

# 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

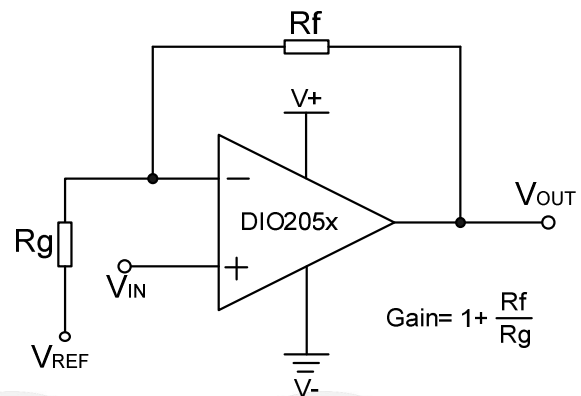
### Descriptions

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.

### Applications

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

### Typical Application



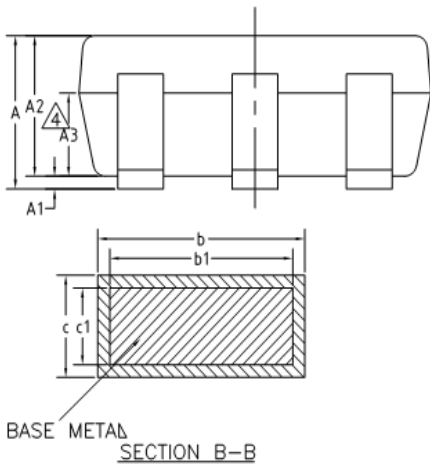
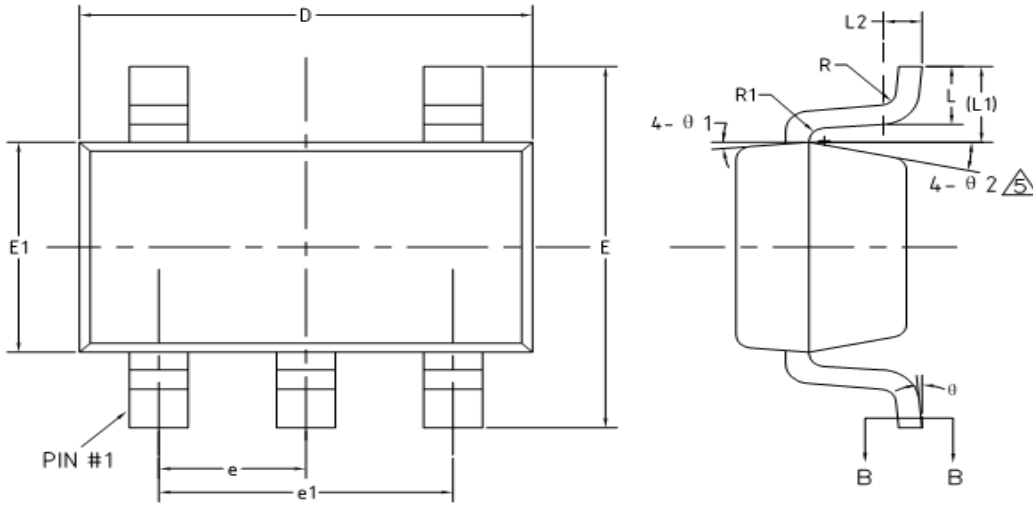
Non-Inverting Amplifier

### 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

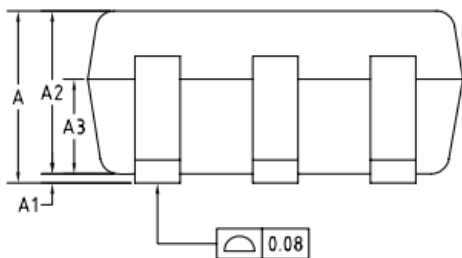
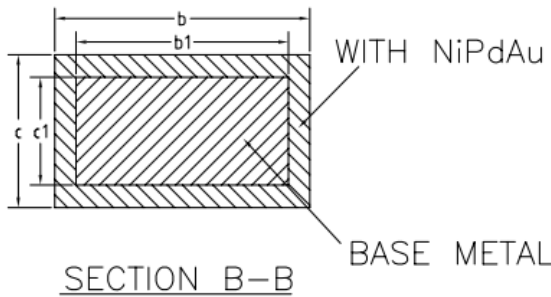
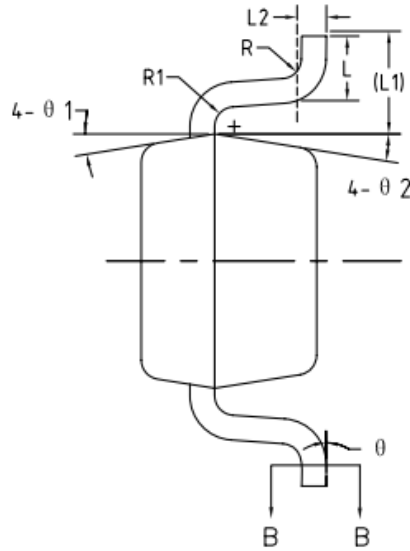
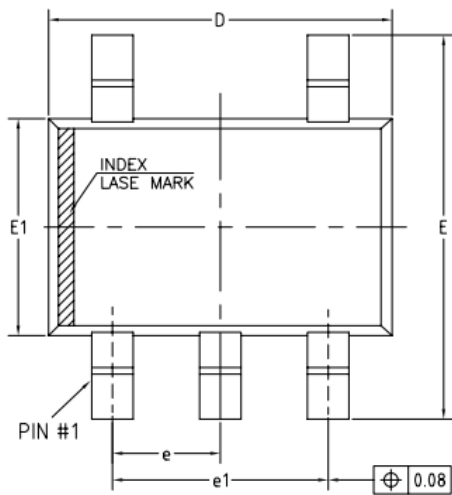
## Physical Dimensions: SOT-23-5



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

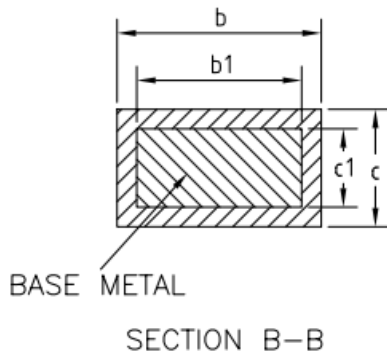
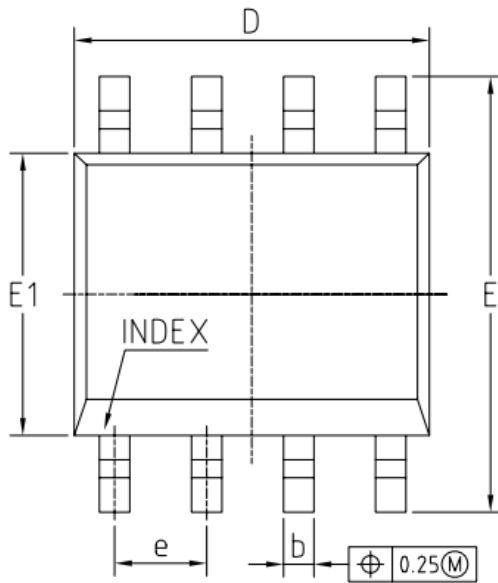
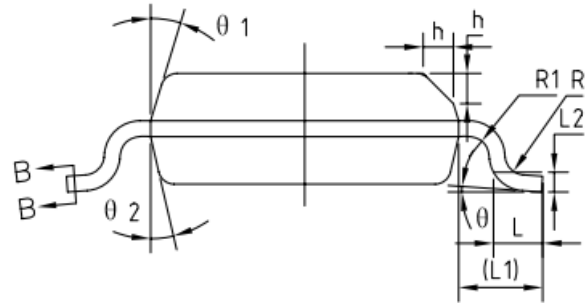
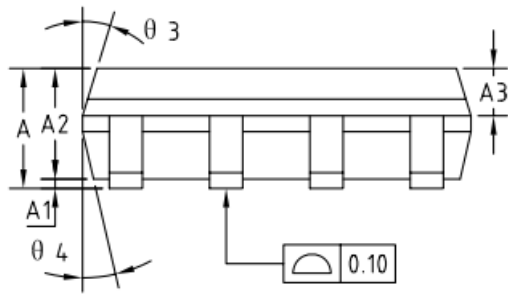


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	0.85	-	1.05
A1	0	-	0.10
A2	0.80	0.90	1.00
A3	0.47	0.52	0.57
b	0.22	-	0.29
b1	0.22	0.25	0.28
c	0.115	-	0.15
c1	0.115	0.13	0.14
D	2.02	2.07	2.12
E	2.20	2.30	2.40
E1	1.25	1.30	1.35
e	0.65BSC		
e1	1.30BSC		
L	0.28	0.33	0.38
L1	0.50REF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

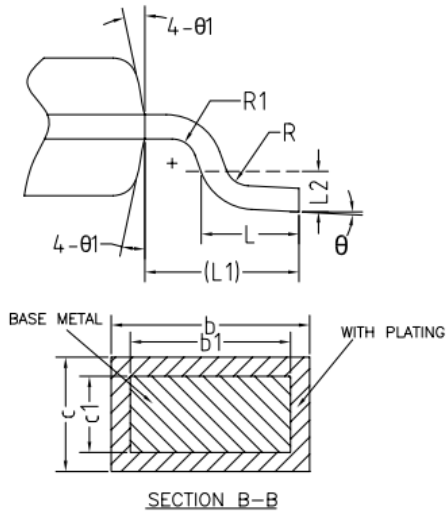
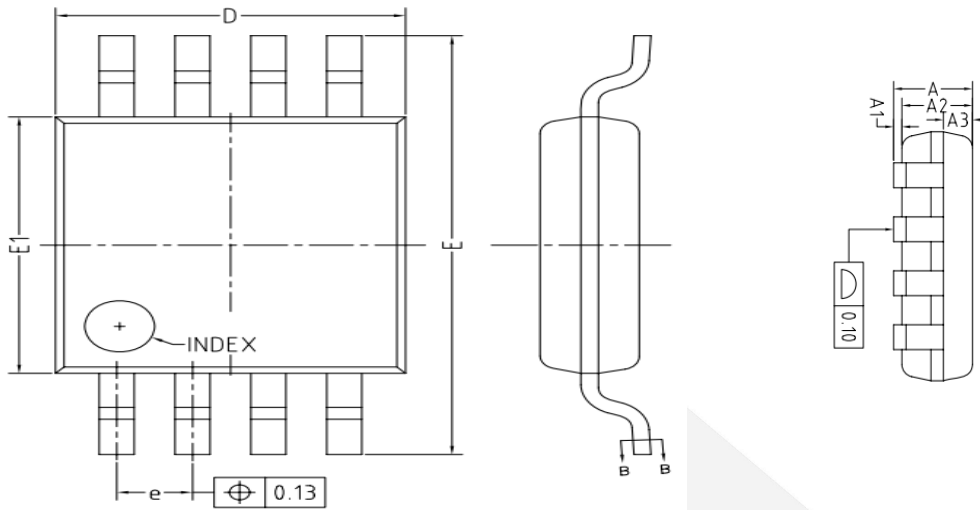


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2	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

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

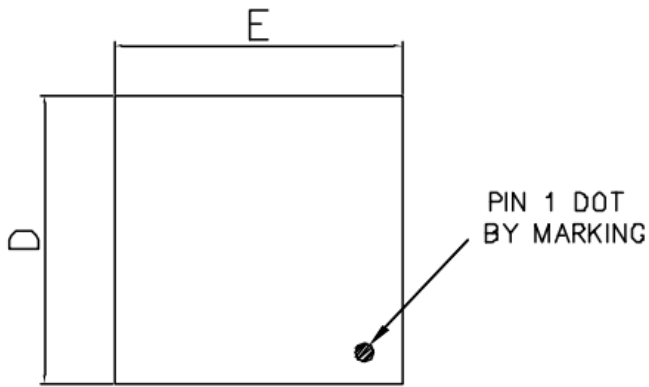
## Physical Dimensions: MSOP-8



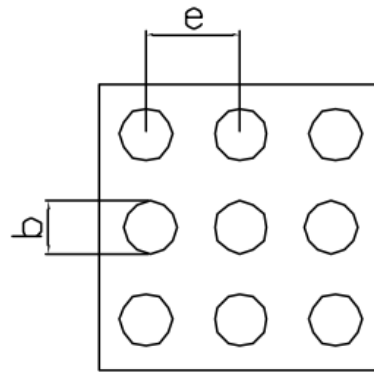
COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	-	-	1.10
A1	0	-	0.15
A2	0.75	0.85	0.95
A3	0.25	0.35	0.39
b	0.28	-	0.37
b1	0.27	0.30	0.33
c	0.15	-	0.20
c1	0.14	0.15	0.16
D	2.90	3.00	3.10
E	4.70	4.90	5.10
E1	2.90	3.00	3.10
e	0.55	0.65	0.75
L	0.45	0.60	0.80
L1	0.95REF		
L2	0.25BSC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

# DIO2051/2052/2054

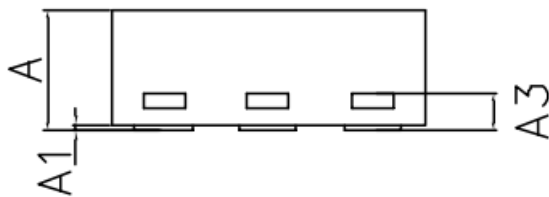
## Physical Dimensions: DQFN-9



TOP VIEW



BOTTOM VIEW



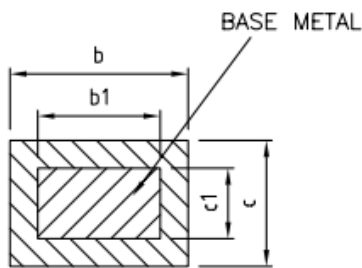
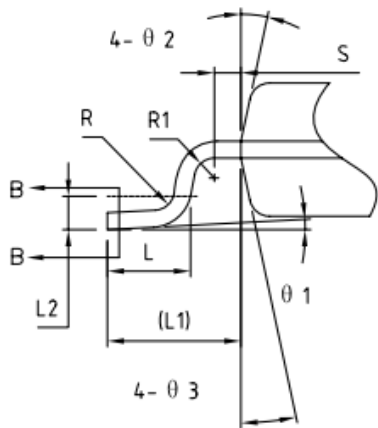
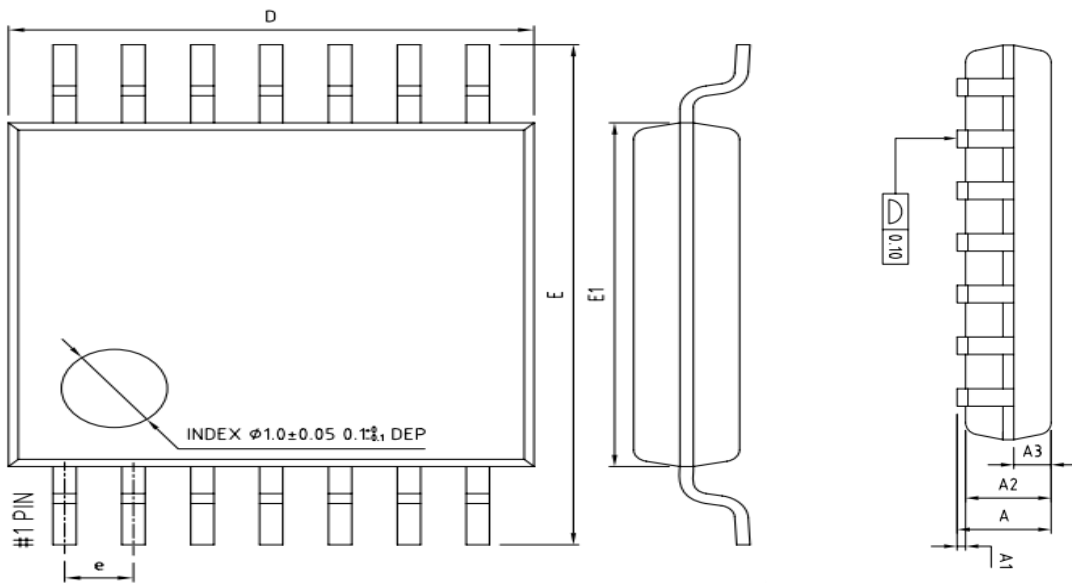
SIDE VIEW

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

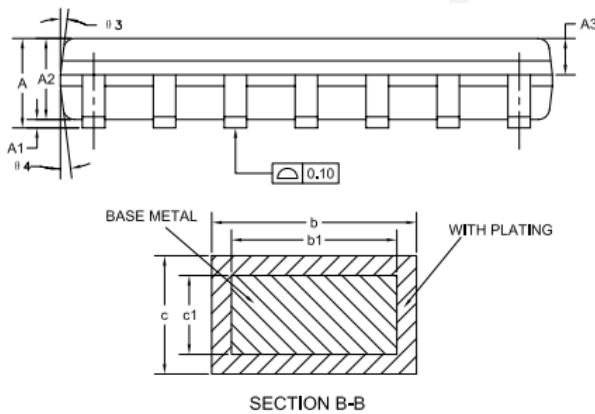
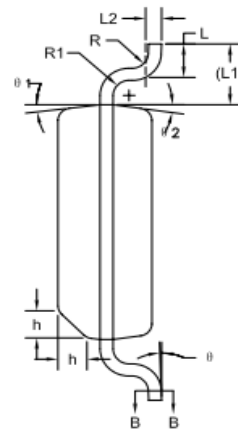
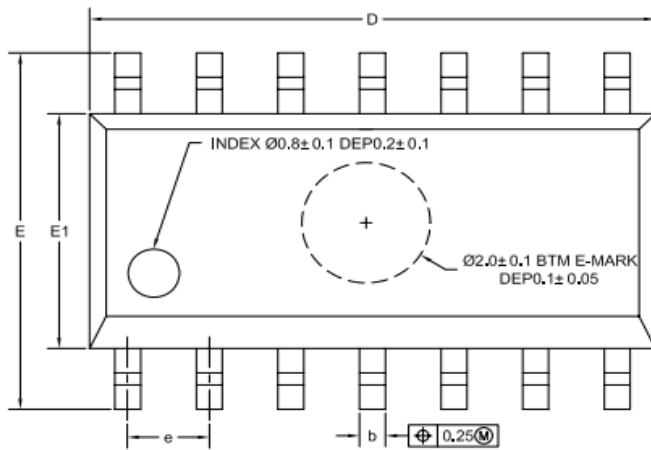


SECTION B-B

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



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

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



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