

Low Temperature Drift, Low Power Dissipation Voltage Reference

FEATURES

- Output Voltage 4.096V
- Initial Precision: $\pm 0.05\%$ (Max)
- Operating Temperature Range:
-40°C to +85°C
- Output Current: $\pm 1.3\text{mA}$
- Quiescent Current: $800\mu\text{A}@5\text{V}$
- Power Supply: $V_{\text{REF}}+0.15\text{V}$ to 5.5V
- SOP8 Package

APPLICATIONS

- Precision Data Acquisition System
- Portable and Battery-powered Devices
- Industry Instrument
- Test Device and Power Monitor

PRODUCT DESCRIPTION

The MSR040SP is a low temperature drift, low power dissipation and high-precision CMOS voltage reference, which is featured by initial precision of $\pm 0.05\%$ and low power dissipation.

The features, low output voltage hysteresis and low long-term output voltage drift, could further improve stability and system reliability. In addition, it is characterized by small-outline and low operating current, which is suitable for portable and battery-powered applications.

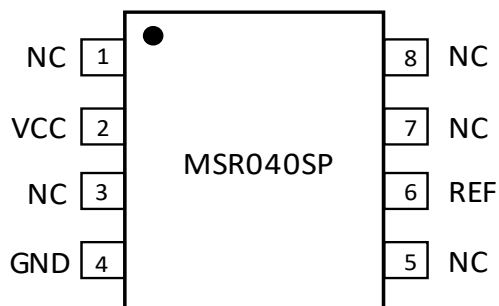
The MSR040SP is available in SOP8 package. The operating temperature ranges from -40°C to 85°C.

PRODUCT SPECIFICATION

Part Number	Package	Marking
MSR040SP	SOP8	MSR040SP

TABLE of CONTENTS

1. FEATURES.....	1
2. PRODUCT DESCRIPTION	1
3. APPLICATIONS.....	1
4. PRODUCT SPECIFICATION	1
5. TABLE of CONTENTS	2
6. PIN CONFIGURATION	3
7. PIN DESCRIPTION	3
8. ABSOLUTE MAXIMUM RATINGS	4
9. ELECTRICAL CHARACTERISTICS	5
10. TYPICAL CHARACTERISTICS DIAGRAM	6
11. TYPICAL APPLICATION DIAGRAM.....	7
12. PACKAGE OUTLINE DIMENSIONS.....	8
13. MARKING and PACKAGING SPECIFICATION.....	9
14. STATEMENT	10
15. MOS CIRCUIT OPERATION PRECAUTIONS	11

PIN CONFIGURATION

PIN DESCRIPTION

Pin	Name	Type	Description
1	NC	-	Not Connection
2	VCC	-	Power Supply
3	NC	-	Not Connection
4	GND	-	Ground
5	NC	-	Not Connection
6	REF	O	Reference Output. MSR040SP: Output 4.096V
7, 8	NC	-	Not Connection

ABSOLUTE MAXIMUM RATINGS

Any exceeding absolute maximum rating application causes permanent damage to device. Because long-time absolute operation state affects device reliability. Absolute ratings just conclude from a series of extreme tests. It doesn't represent chip can operate normally in these extreme conditions.

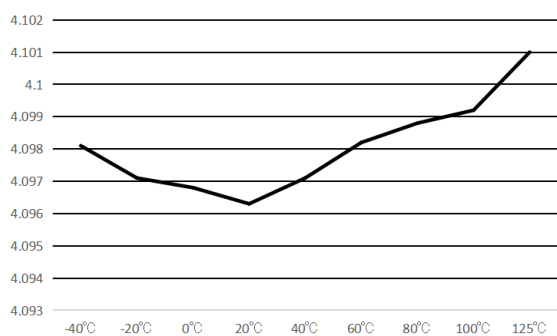
Parameter	Symbol	Ratings	Unit
Power Supply	V _{CC}	-0.3 ~ +6.5	V
Power Supply Difference	V _{CC-GND}	-0.3 ~ +6.5	V
Operating Temperature	T _A	-40 ~ +85	°C
Storage Temperature	T _{STG}	-65 ~ +150	°C
Maximum Junction Temperature	T _J	150	°C
Lead Temperature(10s)		260	°C
ESD (HBM)		4000	V

ELECTRICAL CHARACTERISTICS

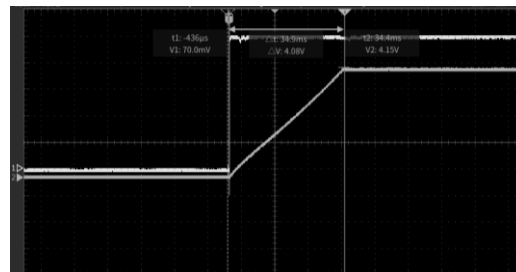
$V_{CC}=5V$, $T_A=25^{\circ}C$

Parameter	Condition	Min	Typ	Max	Unit
Output Voltage	$C_L=1\mu F$		4.096		V
Precision		-0.05%		+0.05%	%
Output Voltage Temperature Drift				10	ppm/ $^{\circ}C$
Output Voltage Noise	$f=0.1Hz$ to 10Hz		20		μV_{pp}
Output Voltage Noise Density	$f=1kHz$		0.3		ppm/ \sqrt{Hz}
Power Supply Rejection Ratio	$V_{CC}=5V\pm0.5V$		-70		dB
Output Short-circuit Current			1.35		mA
Start-up Time	External 10 μF Capacitor		20		ms
Power Supply		$V_{REF}+0.15$		5.5	V
Power Supply Current			800		μA

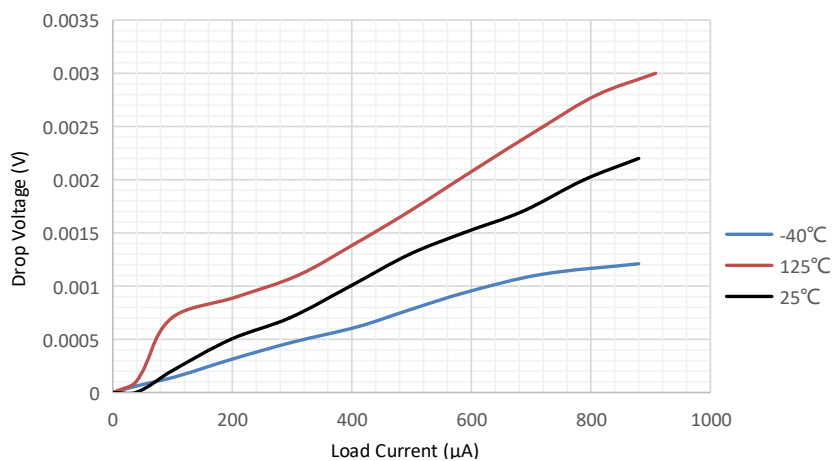
TYPICAL CHARACTERISTICS DIAGRAM



Output Voltage Temperature Drift (V_{CC}=5V)



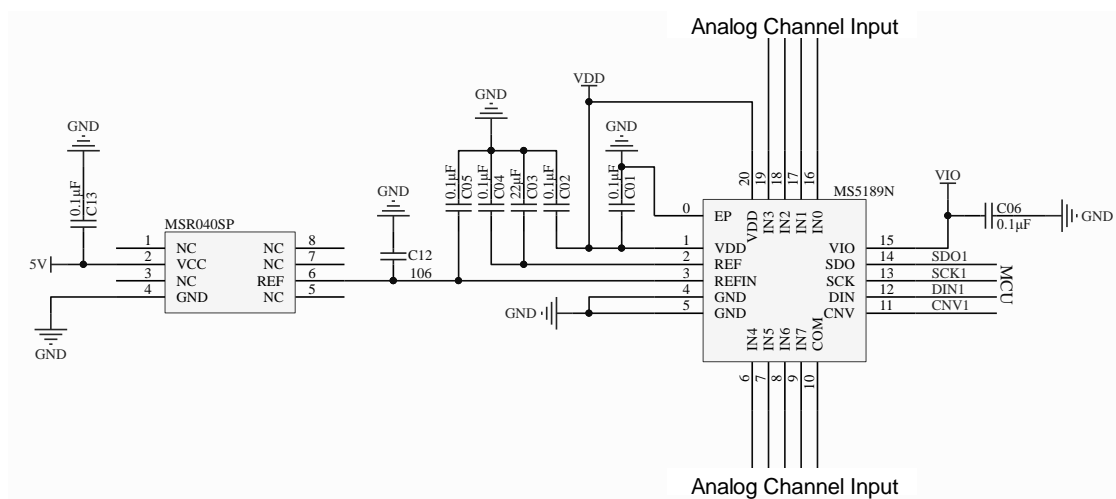
Start-up Time with 10μF Load Capacitor



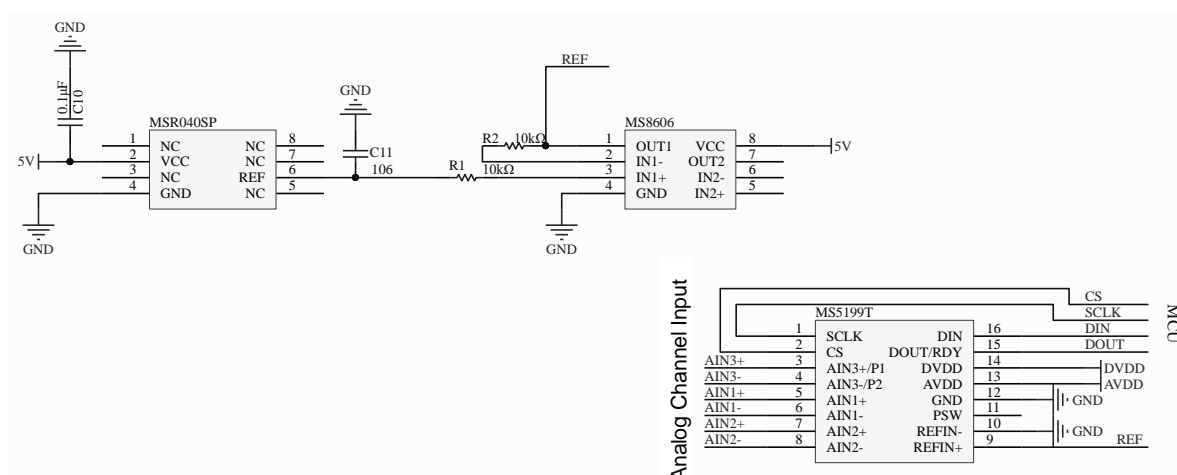
Drop Voltage VS. Load Current

TYPICAL APPLICATION DIAGRAM

1. Provide high-precision, low temperature drift external reference for the MS518X, SAR ADC.

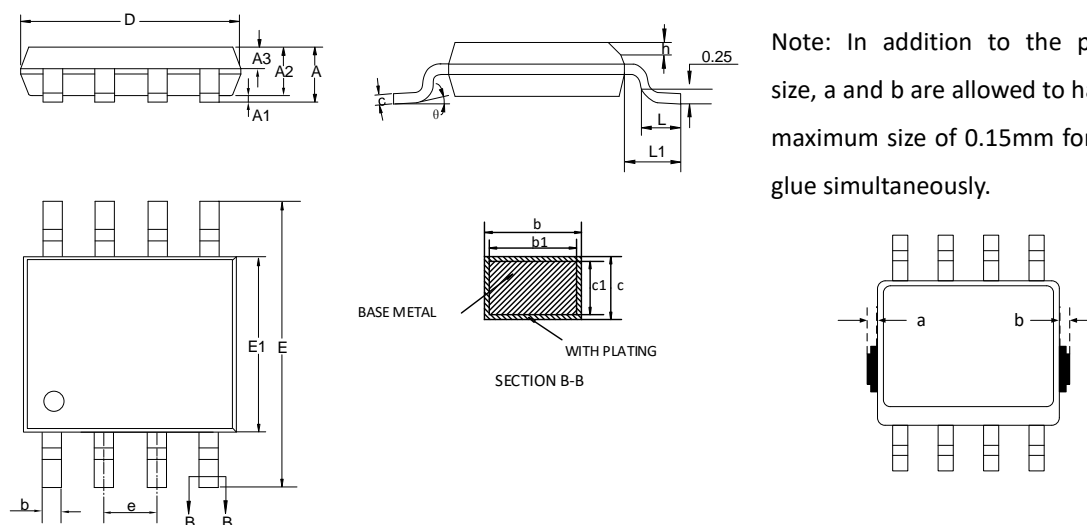


2. Provide high-precision, low temperature drift external reference for the MS519X, Σ - Δ ADC.



PACKAGE OUTLINE DIMENSIONS

SOP8



Symbol	Dimensions in Millimeters		
	Min	Typ	Max
A	-	-	1.75
A1	0.10	-	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	-	0.47
b1	0.38	0.41	0.44
c	0.20	-	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	-	0.50
L	0.50	-	0.80
L1	1.05REF		
θ	0°	-	8°

MARKING and PACKAGING SPECIFICATION**1. Marking Drawing Description**

Product Name: MSR040SP

Product Code: XXXXXXXX

2. Marking Drawing Demand

Laser printing, contents in the middle, font type Arial.

3. Packaging Specification

Device	Package	Piece/Reel	Reel/Box	Piece/Box	Box/Carton	Piece/Carton
MSR040SP	SOP8	2500	1	2500	8	20000

STATEMENT

- All Revision Rights of Datasheets Reserved for Ruimeng. Don't release additional notice.
Customer should get latest version information and verify the integrity before placing order.
- When using Ruimeng products to design and produce, purchaser has the responsibility to observe safety standard and adopt corresponding precautions, in order to avoid personal injury and property loss caused by potential failure risk.
- The process of improving product is endless. And our company would sincerely provide more excellent product for customer.

**MOS CIRCUIT OPERATION PRECAUTIONS**

Static electricity can be generated in many places. The following precautions can be taken to effectively prevent the damage of MOS circuit caused by electrostatic discharge:

1. The operator shall ground through the anti-static wristband.
2. The equipment shell must be grounded.
3. The tools used in the assembly process must be grounded.
4. Must use conductor packaging or anti-static materials packaging or transportation.



+86-571-89966911



Rm701, No.9 Building, No. 1 WeiYe Road, Puyan Street, Binjiang District, Hangzhou, Zhejiang



[http:// www.relmon.com](http://www.relmon.com)