

DIO2361AL

Ultra Low Vos, Low Power Amplifier

Features

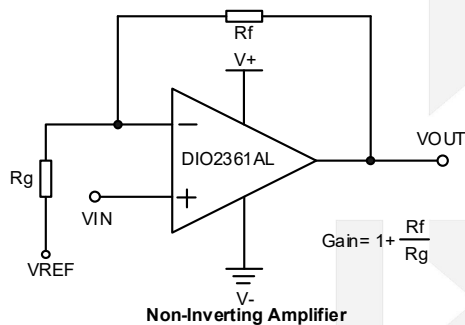
- Ultra low V_{OS} : DIO2361ALA: 10 μ V(Max)
DIO2361ALB: 20 μ V(Max)
DIO2361AL: 40 μ V(Max)
DIO2361ALM: 65 μ V(Max)
- Low Power: 7.0 μ A(typ.)
- Unity Gain Stable
- Gain Bandwidth Product: 110kHz(typ.)
- Wide supply range: 1.8V to 5.5V
- Available in SOT23-5 and SC70-5 packages
- Temperature Range:
 - Industrial: -40°C to 85°C
 - Extended: -40°C to 125°C

Descriptions

DIO2361AL is an ultra low V_{OS} operational amplifier, with rail-to-rail CMOS input/output and single/dual channels selectable. DIO2361AL has a gain-bandwidth product of 110kHz(typ.), wide operating supply voltage from 1.8V to 5.5V and broad output voltage swing.

DIO2361AL consumes ultra low power, with 7.0 μ A(typ.) of bias current, which makes DIO2361AL be ideal for battery powered device, temperature-sense device, etc.

Typical Applications



Applications

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

Ordering Information

Order Part Number	Top Marking		T _A	Package	
DIO2361ALASC5	W6LA	Green or RoHS	-40 to 125°C	SC70-5	Tape & Reel, 3000
DIO2361ALAST5	W6LA	Green or RoHS	-40 to 125°C	SOT23-5	Tape & Reel, 3000
DIO2361ALBSC5	W6LA	Green or RoHS	-40 to 125°C	SC70-5	Tape & Reel, 3000
DIO2361ALBST5	W6LA	Green or RoHS	-40 to 125°C	SOT23-5	Tape & Reel, 3000
DIO2361ALSC5	W6LA	Green or RoHS	-40 to 125°C	SC70-5	Tape & Reel, 3000
DIO2361ALST5	W6LA	Green or RoHS	-40 to 125°C	SOT23-5	Tape & Reel, 3000
DIO2361ALMSC5	W6LA	Green or RoHS	-40 to 125°C	SC70-5	Tape & Reel, 3000
DIO2361ALMST5	W6LA	Green or RoHS	-40 to 125°C	SOT23-5	Tape & Reel, 3000

Ordering Information Complimentary Note

Ordering Code = Part No. + Package Code

SC5: stands for SC70-5
ST5: stands for SOT23-5

DIO2361ALA
DIO2361ALB
DIO2361AL
DIO2361ALM

Pin Assignments

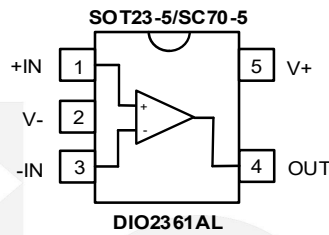


Figure 1 Top View

Pin Description

Pin name	Description
V+	Positive supply
V-	Negative supply
+IN	Positive Input
-IN	Negative Input
OUT	Output
NC	No connect

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		1.8 to 5.5	V
Input Voltage		0 to 5	V
Operating Temperature Range		-40 to 125	°C



Electrical Characteristics

Typical value: $V_+ = 5V$, $R_L = 1M\Omega$ to $V_+/2$, $V_{CM} = 1/2V_+$, $T_A = 25^\circ C$, unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit	
INPUT CHARACTERISTICS							
V_{OS}	Input Offset Voltage	$V_+ = 1.8V$ to $5.5V$	DIO2361ALA	-10		10	μV
			DIO2361ALB	-20		20	
			DIO2361AL	-40		40	
			DIO2361ALM	-65		65	
I_B	Input Bias Current	$V_+ = 1.8V$ to $5.5V$		1		pA	
I_{OS}	Input Offset Current	$V_+ = 1.8V$ to $5.5V$		1		pA	
V_{CM}	Common Mode Voltage Range		-0.1		(V_+) +0.1	V	
CMRR	Common Mode Rejection Ratio	$-40^\circ C \leq T_A \leq 125^\circ C$		130		dB	
A_{OL}	Open Loop Voltage Gain	$R_L = 50k\Omega$, $V_O = 0.1$ to $(V_+) - 0.1$	80	110		dB	
$\Delta V_{OS}/\Delta T$	Input Offset Voltage Drift	$-40^\circ C \leq T_A \leq 125^\circ C$		0.02		$\mu V/^\circ C$	
OUTPUT CHARACTERISTICS							
V_{OH}	Output Voltage High	$R_L = 50k\Omega$, $-40^\circ C \leq T_A \leq 125^\circ C$		4.992		V	
V_{OL}	Output Voltage Low	$R_L = 50k\Omega$, $-40^\circ C \leq T_A \leq 125^\circ C$		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	$-40^\circ C \leq T_A \leq 125^\circ C$		7	11	μA	
DYNAMIC PERFORMANCE							
GBP	Gain Bandwidth Product	$C_L = 100pF$, $R_L = 1M\Omega$		110		kHz	
SR	Slew Rate	$G = 1$, 2V Output Step		80		V/ms	
t_s	Setting Time	$G = 1$, 2V Output Step		2		ms	
θ_m	Phase Margin			70		Deg	
t_r	Overload Recovery Time			3.9		ms	

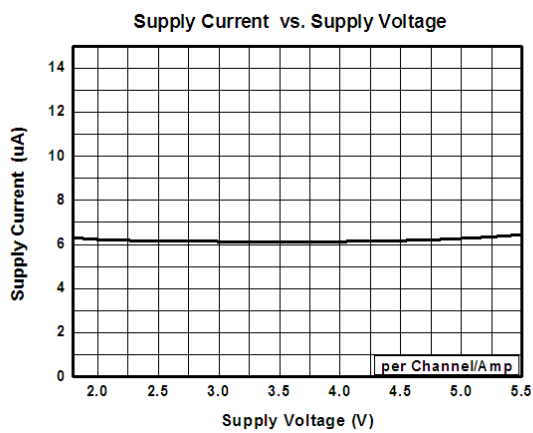
NOISE PERFORMANCE

THD	Total Harmonic Distortion	f=1kHz, 4V _{PP} , R _L =5kΩ	0.33	%
e _n	Voltage Noise Density	f=1kHz	100	nV/√Hz

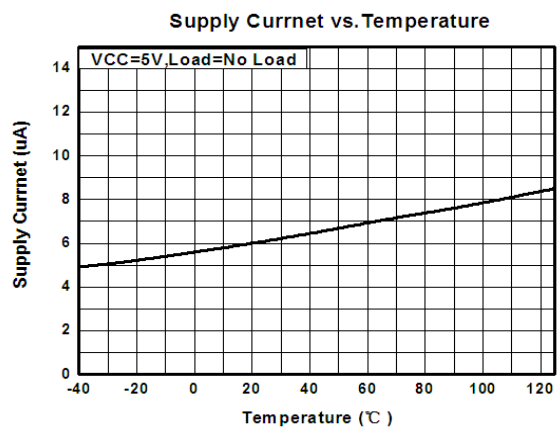
Specifications subject to change without notice.

Typical Performance Characteristics

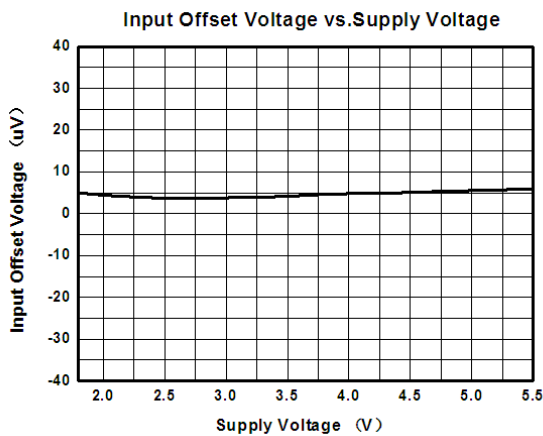
I_S vs. V_{CC}



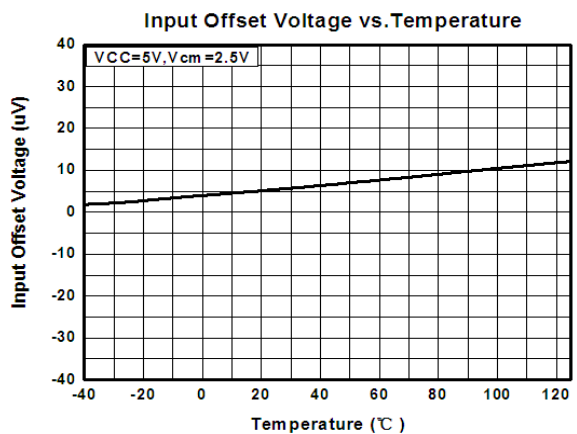
I_S vs. Temperature



V_{OS} vs. V_{CC}

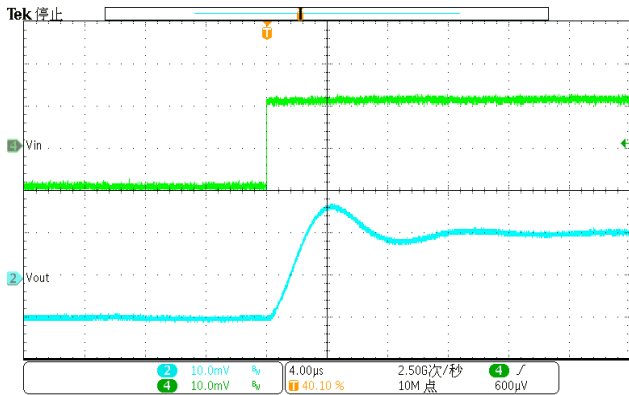


V_{OS} vs. Temperature

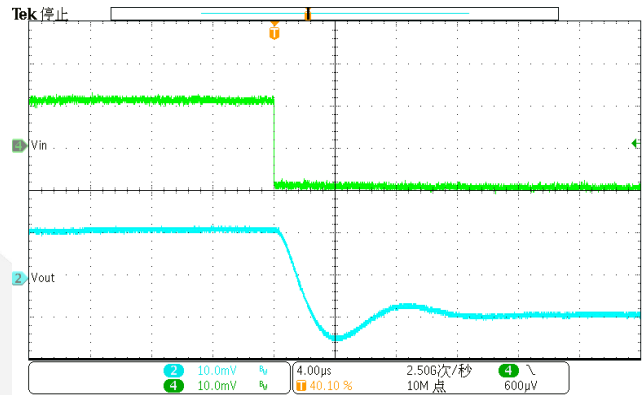


Typical Performance Characteristics (Continue)

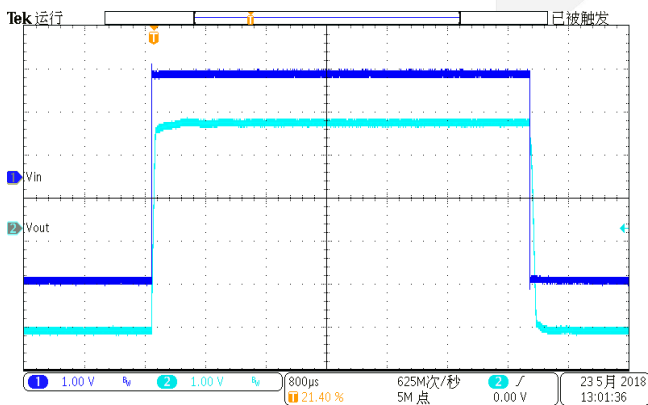
Small-signal Response
($V_{CC}=5V$, $C_L=200pF$)



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



Large-signal Response
($V_{CC}=5V$, $R_L=5.1k\Omega$)



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.

For additional product information, or full datasheet, please contact with our Sales Department or Representatives.

