

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-ADTL084

Low-cost, JFET-input operational amplifier

网址 www.sztdbdt.com

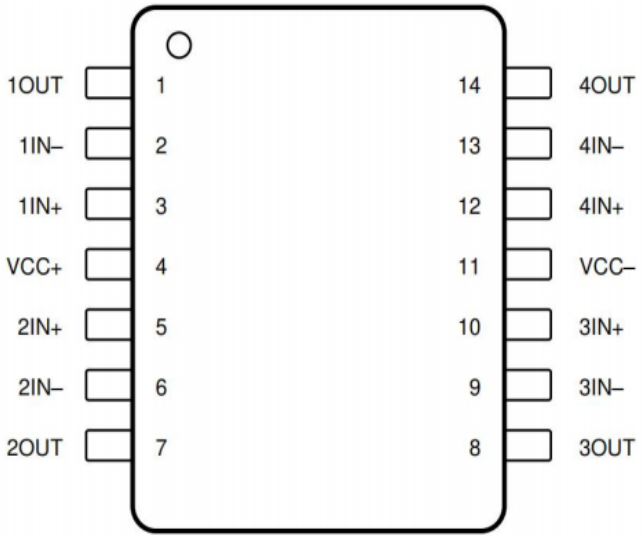
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Features

- Low power consumption: 1.8 mA/ch
- Wide common-mode input voltage range
- Wide differential-mode input voltage range
- Low input bias current: 200 pA
- Low input offset current: 50 pA
- Output short-circuit protection
- Low distortion: approx. 0.003%
- High input impedance: 10^{12} Ω
- High slew rate: 13 V/uS
- High gain-bandwidth product: 3MHz



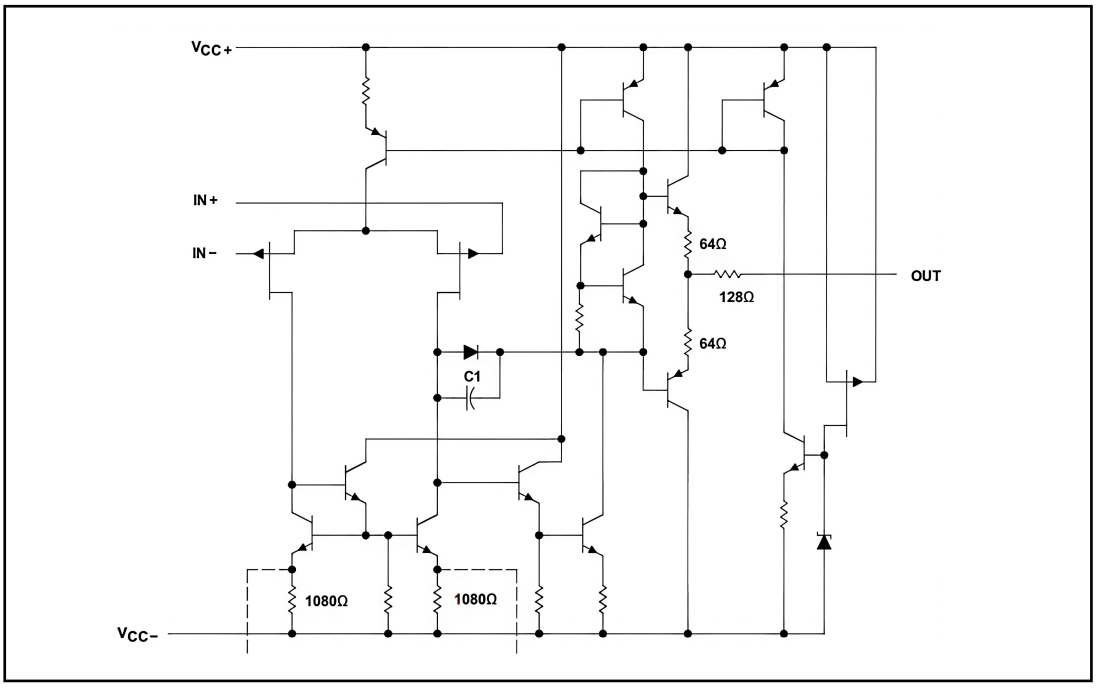
Application

- General purpose amplifier
- Power control and monitoring
- Active filter
- Industrial/process control
- Data acquisition
- Sample and hold circuit
- Integrator
- Input

Description

The TL084 is high-speed JFET input quad operational amplifiers incorporating well matched, high voltage JFET and bipolar transistors in a monolithic integrated circuit.
The devices feature high slew rates, low input bias and offset currents, and low offset voltage temperature coefficient.
Suitable for many applications, including process control, industrial and instrumentation equipment, active filtering, data conversion, buffering, as well as power control and monitoring.
A-grade amplifiers are available in lead-free packages. Standard-grade amplifiers are available in both leaded and lead-free packages.

Functional block diagram



Pin description

Pin numbering	Pin Name	I/O	describe
1	10UT	O	Route 1 Op-Amp Output
2	1IN-	I	Inverting input of the first operational amplifier
3	1IN+	I	Route 1: Op-Amp Positive Input
4	V_{cc}+	P	Positive power supply
5	2IN+	I	Channel 2 Op-Amp Positive Input
6	2IN-	I	Channel 2 Op-Amp Reverse Input
7	20UT	0	Channel 2 Op-Amp Output
8	30UT	0	Route 3 Op-Amp Output
9	3IN-	I	Route 3 Op-Amp Reverse Input
10	3IN+	I	Route 3 Op-Amp Positive Input
11	V_{cc}-	P	Negative power supply
12	4IN+	I	Channel 4 Op-Amp Positive Input
13	4IN-	I	Channel 4 Op-Amp Reverse Input
14	4OUT	0	Channel 4 Op-Amp Output

Limit parameters (unless otherwise specified, TA=25°C

Parameter	Characteristic	Price
supply voltage	Vcc	±18V
Differential input voltage	ViD	±30V
input voltage	VI	±15V
Maximum operating junction temperature	Tj	150℃
operating temperature range	TA	-40～+125℃
storage temperature	Ts	-65～+150℃
Lead temperature (welding, 10 s)	Tw	260℃

Recommended operating conditions (unless otherwise specified, TA=25°C

parameter	symbol	MIN	MAX	UNIT
Positive power supply	V_{cc}+	+5	+15	V
Negative power supply	V_{cc}-	-5	-15	V
common-mode input voltage	VcM	(V_{cc}-)+4	(V_{cc}+)-4	V

Electrical characteristics (unless otherwise specified, TA=25°C

parameter	characteristic	test condition	MIN	TYP	MAX	UNIT
Power supply current (per channel)	I_{cc}	V_o=0V,R_L=∞	-	1.8	2.8	mA
Input offset voltage	V_{io}	V_o=0V	-	±2	±6	mV
input offset current	I_{io}	V_o=0V	-	±50	-	pA
input bias current	I_B	V_o=0V	-	±200	-	pA
common-mode input voltage	V_{CM}		±11	-	-	V
Output voltage amplitude	V_{OM}	R_L=10kΩ	±12	±13.5	-	V
		R_L=2kΩ	±10	±12	-	V
open loop voltage gain	A_{OL}	V_o=±10V,R_L≥2kΩ	-	100	-	V/mV
cmrr	CMRR	V_{CM}=0V,V_o=0V	80	86	-	dB
supply voltage rejection ratio	PSRR	V_{cc}=±9V to±15V	80	90	-	dB
gain bandwidth product	GBWP		-	3	-	MHz
slew rate	SR	G=+1	8	13	-	V/uS
input impedence	R_I		-	10^{12}	-	Ω

Typical application

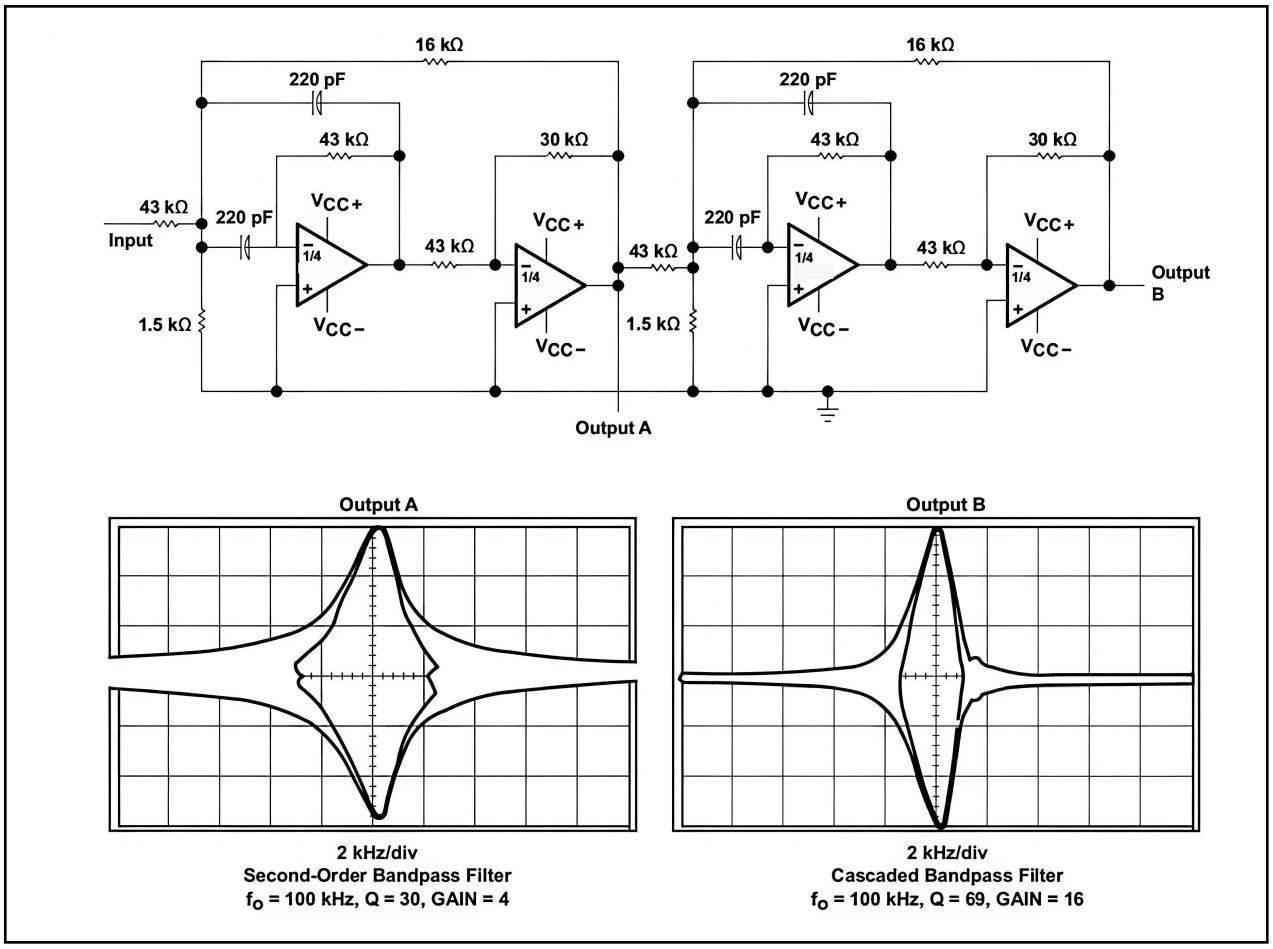


Figure 1 Positive feedback bandpass filter

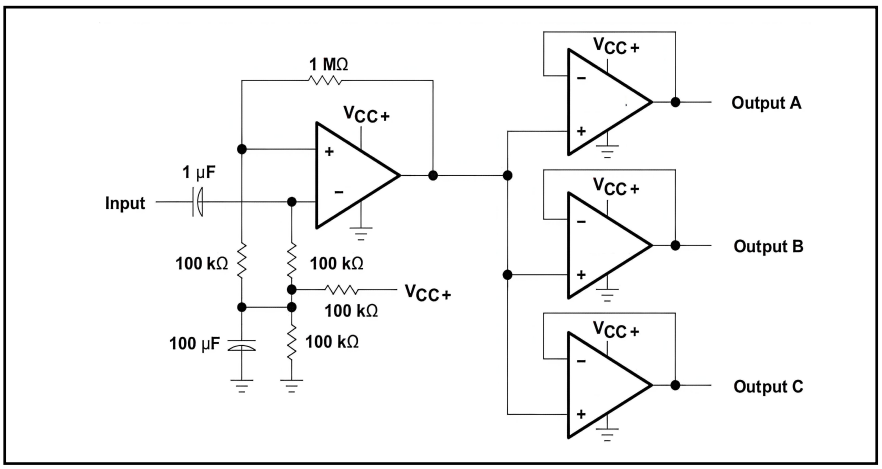


Figure 2 Audio distribution amplifier

Characteristic curve

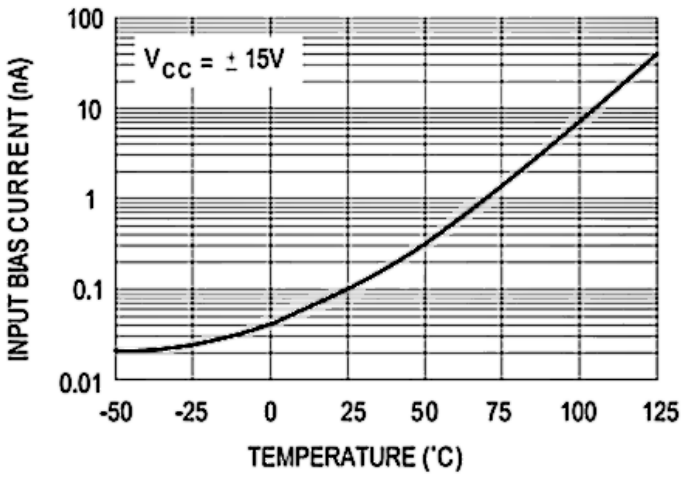


Figure 3 Relationship between input bias current and ambient temperature

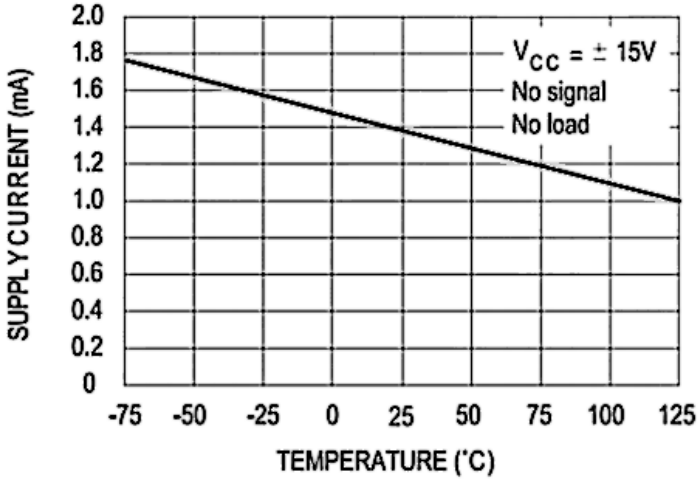


Figure 4 Power supply current vs. ambient temperature (per channel)

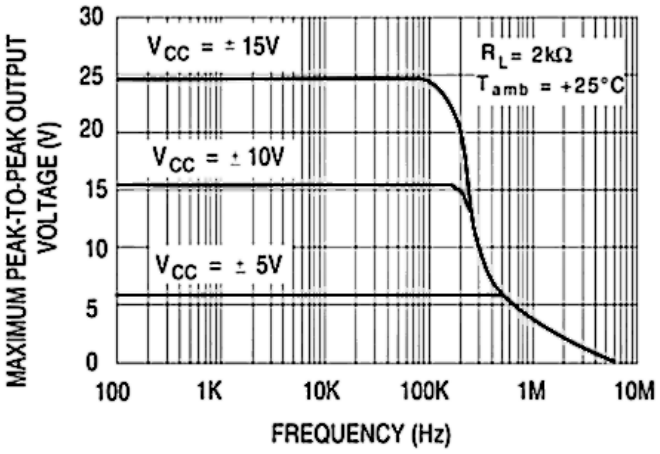


Figure 5 Relationship between maximum output voltage swing and frequency

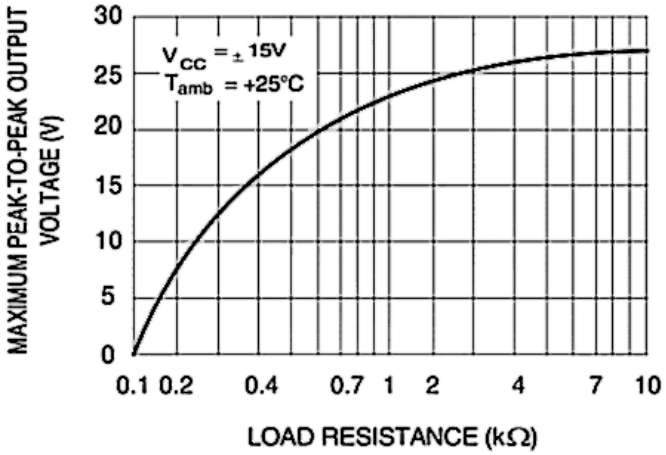
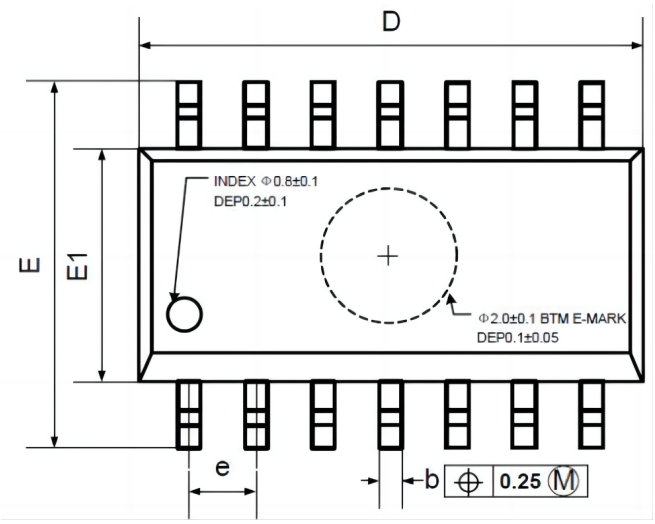


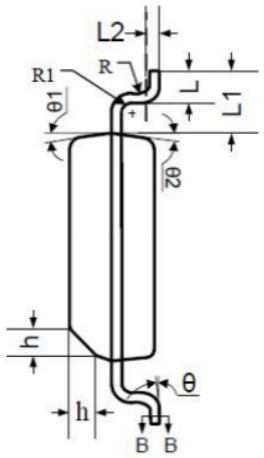
Fig. 6 Relationship between maximum output voltage swing and load

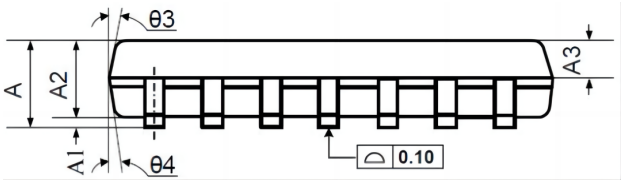
Order information

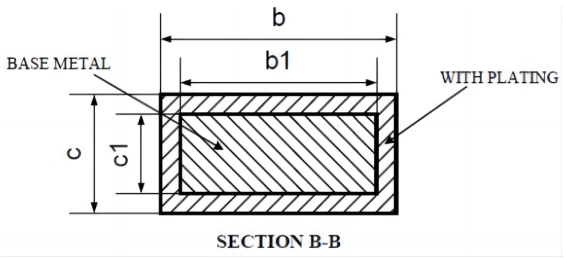
Order Number	Package	Package Quantity	Marking On The park	Temperature
ADTL084JRZ-REEL-TUDI	SOP14	Tape,Reel,4000	ADTL084J	0℃ to +70℃
ADTL084JRUZ-REEL-TUDI	TSSOP14	Tape,Reel,4000	ADTL084J	
ADTL084JNZ-TUDI	DIP14	Tube,25,A box of 1000	ADTL084JNZ	
ADTL084ARZ-REEL-TUDI	SOP14	Tape,Reel,4000	ADTL084A	-40℃ to +85℃
ADTL084ARUZ-REEL-TUDI	TSSOP14	Tape,Reel,4000	ADTL084A	
ADTL084ANZ-TUDI	DIP14	Tube,25,A box of 1000	ADTL084ANZ	

Package SOP14



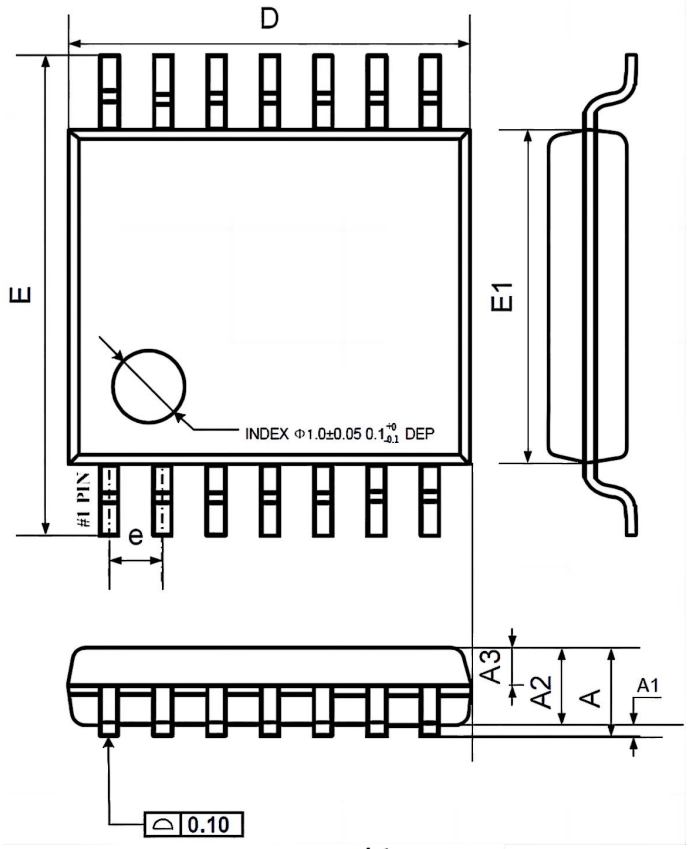


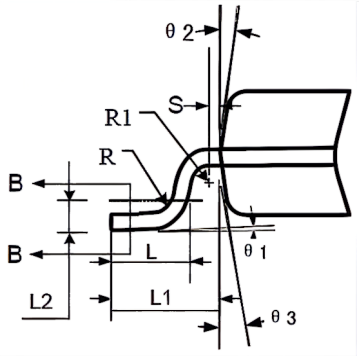


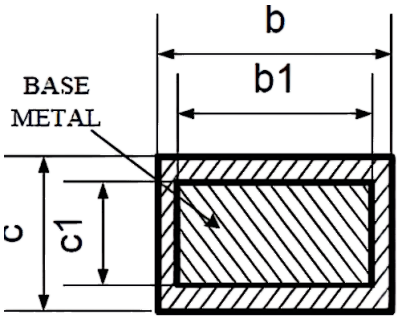


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.35	1.60	1.75
A1	0.10	0.15	0.25
A2	1.25	1.45	1.65
A3	0.55	0.65	0.75
b	0.36		0.49
b1	0.35	0.40	0.45
C	0.16		0.25
c1	0.15	0.20	0.25
D	8.53	8.63	8.73
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27 BSC		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25 BSC		
R	0.07		
R1	0.07		
h	0.30	0.40	0.50
θ	0°		8°
θ1	6°	8°	10°
θ2	6°	8°	10°
θ3	5°	7°	9°
θ4	5°	7°	9°

Package TSSOP14

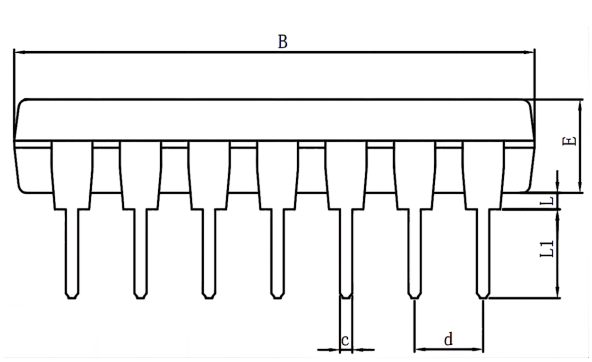


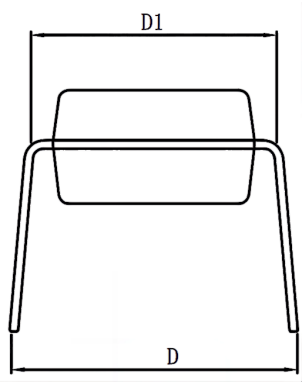


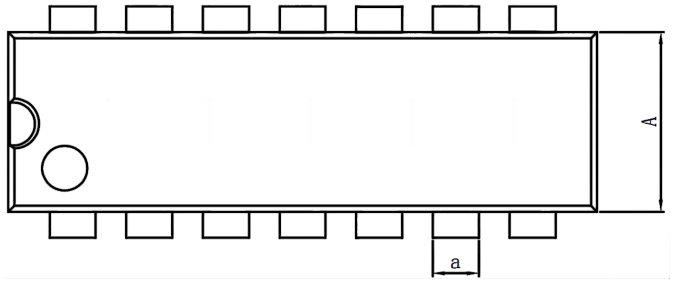


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.34	0.44	0.54
b	0.20	—	0.28
b1	0.20	0.22	0.24
C	0.10	—	0.19
c1	0.10	0.13	0.15
D	4.86	4.96	5.06
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65 BSC		
L	0.45	0.60	0.75
L1	1.00 REF		
L2	0.25 BSC		
R	0.09	—	—
R1	0.09	—	—
S	0.20	—	—
θ1	0°	—	8°
θ2	10°	12°	14°
θ3	10°	12°	14°

Package DIP14







DIM.	MIN	TYP	MAX	DIM.	MIN	TYP	MAX
A	6.100	6.300	6.680	a	1.504	1.524	1.544
B	18.940	19.200	19.560	C	0.437	0.457	0.477
D	8.200	8.700	9.200	d	2.530	2.540	2.550
D1	7.42	7.62	7.82	L	0.500	—	0.800
E	3.100	3.300	3.550	L1	3.000	3.200	3.600

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