DIO2372MP8

Ultra Low Vos, Low Power Amplifier

Features

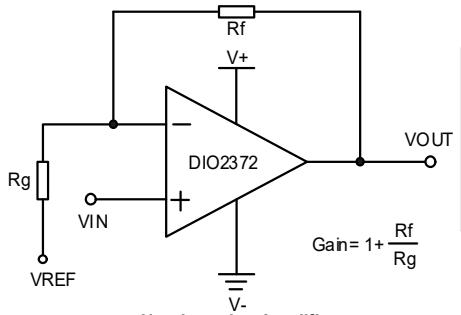
- Ultra low V_{OS}: 28μV(Max)
- Low Power: 17.0μA(typ.)
- Unity Gain Stable
- Gain Bandwidth Product: 300kHz(typ.)
- Wide supply range: 2.5V to 5.5V
- Available in MSOP-8 package
- Temperature Range:
  -Industrial: -40°C to 85°C
  -Extended: -40°C to 125°C

Descriptions

DIO2372MP8 is an ultra low V_{OS} operational amplifier, with rail-to-rail CMOS input/output and dual channels selectable. DIO2372MP8 has a gain-bandwidth product of 300kHz(typ.), wide operating supply voltage from 2.5V to 5.5V and broad output voltage swing.

DIO2372MP8 consumes ultra low power, with each channel 17.0μA(typ.) of bias current, which makes DIO2372MP8 be ideal for battery powered device, temperature-sense device, etc.

Typical Applications



Non-Inverting Amplifier

Applications

- Active Filters
- Data Acquisition
- Portable Equipment
- Test Equipment
- Broadband Communication
- Process Control
- Audio and Video Processing

Ordering Information

Order Part Number	Top Marking		T_A	Package	
DIO2372MP8	DIO2372	Green or RoHS	-40 to 125°C	MSOP-8	Tape & Reel, 3000

Pin Assignments

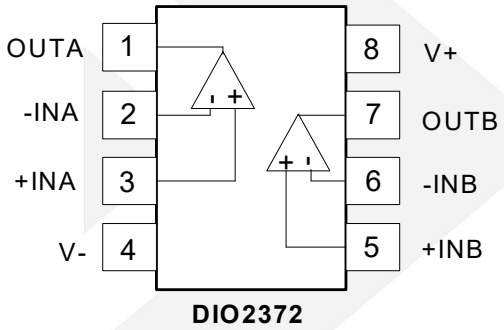


Figure 1 Top View

Pin Description

Pin name	Description
V+	Positive supply
V-	Negative supply
+INX	Positive Input
-INX	Negative Input
OUTX	Output

Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Rating” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other condition beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Parameter		Rating	Unit
Supply Voltage (V+ – V-)		7	V
Input Voltage		(V-)-0.3V to (V+) 0.3V	V
Difference Input Voltage		|V+ – V-|	V
Storage Temperature Range		-65 to 150	°C
Junction Temperature		150	°C
Lead Temperature Range		260	°C
ESD	HBM, JEDEC: JESD22-A114	8	kV

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation to ensure optimal performance to the datasheet specifications. DIOO does not recommend exceeding them or designing to Absolute Maximum Ratings.

Parameter	Rating	Unit
Supply Voltage	2.5 to 5.5	V
Input Voltage	0 to 5	V
Operating Temperature Range	-40 to 125	°C

Electrical Characteristics

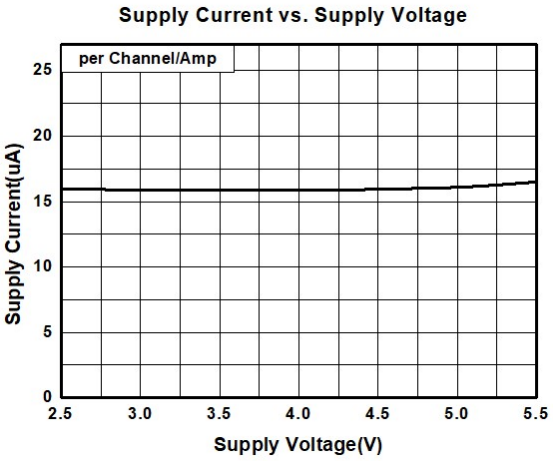
T_A = 25°C, R_L=1MΩ to V_{CC}/2, V_{CM}=1/2V_{CC}, unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
INPUT CHARACTERISTICS						
V_{OS}	Input Offset Voltage	V+=3.3V / 5V	-28		28	μV
I_B	Input Bias Current	V+=3.3V to 5.5V		1		pA
I_{OS}	Input Offset Current	V+=3.3V to 5.5V		1		pA
V_{CM}	Common Mode Voltage Range		-0.1		(V+) +0.1	V
CMRR	Common Mode Rejection Ratio	-40°C≤T_A≤125°C		130		dB
A_{OL}	Open Loop Voltage Gain	R_L=50kΩ, V_O= 0.1 to (V+)-0.1	80	110		dB
$\Delta V_{OS}/\Delta T$	Input Offset Voltage Drift	-40°C≤T_A≤125°C		0.05		μV/°C
OUTPUT CHARACTERISTICS						
V_{OH}	Output Voltage High	R_L=50kΩ, -40°C≤T_A≤125°C		4.992		V
V_{OL}	Output Voltage Low	R_L=50kΩ, -40°C≤T_A≤125°C		8		mV
I_{SC}	Output Short Circuit Current	Source I_{SC}, V+=5V		34		mA
		Sink I_{SC}, V+=5V		34		
POWER SUPPLY						
PSRR	Power Supply Rejection Ration		100			dB
I_S	Supply Current per Channel/Amp	-40°C≤T_A≤125°C		17	27	μA
DYNAMIC PERFORMANCE						
GBP	Gain Bandwidth Product	C_L=100pF, R_L=1MΩ		300		kHz
SR	Slew Rate	G=1, 2V Output Step		160		V/ms
t_S	Setting Time	G=1, 2V Output Step		1		ms
Θm	Phase Margin			62		Deg
tr	Overload Recovery Time			40		μs
NOISE PERFORMANCE						
THD	Total Harmonic Distortion	f=1kHz, 4V_{PP}, R_L=5kΩ,		0.33		%
e_n	Voltage Noise Density	f=1kHz		70		nV/√Hz

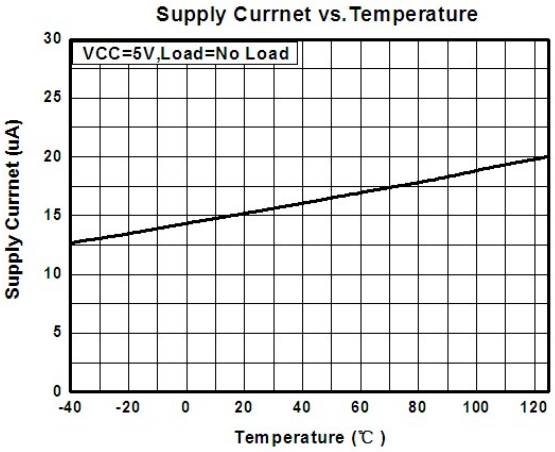
Specifications subject to change without notice.

Typical Performance Characteristics

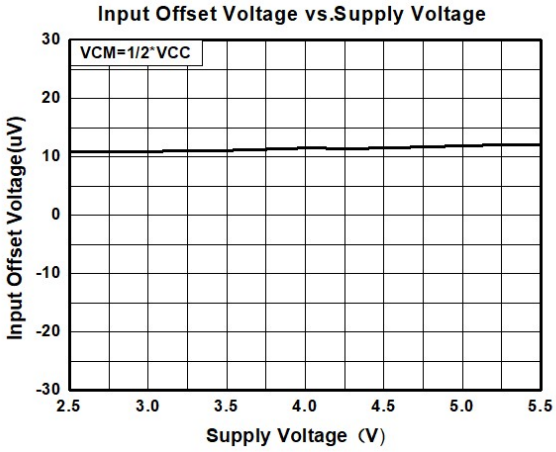
I_S vs. V_{CC}



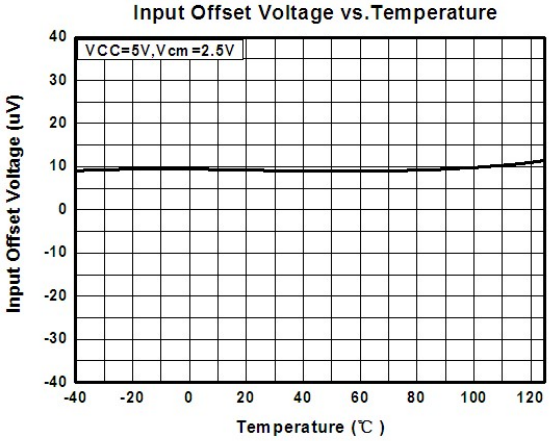
I_S vs. Temperature



V_{OS} vs. V_{CC}

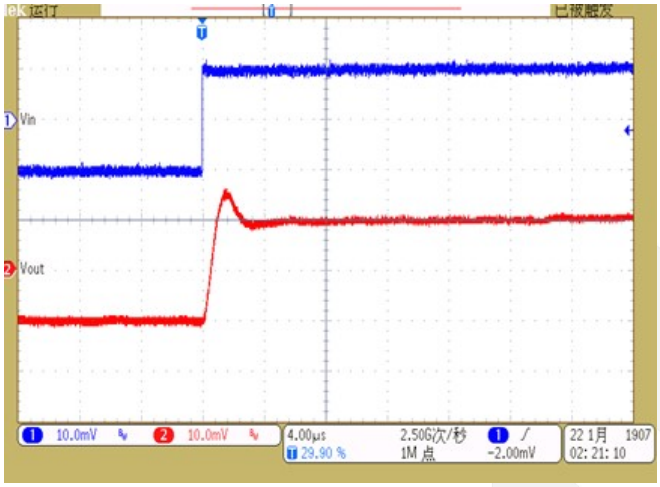


V_{OS} vs. Temperature

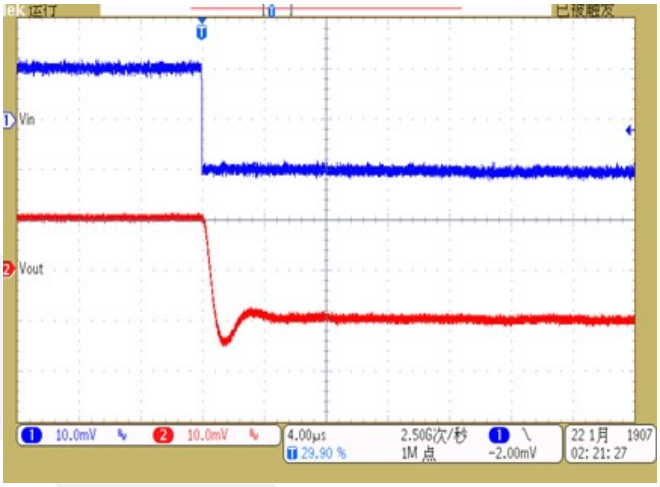


Typical Performance Characteristics (Continue)

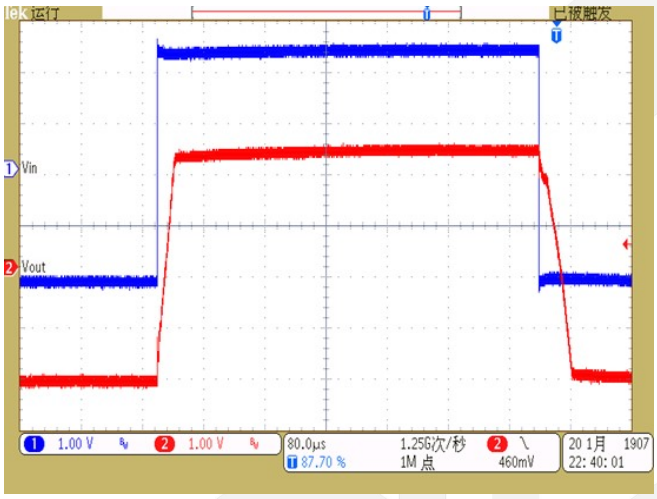
Small-signal Response
(V_{CC}=5V, C_L=200pF)



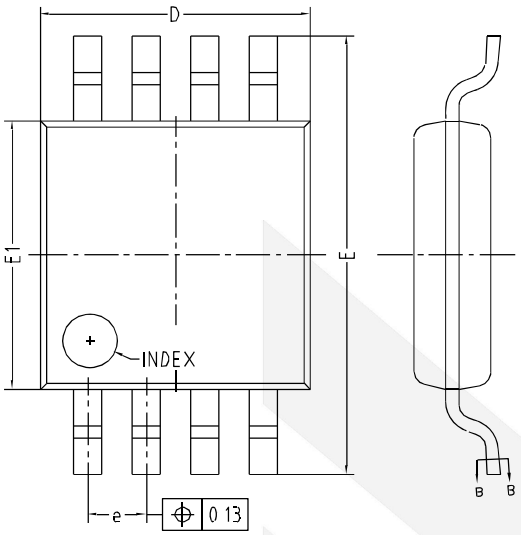
Small-signal Response
(V_{CC}=5V, C_L=200pF)

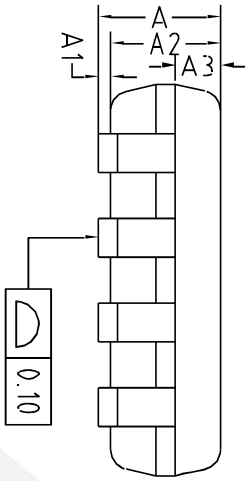


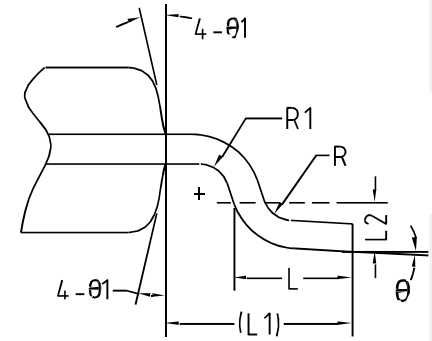
Large-signal Response
(V_{CC}=5V, R_L=5.1kΩ)

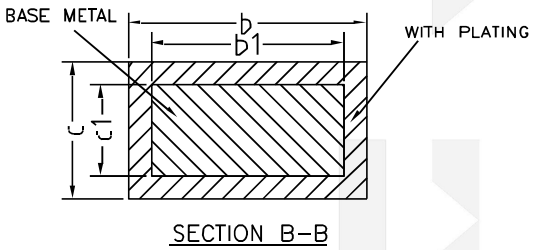


Physical Dimensions: MSOP-8









SECTION B–B

COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	**MIN**	**NOM**	**MAX**
A	-	-	1.10
A1	0	-	0.15
A2	0.75	0.85	0.95
A3	0.25	0.35	0.39
b	0.28	-	0.37
b1	0.27	0.30	0.33
c	0.15	-	0.20
c1	0.14	0.15	0.16
D	2.90	3.00	3.10
E	4.70	4.90	5.10
E1	2.90	3.00	3.10
e	0.55	0.65	0.75
L	0.40	0.60	0.80
L1	0.95REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
Θ	0°	-	8°
Θ1	9°	12°	15°

CONTACT US

Dioo is a professional design and sales corporation for high-quality and performance analog semiconductors. The company focuses on industry markets, such as, cell phone, handheld products, laptop, and medical equipment and so on. Dioo's product families include analog signal processing and amplifying, LED drivers and charger IC. Go to http://www.dioo.com for a complete list of Dioo product families.

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