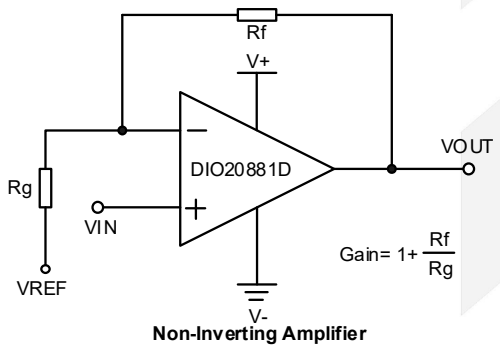
DIO20881D

600nA，Rail-to-Rail Input/ Output Low Power Amplifier

Features

- Ultra low power: 600nA
- Unity Gain Stable
- Gain Bandwidth Product: 14kHz
- Wide supply range: 1.4V to 5.5V
- Available in DFN1.2*1.2-6 package
- Temperature Range:
  -Industrial: -40°C to 85°C
  -Extended: -40°C to 125°C

Typical Applications



Non-Inverting Amplifier

Descriptions

DIO20881D is a ultra low power operational amplifier, with rail-to-rail CMOS input/output and single channel selectable. DIO20881D has a gain-bandwidth product of 14kHz, wide operating supply voltage from 1.4V to 5.5V and broad output voltage swing.

DIO20881D consumes ultra low power, with 600nA of bias current, which makes DIO20881D be ideal for battery powered device, temperature-sense device, etc.

The DIO20881D operational amplifier is available in single configuration. Furthermore, the DIO20881D is offered in DFN1.2*1.2-6 package. The type of amplifier is fully specified over the extended -40°C to 125°C temperature range.

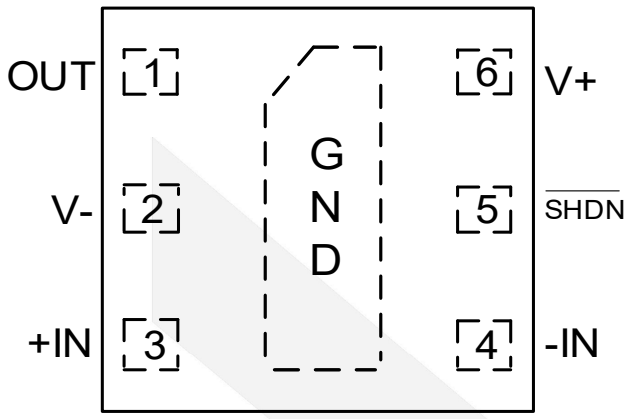
Applications

- Portable Equipment
- 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	
DIO20881DPN6	W8	Green or RoHS	-40 to 125°C	DFN1.2*1.2-6	Tape & Reel, 5000

Pin Assignments



DIO20881D

Figure 1 Top View

Pin Description

Pin name	Description
V+	Positive supply
V-	Negative supply
+IN	Positive Input
-IN	Negative Input
OUT	Output
$\overline{SHDN}$	Active Low Shutdown

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 maxim 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
	CDM, JEDEC: JESD22-C101	2	

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

Electrical Characteristics

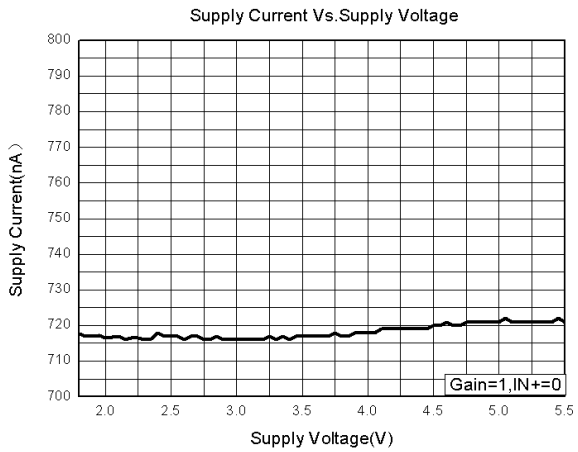
Typical value: V+=5V, R_L=1MΩ to V+/2, V_{CM}=1/2V+, T_A=25°C, unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
INPUT CHARACTERISTICS						
V_{OS}	Input Offset Voltage	-40°C≤T_A≤125°C, V+=1.4V to 5.5V	-3.5		3.5	mV
I_B	Input Bias Current	V+=1.4V to 5.5V		1		pA
I_{OS}	Input Offset Current	V+=1.4V 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,	100			dB
A_{OL}	Open Loop Voltage Gain	R_L=50kΩ, V_O= 0.1 to (V+)-0.1	70	87		dB
$\Delta V_{OS}/\Delta_T$	Input Offset Voltage Drift	-40°C≤T_A≤125°C		±5		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	15	mV
I_{SC}	Output Short Circuit Current	Source I_{SC}, V+=5V		30		mA
		Sink I_{SC}, V+=5V		30		
POWER SUPPLY						
PSRR	Power Supply Rejection Ration		100			dB
I_Q	Supply Current	-40°C≤T_A≤125°C		600	1000	nA
$I_{Q(off)}$	Supply Current in Shutdown	$V_{\overline{SHDN}}$=0V		3		nA
$I_{\overline{SHDN}}$	Shutdown Pin Current			-10		pA
I_{LEAK}	Output Leakage Current in Shutdown	$V_{\overline{SHDN}}$=0V		3.6		pA
V_{IL}	$\overline{SHDN}$ Input Low Voltage	Disable			0.5	V
V_{IH}	$\overline{SHDN}$ Input High Voltage	Enable	1.1			V
DYNAMIC PERFORMANCE						
GBP	Gain Bandwidth Product	C_L=60pF		14		kHz
SR	Slew Rate	G=1, 2V Output Step		3.5		V/ms
t_S	Setting Time	G=1, 2V Output Step		150		μs
Θm	Phase Margin			49		Deg
tr	Overload Recovery Time			110		μs
NOISE PERFORMANCE						
THD	Total Harmonic Distortion	f=100Hz, $4V_{PP}$, R_L=50kΩ,		0.09		%
e_n	Voltage Noise Density	f=1kHz		190		nV/√Hz

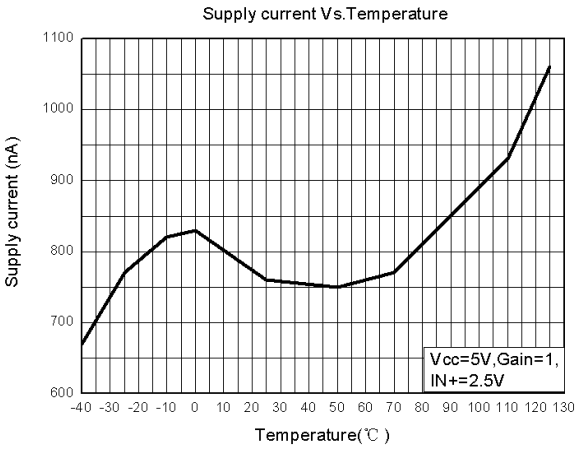
Specifications subject to change without notice.

Typical Performance Characteristics

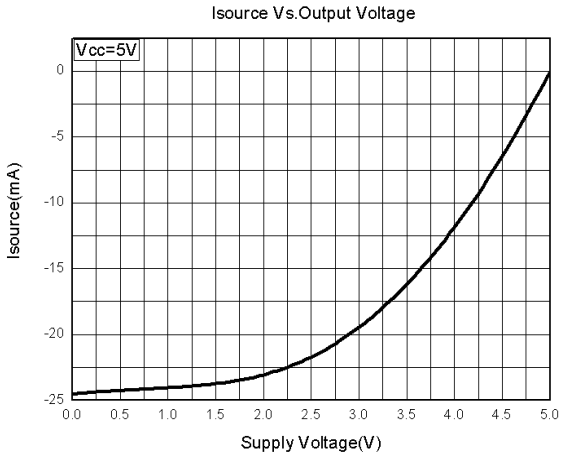
Supply Current vs. Supply Voltage



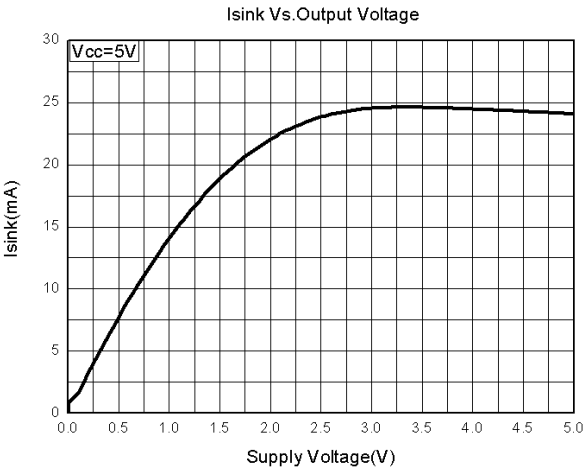
Supply Current vs. Temperature



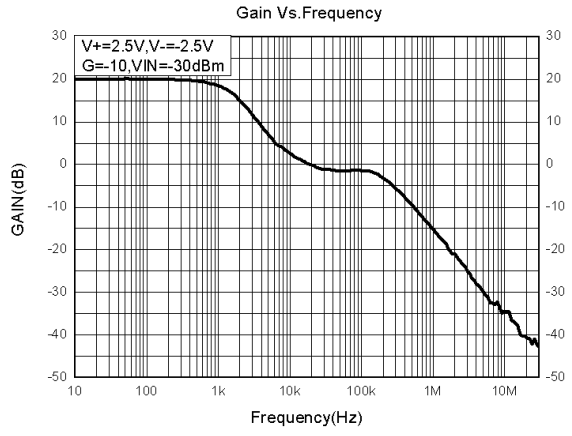
I_{SOURCE} vs. Output Voltage



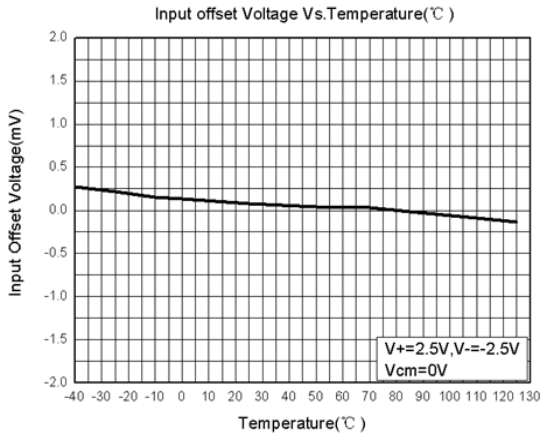
I_{SINK} vs. Output Voltage



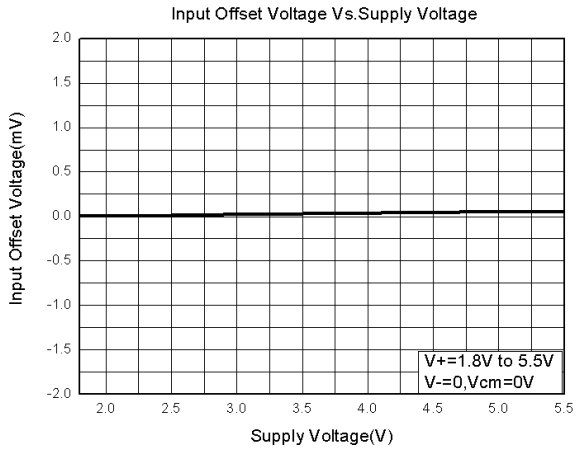
Gain vs. Frequency



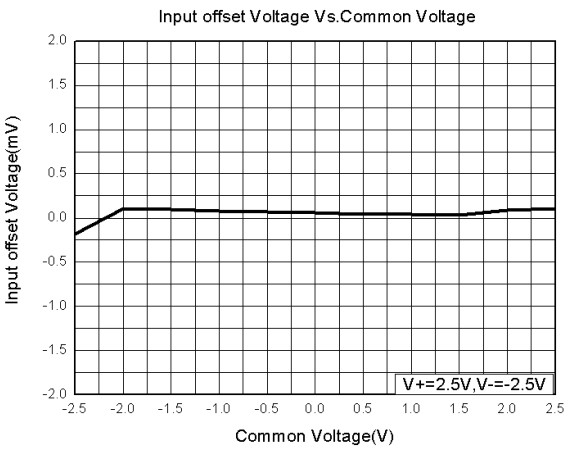
Input Offset Voltage vs. Temperature



Input Offset Voltage vs. Supply Voltage



Input Offset Voltage vs. Common Voltage



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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