



Micro Power Systems

T-58-07

MP5010

Very Low Tempco
1.2 Volt Reference

FEATURES

- Tested and Guaranteed as low as 5 ppm/°C Max Tempco
- Wide Operating Range: 50 μ A - 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 50 μ A to 5mA, lower sensitivity to load capacitances, and a low output impedance of 0.6 Ω (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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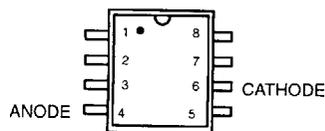
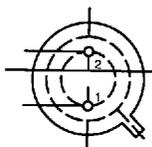
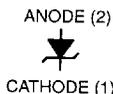
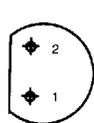
ORDERING INFORMATION

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

MP5010



PIN CONFIGURATIONS



TO-92 PLASTIC

TO-52 (Metal Can)

8 Lead SOIC (0.150")

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	25°C			Tmin to Tmax		Units	Test Conditions/Comments
		Min	Typ	Max	Min	Max		
Reference Current	I_R	50		5000			μA	
Reference Voltage	V_{REF}	1.200	1.220	1.250			V	$I_R = 500\mu A$
Output Impedance (1)	Z_{OUT}		.6	2			Ω	$I_R = 500\mu A$
RMS Noise Voltage (1)			5				μV	10Hz $\leq f \leq$ 10 kHz $I_R = 500\mu A$
BREAKDOWN VOLTAGE								
TEMPERATURE COEFFICIENT								
G-S			30	100			$ppm/^{\circ}C$	$I_R = 500\mu A$ $T_{min} \leq T_A \leq T_{max}$
H-K			25	50				
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, -40 to +85°C
- MT, JR, RR, LR)
- 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.