

# DIO2051/2052/DIO2054

## Single/Dual/Quad, Rail-to-Rail Low Power Amplifier

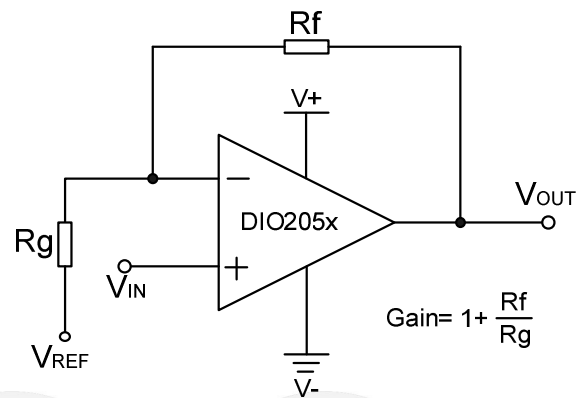
### Features

- Rail-to-Rail Input and Output
- 0.65 mV Typical offset ( $V_{OS}$ )
- Unity Gain Stable
- Gain Bandwidth Product: 550KHz
- Very low input bias currents : 0.5pA
- Wide supply range: 1.8V to 5.5V
- Input Voltage Range:  
-0.1V to +5.6V with  $V_+ = 5.5V$
- Ultra low power: 16 $\mu$ A per channel
- Small size packaging best for portable applications:  
DIO2051 Available in SC70-5 and SOT23-5  
DIO2052  
Available in SOIC-8, MSOP-8 and DQFN-9  
DIO2054 Available in TSSOP-14 and SOIC-14

### Descriptions

DIO2051/2052/2054 is single/dual/quad channel rail-to-rail CMOS operational amplifier with ultra low offset. Features include wide input common-mode voltage range and broad output voltage swing with operating supply voltage from 1.8V to 5.5 V. Products are fully specified over the extended  $-40^{\circ}C$  to  $+125^{\circ}C$  temperature range. DIO2051/2052/2054 provides 550kHz bandwidth consuming ultra low current of 16 $\mu$ A per channel. Very low input bias currents of 0.5pA enable the DIO2051/2052/2054 ideal for integrators, photodiode amplifiers, and piezoelectric sensors.

### Typical Application



Non-Inverting Amplifier

### Applications

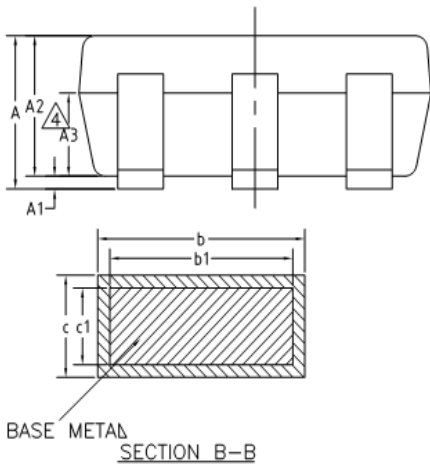
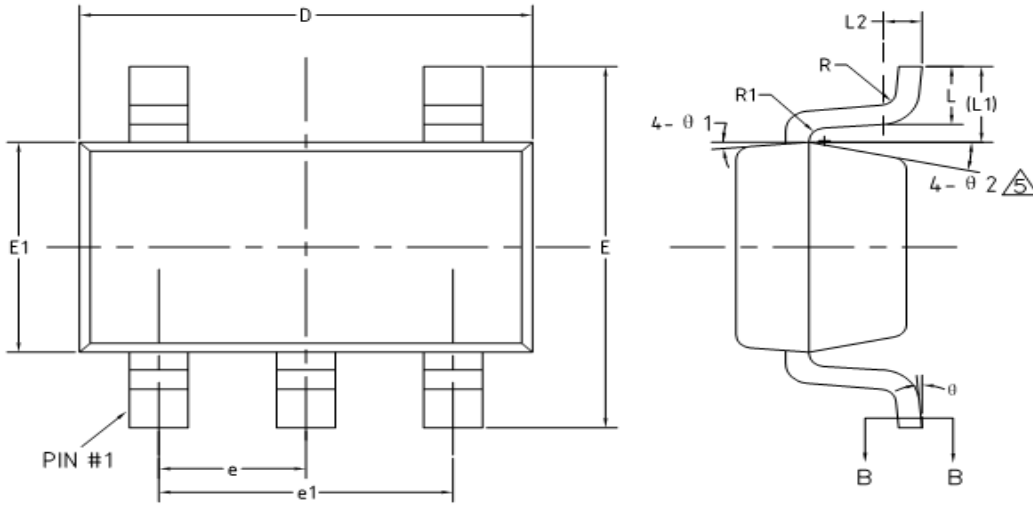
- ASIC Input or Output Amplifier
- Sensor Interface
- Piezo Electric Transducer Amplifier
- Medical Instrumentation
- Audio Output
- Portable Systems
- Smoke Detectors
- Notebook PC

### Ordering Information

Order Part Number	Top Marking		$T_A$		Package
DIO2051ST5	YW(X)Z	RoHS/Green	$-40$ to $+125^{\circ}C$	SOT23-5	Tape & Reel, 3000
DIO2051SC5	YW(X)Z	RoHS/Green	$-40$ to $+125^{\circ}C$	SC70-5	Tape & Reel, 3000
DIO2052MP8	DIO2052	RoHS/Green	$-40$ to $+125^{\circ}C$	MSOP-8	Tape & Reel, 3000
DIO2052SO8	DIO2052	RoHS/Green	$-40$ to $+125^{\circ}C$	SOIC-8	Tape & Reel, 2500
DIO2052LN9	2Q	Green	$-40$ to $+125^{\circ}C$	DQFN-9	Tape & Reel, 3000
DIO2054SO14	DIO2054	RoHS/Green	$-40$ to $+125^{\circ}C$	SOIC-14	Tape & Reel, 2500
DIO2054TP14	DIO2054	RoHS/Green	$-40$ to $+125^{\circ}C$	TSSOP-14	Tape & Reel, 2500

# DIO2051/2052/2054

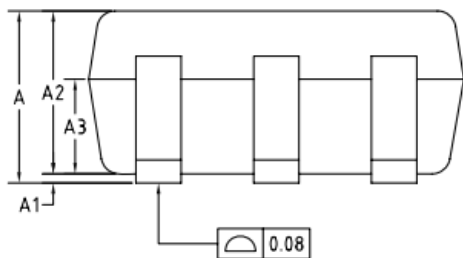
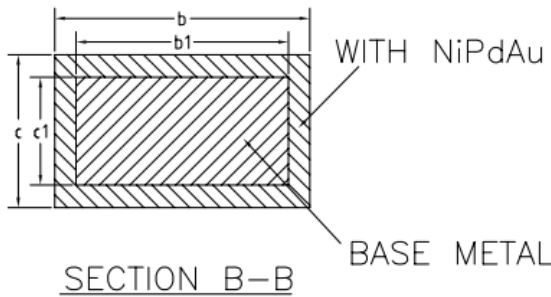
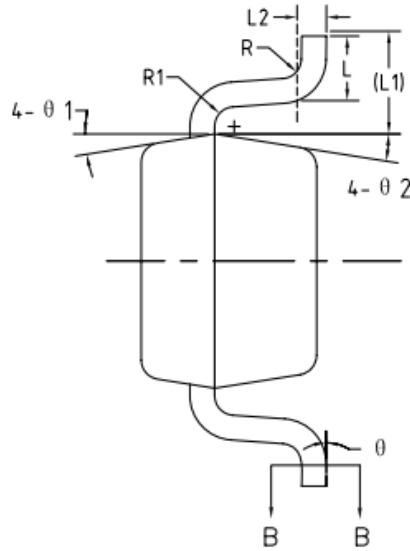
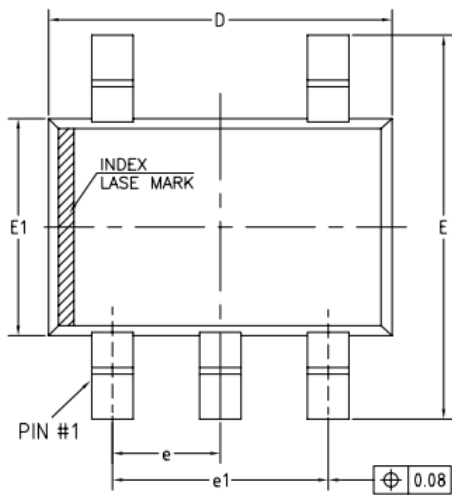
## Physical Dimensions: SOT-23-5



COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	-	-	1.25
A1	0	-	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	-	0.50
b1	0.36	0.38	0.45
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.25
$\theta$	0°	-	8°
$\theta 1$	3°	5°	7°
$\theta 2$	6°	-	14°

# DIO2051/2052/2054

## Physical Dimensions: SC70-5

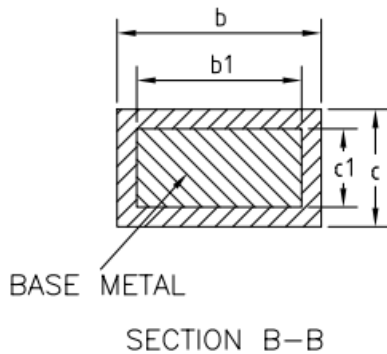
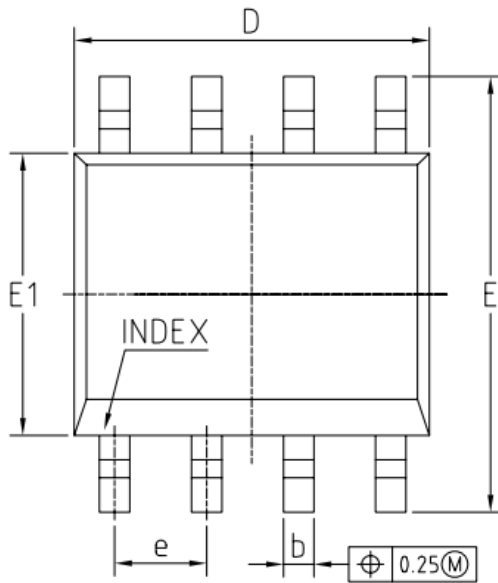
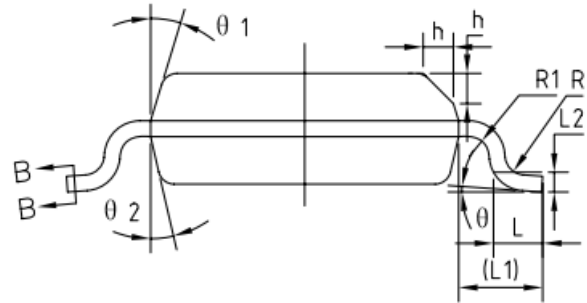
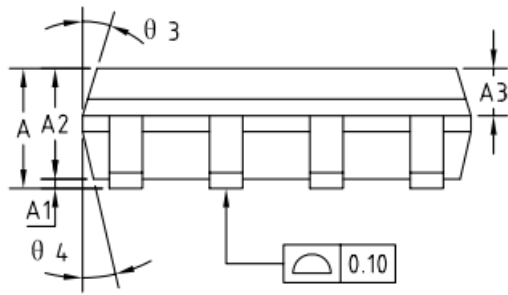


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	0.85	-	1.05
A1	0	-	0.10
A2	0.80	0.90	1.00
A3	0.47	0.52	0.57
b	0.22	-	0.29
b1	0.22	0.25	0.28
c	0.115	-	0.15
c1	0.115	0.13	0.14
D	2.02	2.07	2.12
E	2.20	2.30	2.40
E1	1.25	1.30	1.35
e	0.65BSC		
e1	1.30BSC		
L	0.28	0.33	0.38
L1	0.50REF		
L2	0.15BSC		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	-	8°
θ1	6°	9°	12°
θ2	6°	9°	12°

# DIO2051/2052/2054

Single/Dual/Quad Rail-to-Rail Low Power Amplifier

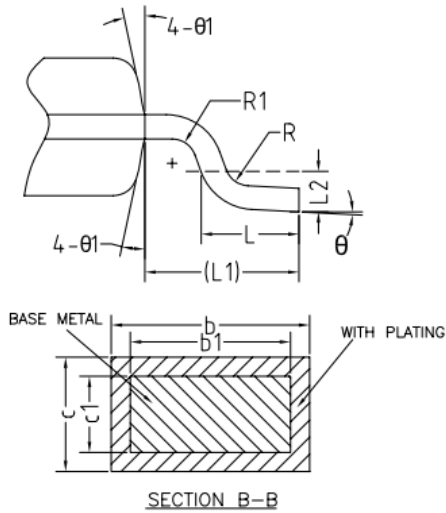
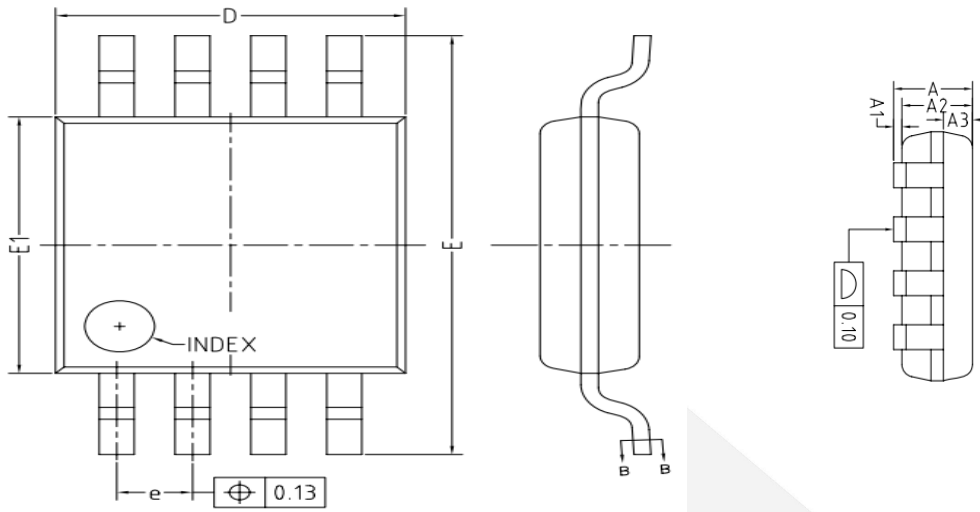
## Physical Dimensions: SOIC-8



COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
h	0.30	0.40	0.50
θ	0°	-	8°
θ1	15°	17°	19°
θ2	11°	13°	15°
θ3	15°	17°	19°
θ4	11°	13°	15°

# DIO2051/2052/2054

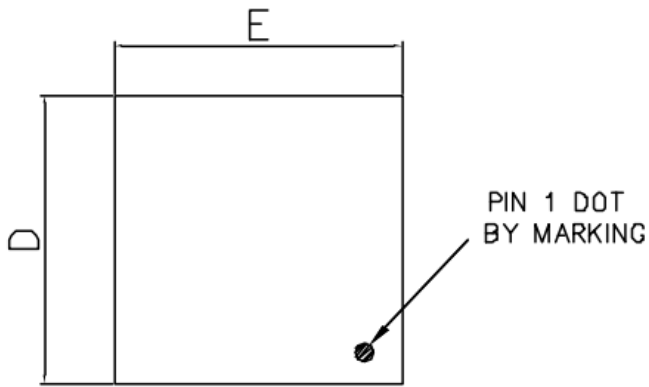
## Physical Dimensions: MSOP-8



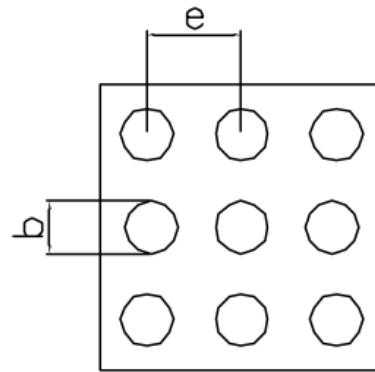
COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	-	-	1.10
A1	0	-	0.15
A2	0.75	0.85	0.95
A3	0.25	0.35	0.39
b	0.28	-	0.37
b1	0.27	0.30	0.33
c	0.15	-	0.20
c1	0.14	0.15	0.16
D	2.90	3.00	3.10
E	4.70	4.90	5.10
E1	2.90	3.00	3.10
e	0.55	0.65	0.75
L	0.45	0.60	0.80
L1	0.95REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
θ	0°	-	8°
θ1	9°	12°	15°

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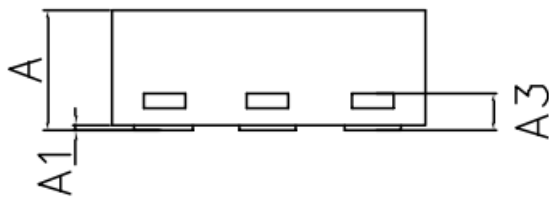
## Physical Dimensions: DQFN-9



TOP VIEW



BOTTOM VIEW



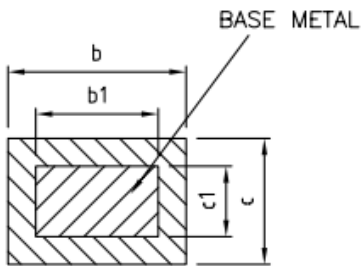
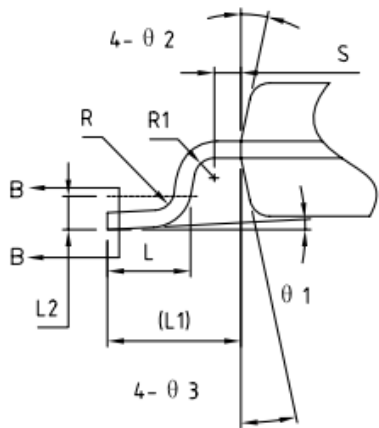
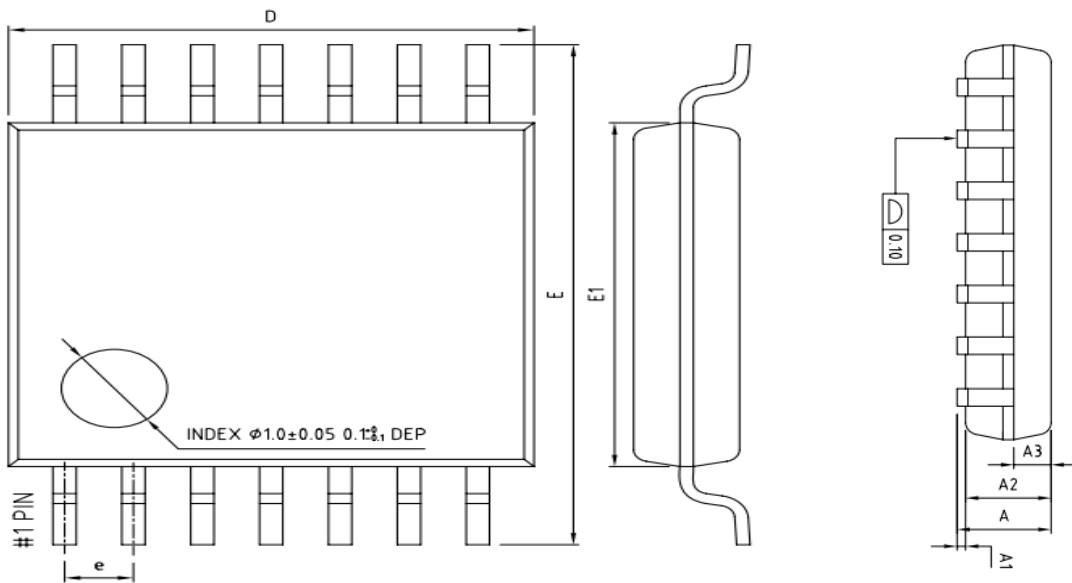
SIDE VIEW

COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	>0.50	0.55	0.60
A1	0.00	-	0.05
A3	0.15REF		
D	1.45	1.50	1.55
E	1.45	1.50	1.55
b	D0.250	D0.275	D0.300
e	0.50BSC		

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## Physical Dimensions: TSSOP-14

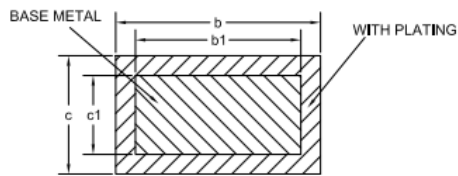
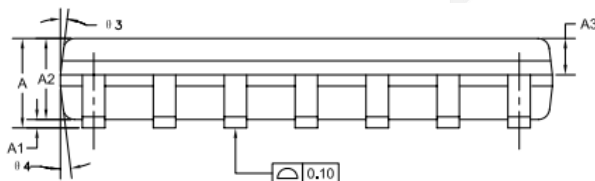
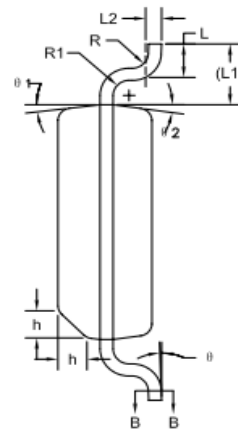
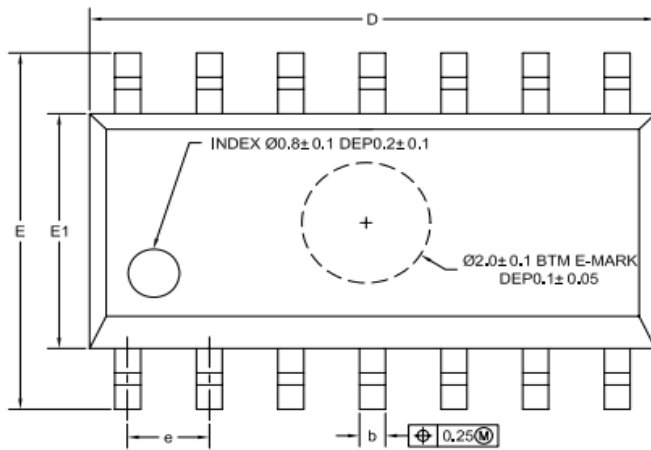


SECTION B-B

COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	-	-	1.20
A1	0.05	-	0.15
A2	0.90	1.00	1.05
A3	0.34	0.44	0.54
b	0.20	-	0.28
b1	0.20	0.22	0.24
c	0.10	-	0.19
c1	0.10	0.13	0.15
D	4.86	4.96	5.06
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00REF		
L2	0.25BSC		
R	0.09	-	-
R1	0.09	-	-
S	0.20	-	-
Ø1	0°	-	8°
Ø2	10°	12°	14°
Ø3	10°	12°	14°

# DIO2051/2052/2054

## Physical Dimensions: SOIC-14



SECTION B-B

COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	1.35	1.60	1.75
A1	0.10	0.15	0.25
A2	1.25	1.45	1.65
A3	0.55	0.65	0.75
b	0.36	-	0.49
b1	0.35	0.40	0.45
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	8.53	8.63	8.73
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2	0.25BSC		
R	0.07	-	-
R1	0.07	-	-
h	0.30	0.40	0.50
Ø	0°	-	8°
Ø1	6°	8°	10°
Ø2	6°	8°	10°
Ø3	5°	7°	9°
Ø4	5°	7°	9°

Single/Dual/Quad Rail-to-Rail Low Power Amplifier



## CONTACT US

**D**ioo 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 equipments 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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