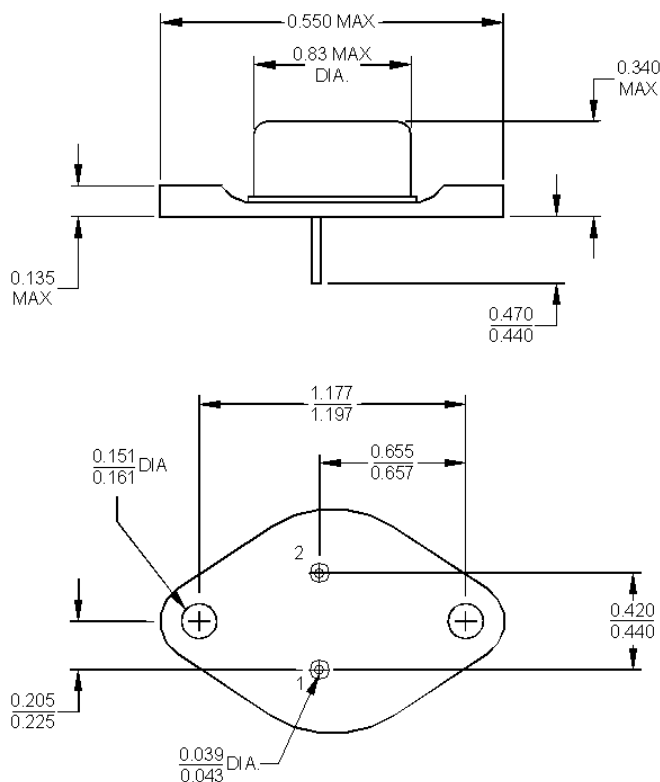
Notes:

1) $V_{IN} = 10\text{V Min}$

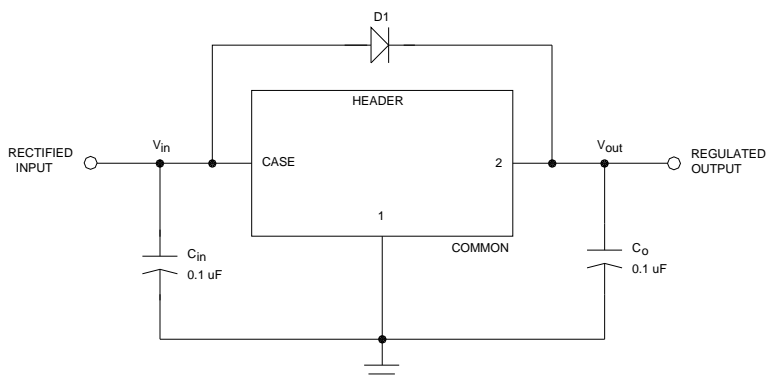
2) Regulator operation guaranteed by design @ -25°C for test condition listed. To designate factory screening add a "-1" to the Micropac part number; i.e. 42095-015-1.

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Mechanical Configuration



Typical Connection Diagram



Electrical Connection

Case	V_{IN}
Pin 1	Ground
Pin 2	V_{OUT}

C_{IN} & C_O :

- Recommended as good analog design practice to ensure regulator stability. These are in addition to supply and load capacitance.
- Required if regulator is located more than 2" or 3" away from input supply or output load capacitor(s). Capacitors must be installed as close to the regulator Terminals as possible to ensure stability.
- X5R & X7R type ceramic capacitors are recommended because of minimal variation in value and ESR over temperature.

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