Micro Power Systems

MP5010

Very Low Tempco 1.2 Volt Reference

FEATURES

- **Tested and Guaranteed as low as 5 ppm/°C Max Tempco**
- **Wide Operating Range: 50 µA - 5 mA**
- **Low Output Impedance: 0.6 Ω Typical**

BENEFITS

- **Lower Sensitivity to Capacitive Loading**
- **No Frequency Compensation Required**
- **Accurate Stable Reference over Temp**

APPLICATIONS

- **Building Block for Custom References**
- **Low Current Voltage Reference for Hand Held Multimeters**
- **Voltage Reference for Video Flash Converters**
- **Voltage Reference for D/A and A/D Converters**
- **Precision Analog Control Circuits**

GENERAL DESCRIPTION

The MP5010 is a 2 terminal, band-gap voltage reference which provides a fixed 1.2 V nominal output voltage. Micro Power Systems design and process enables us to provide guaranteed tempcos as low as 5 ppm/°C max. We provide this with a wide input current range of 50µA to 5mA, lower sensitivity to load capacitances, and a low output impedance of 0.6Ω (typ).

Specified for operation over the commercial (0 to +70°C), industrial (–40 to +85°C), and military (–55 to +125°C) temperature ranges, the MP5010 is available in Plastic TO-92, Metal Can TO-52, and Surface Mount (SOIC) packages.

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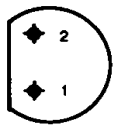
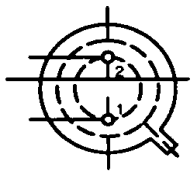
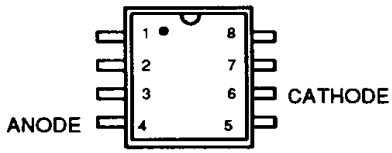
ORDERING INFORMATION

Part No.	Max Tempco	Temperature Range	Package Type
MP5010GN	100	–40 to +85°C	Plastic TO-92
MP5010HN	50	–40 to +85°C	Plastic TO-92
MP5010LN	25	–40 to +85°C	Plastic TO-92
MP5010MN	10	0 to 70°C	Plastic TO-92
MP5010JT	100	–55 to +125°C	TO-52
MP5010KT	50	–55 to +125°C	TO-52
MP5010LT	25	–55 to +125°C	TO-52
MP5010MT	10	–40 to +85°C	TO-52
MP5010NT	5	–40 to +85°C	TO-52
MP5010JR	100	–40 to +85°C	SO-8
MP5010GR	100	0 to 70°C	SO-8
MP5010HR	50	–40 to +85°C	SO-8
MP5010LR	25	–40 to +85°C	SO-8
MP5010MR	10	–40 to +85°C	SO-8
MP5010NR	5	–40 to +85°C	SO-8

PIN CONFIGURATIONS







TO-92 PLASTIC **TO-52 (Metal Can)** **8 Lead SOIC (0.150")**

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	25°C Min	25°C Typ	25°C Max	Tmin to Tmax Min	Tmin to Tmax Max	Units	Test Conditions/Comments
Reference Current	I_R	50		5000			µA	
Reference Voltage	V_{REF}	1.200	1.220	1.250			V	I_R = 500µA
Output Impedance (1)	Z_{OUT}		.6	2			Ω	I_R = 500µA
RMS Noise Voltage (1)			5				µV	10Hz ≤ f ≤ 10 kHz I_R = 500µA
BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT								
G-S			30	100			ppm/°C	I_R = 500µA
H-K			25	50				Tmin ≤ T_A ≤ Tmax
L			10	25				
M			5	10				
N			3	5				
Reverse Current		50		5000			µA	To rated specs

ABSOLUTE MAXIMUM RATINGS (1, 3)

Maximum Temperature
- Storage (JT, KT, LT, MT, NT) ..... –65 to +200°C
- Storage (GN, HN, LN, JR, GR, RR, LR) –65 to +125°C
- Operating Range (JT, KT, LT) ..... –55 to +125°C
- Operating Range (GN, HN, LN, NT, MT, JR, RR, LR) ..... –40 to +85°C
- Operating Range (MN, GR) ..... 0 to 70°C

Lead Temperature (soldering, 10 sec) ..... +260°C

Maximum Power Dissipation (all packages) (2)
- Power Dissipation (25°C) 13mW

Maximum Current
- Forward Current 10mA
- Reverse Current 10mA

NOTES:
(1) Guaranteed, not tested.
(2) Limited by max forward/reverse current.
(3) Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation at or above this specification is not implied. Exposure to above maximum rating conditions for extended periods may affect device reliability.