



Limited Datasheet

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DIO2031/2032/2033/2034/2036

500 μ A, 6MHz, Rail-to-Rail I/O CMOS Operational Amplifiers

Features

- Supply Voltage Range: 2.5V to 5.5V
- Low Supply Current: 500 μ A Typically
- Rail-to-Rail Input and Output
- 6MHz High Gain-Bandwidth Product
- High Slew Rate: 3.6V/ μ s
- Settling Time to 0.1% with 2V Step: 2.1 μ s
- Overload Recovery Time: 0.9 μ s
- Packages:
 - DIO2031 Available in: SOT23-5/SOIC-8
 - DIO2032 Available in: SOIC-8/MSOP-8
 - DIO2033 Available in: SOT23-6/SOIC-8
 - DIO2034 Available in: TSSOP-14/SOIC-14
 - DIO2036 Available in: QFN4*4-20

Applications

- Audio Output
- Sensor Interface
- Active Filters
- A/D Converters
- Cellular and Cordless Phones
- Laptops and PDAs
- Photodiode Amplification
- Battery-Powered Instrumentation

Descriptions

The DIO2031 (single), DIO2032 (dual), DIO2033 (single with shutdown), DIO2034 (quad) and DIO2036 (Triple) are amplifiers with very low noise, low voltage, and low power operational. The DIO2031/2/3/4/6 has a high gain-bandwidth product of 6MHz, a slew rate of 3.6V/ μ s, and a quiescent current of 500 μ A/amplifier at 5V typically.

The DIO2031/2/3/4/6 is designed to provide optimal performance in low voltage and low noise systems. All these chips provide rail-to-rail output swing into heavy loads. The input common-mode voltage range includes ground, and the maximum input offset voltage is 3.5mV for DIO2031/2/3/4/6.

The DIO2033 has a power-down disable feature that reduces the supply current to 90nA individually.

They are specified over the extended industrial temperature range (-40 $^{\circ}$ C to +125 $^{\circ}$ C). The operating range is from 2.5V to 5.5V.

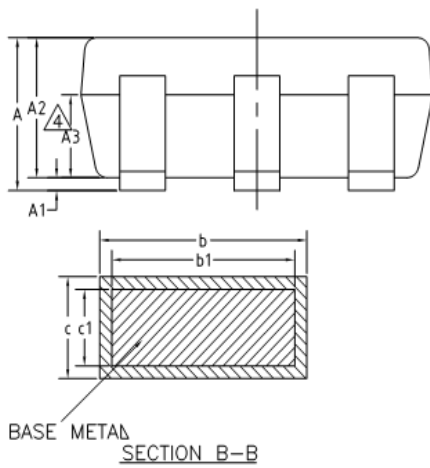
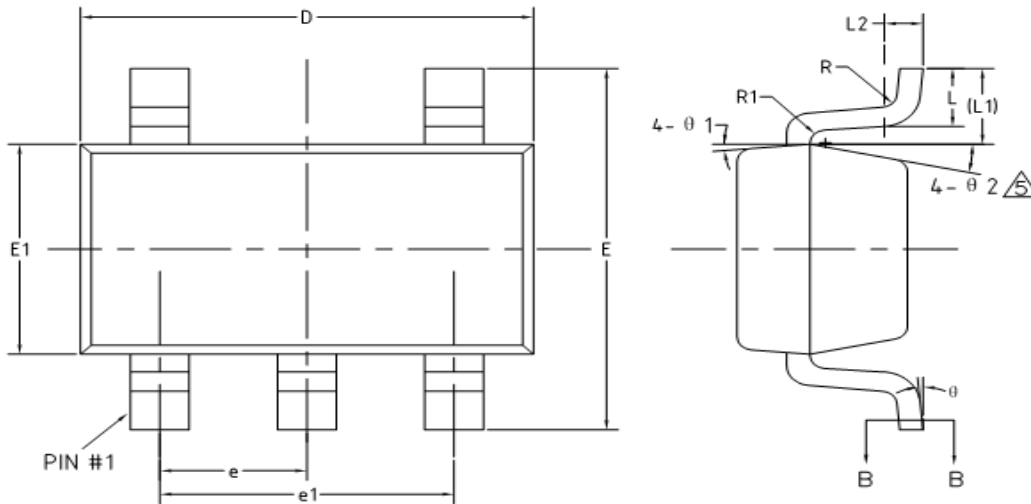
Ordering Information

Order Part Number	Top Marking		T _A	Package	
DIO2031ST5	YWXM	RoHS/Green	-40 to +125 $^{\circ}$ C	SOT23-5	Tape & Reel, 3000
DIO2031SO8	DIO2031	RoHS/Green	-40 to +125 $^{\circ}$ C	SOIC-8	Tape & Reel, 2500
DIO2032SO8	DIO2032	RoHS/Green	-40 to +125 $^{\circ}$ C	SOIC-8	Tape & Reel, 2500
DIO2032MP8		RoHS/Green	-40 to +125 $^{\circ}$ C	MSOP-8	Tape & Reel, 3000
DIO2033SO8	DIO2033	RoHS/Green	-40 to +125 $^{\circ}$ C	SOIC-8	Tape & Reel, 2500
DIO2033ST6	YWXM	RoHS/Green	-40 to +125 $^{\circ}$ C	SOT23-6	Tape & Reel, 3000
DIO2034SO14	DIO2034	RoHS/Green	-40 to +125 $^{\circ}$ C	SOP-14	Tape & Reel, 2500
DIO2034TP14		RoHS/Green	-40 to +125 $^{\circ}$ C	TSSOP-14	Tape & Reel, 2500
DIO2036QN20	D2036	RoHS/Green	-40 to +125 $^{\circ}$ C	QFN4*4-20	Tape & Reel, 5000

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Physical Dimensions: SOT-23-5

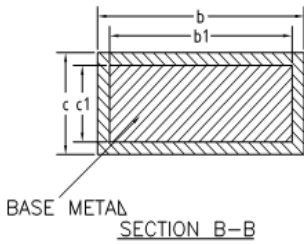
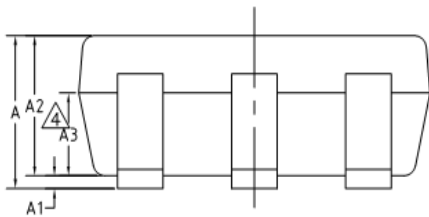
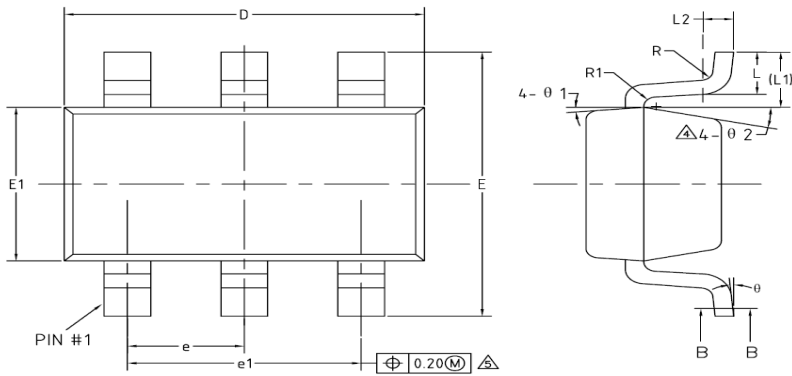


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	-	-	1.25
A1	0	-	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	-	0.50
b1	0.36	0.38	0.45
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	-	8°
θ1	3°	5°	7°
θ2	6°	-	14°

DIO2031/2032/2033/2034/2036

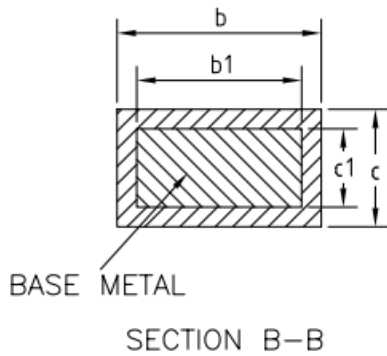
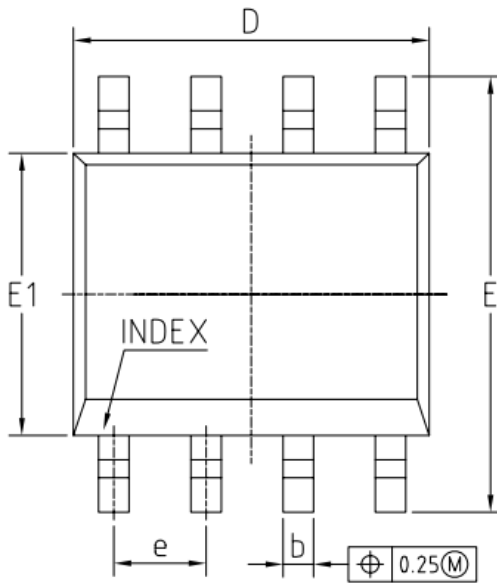
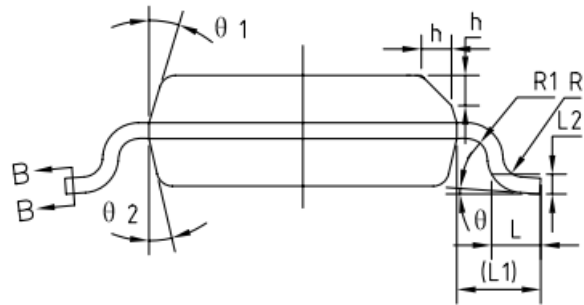
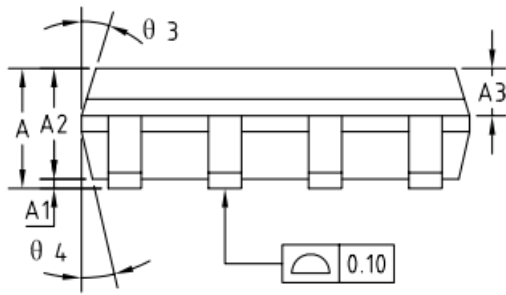
500uA. 6MHz. Rail-to-Rail I/O CMOS Operational Amplifiers

Physical Dimensions: SOT-23-6



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
θ	0°	-	8°
θ1	3°	5°	7°
θ2	6°	-	14°

Physical Dimensions: SOIC-8

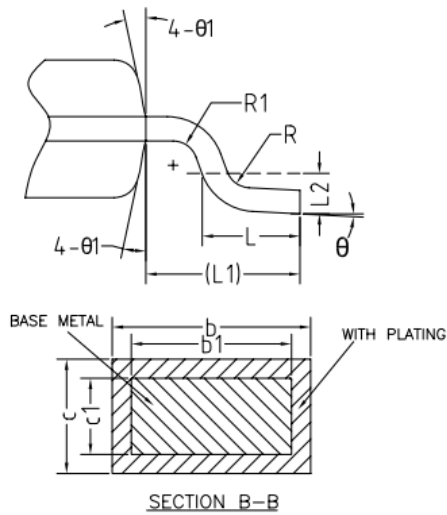
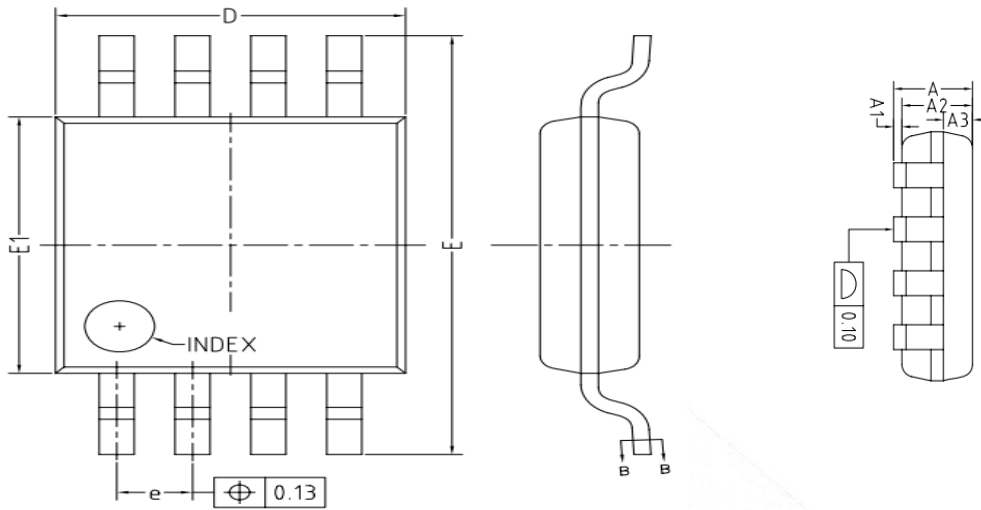


COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	1.35	1.55	1.75
A1	0.10	0.15	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.38	-	0.51
b1	0.37	0.42	0.47
c	0.17	-	0.25
c1	0.17	0.20	0.23
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.45	0.60	0.80
L1	1.04REF		
L2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

DIO2031/2032/2033/2034/2036

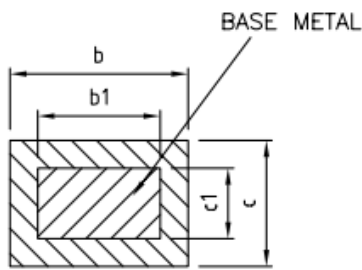
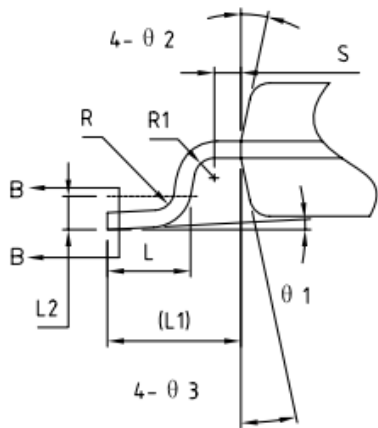
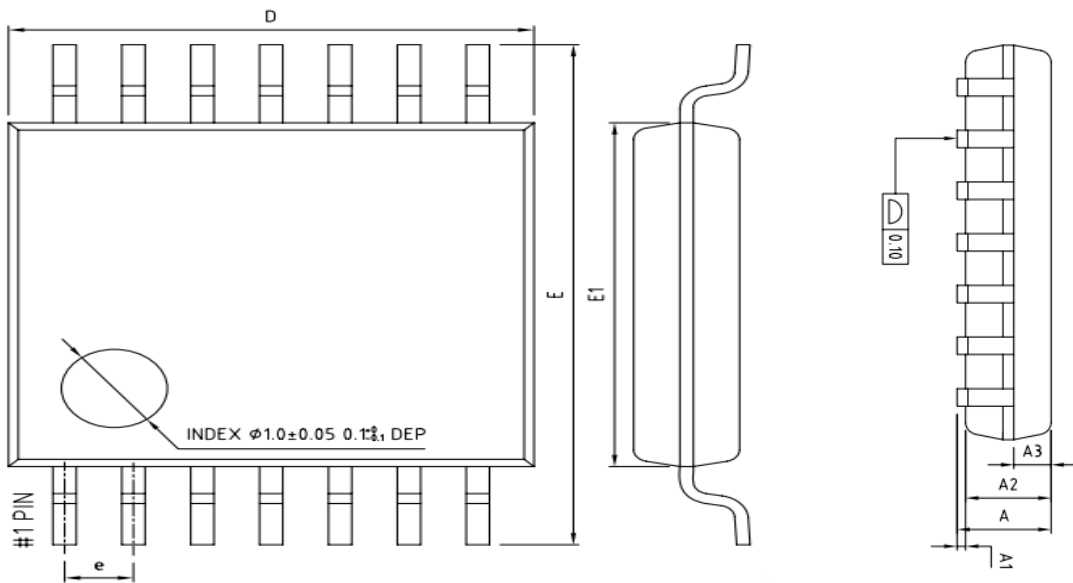
500uA. 6MHz. Rail-to-Rail I/O CMOS Operational Amplifiers

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°

Physical Dimensions: TSSOP-14



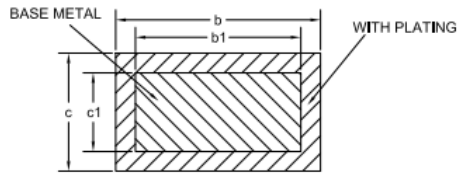
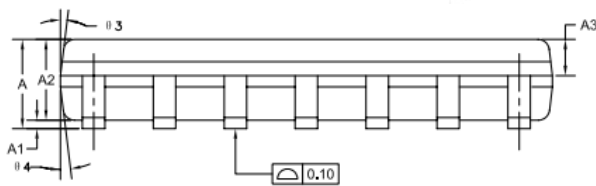
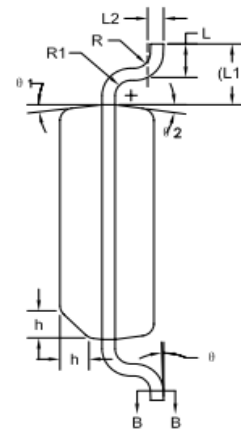
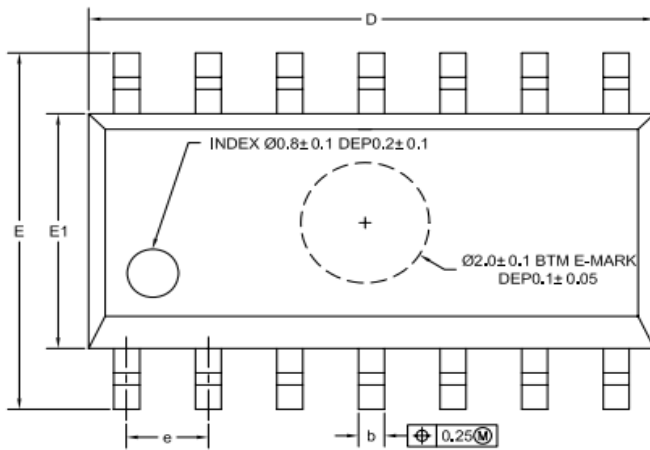
SECTION B-B

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°

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Physical Dimensions: SOIC-14



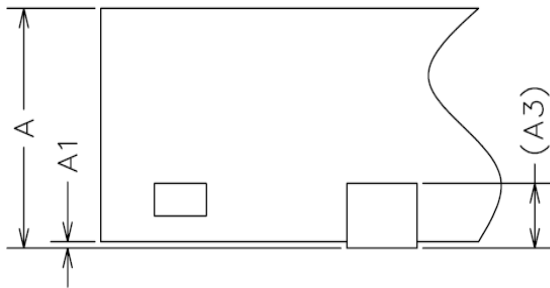
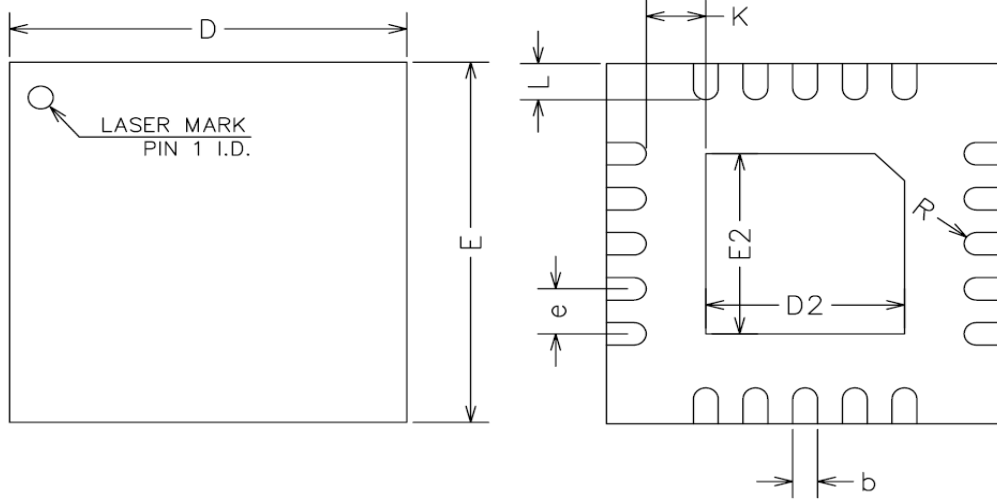
SECTION B-B

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°

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500uA. 6MHz. Rail-to-Rail I/O CMOS Operational Amplifiers

Physical Dimensions: QFN-20



COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
Symbol	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0	0.02	0.05
A3	0.20REF		
b	0.18	0.25	0.30
D	3.90	4.00	4.10
E	3.90	4.00	4.10
D2	1.90	2.00	2.10
E2	1.90	2.00	2.10
e	0.40	0.50	0.60
K	0.20	-	-
L	0.35	0.40	0.45
R	0.09	-	-

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