

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-TL084

JFET input quad op-amp

网址 www.sztdbdt.com

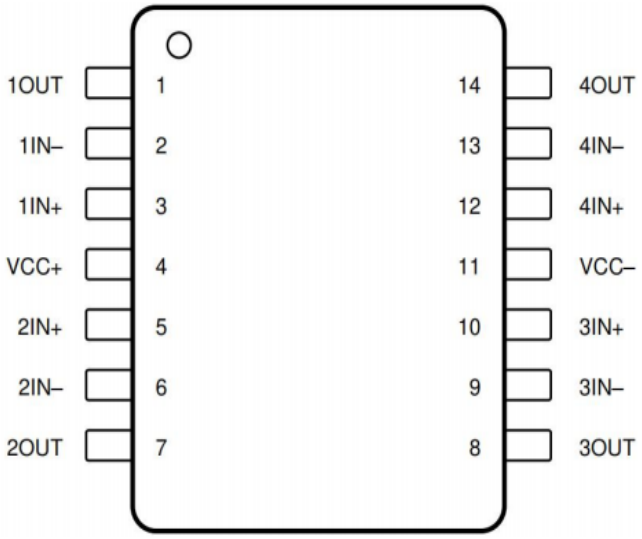
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Features

- Wide common-mode (up to VCC+) and differential voltage range
- Low input bias and offset current
- Output short-circuit protection
- High input impedance JFET input stage
- Internal frequency compensation
- Latch up free operation
- High slew rate: 16V/μs (typ)



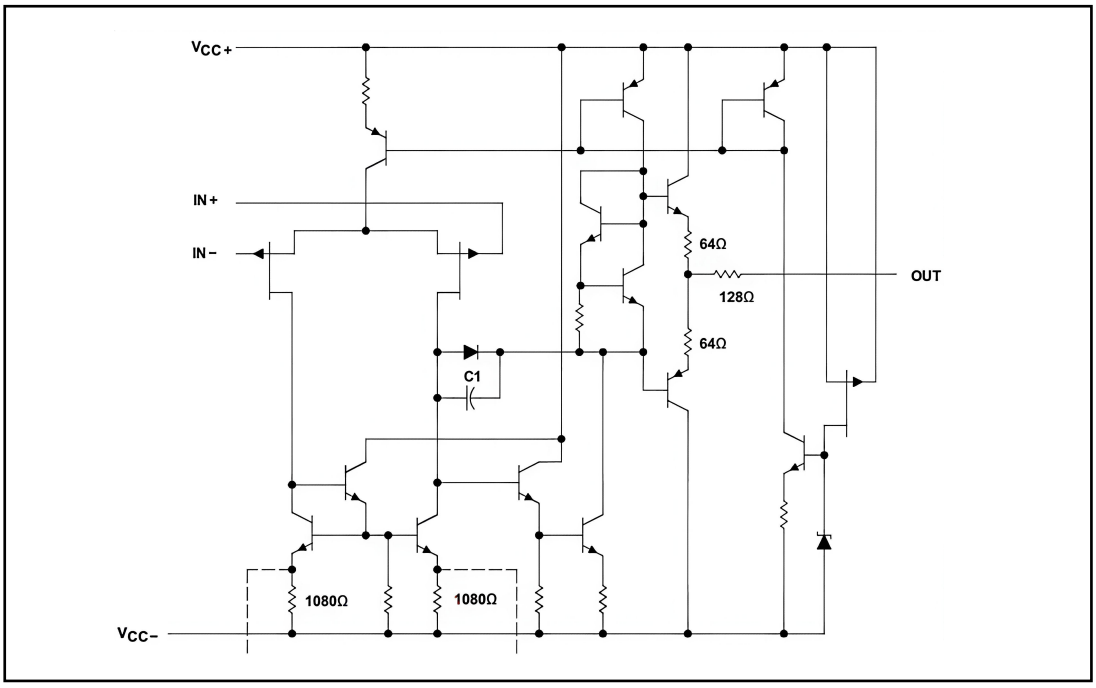
Application

- Solar: String and central inverters
- Motor drives: AC and servo drive control and power stage modules
- Single-phase online UPS
- Three-phase UPS
- Professional audio mixers
- Battery test equipment

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.

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

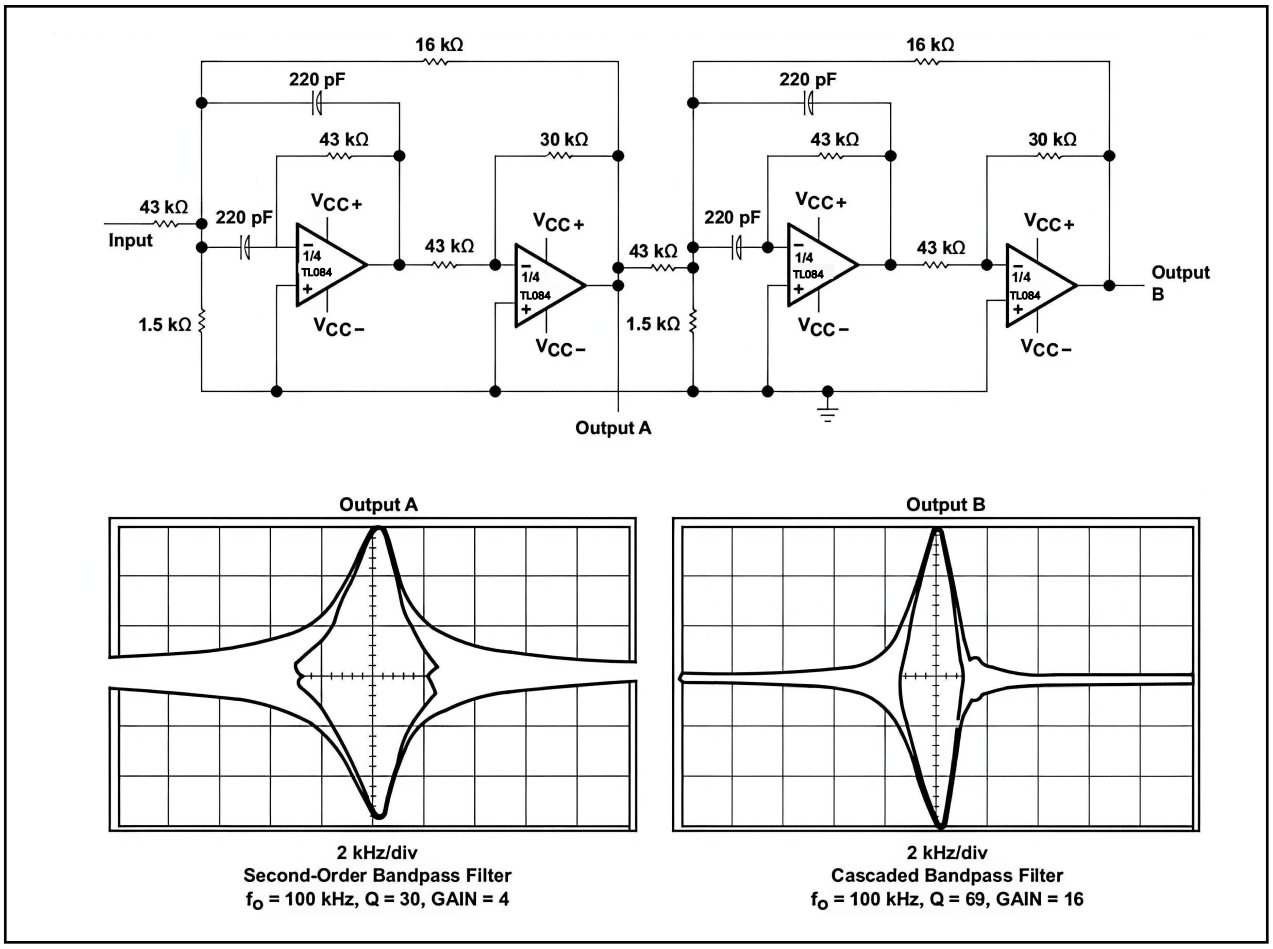


Figure 1 Positive feedback bandpass filter

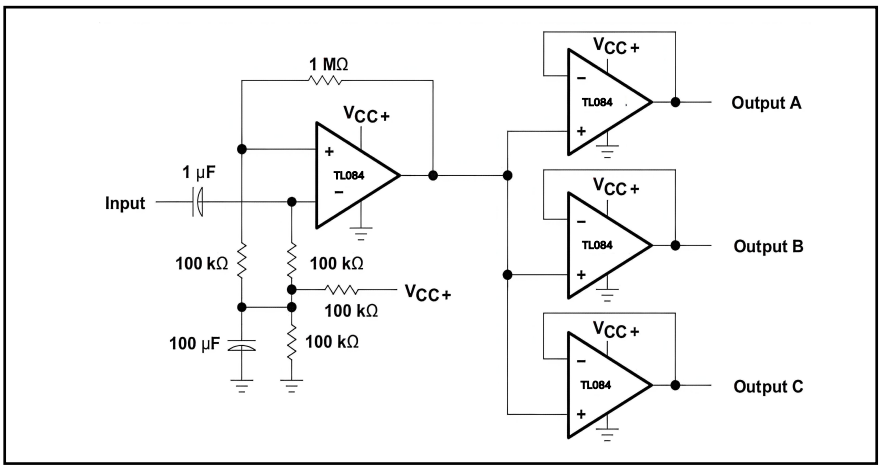


Figure 2 Audio distribution amplifier

Characteristic curve

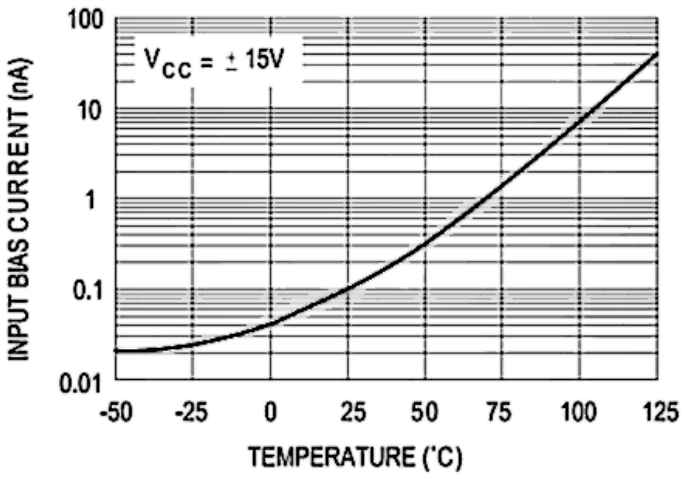


Figure 3 Relationship between input bias current and ambient temperature

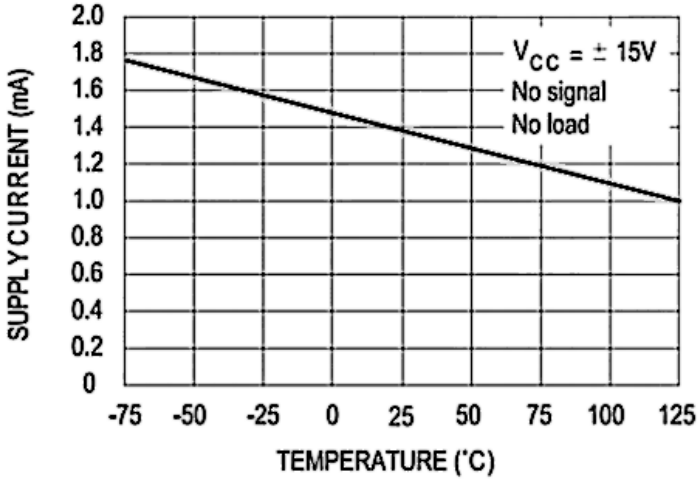


Figure 4 Power supply current vs. ambient temperature (per channel)

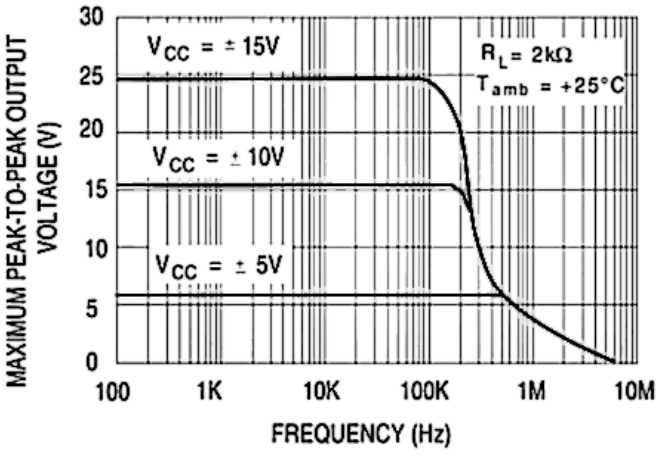


Figure 5 Relationship between maximum output voltage swing and frequency

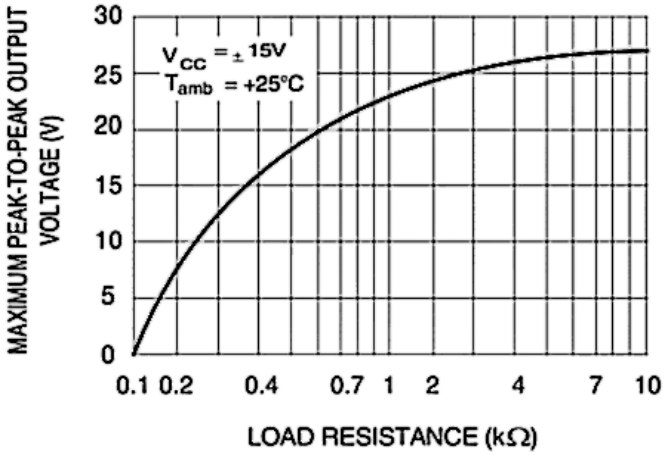
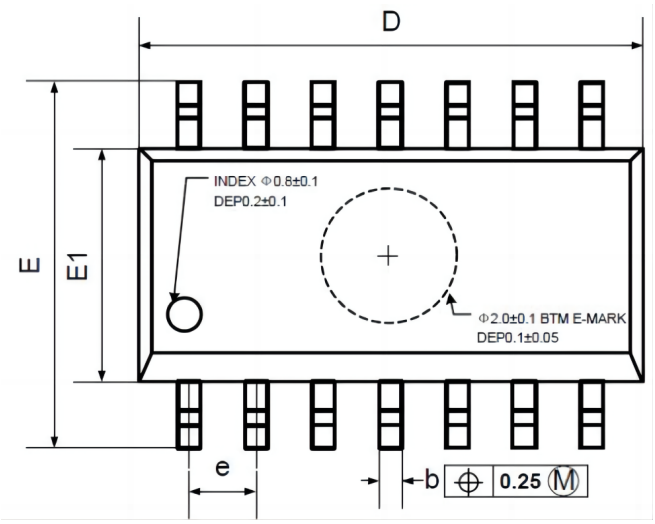


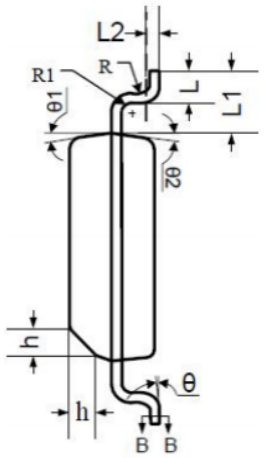
Fig. 6 Relationship between maximum output voltage swing and load

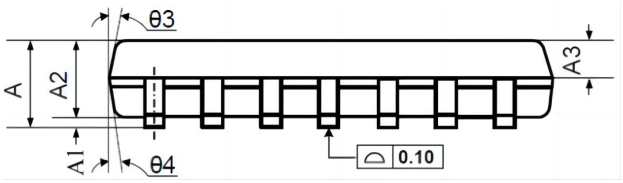
Order information

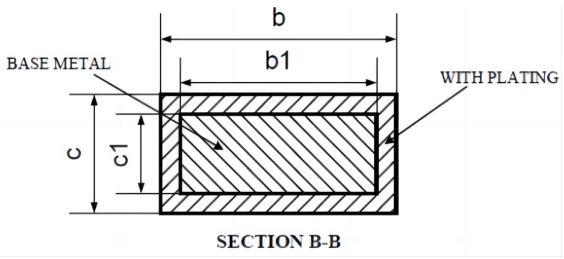
Order Number	Package	Package Quantity	Marking On The park	Temperature
TL084CN-TUDI	DIP14	Tube,25,A box of 1000	TL084CN	0℃ to +70℃
TL084CDT-TUDI	SOP14	Tape,Reel,4000	084C	
TL084CPT-TUDI	TSSOP14	Tape,Reel,4000	084C	
TL084IN-TUDI	DIP14	Tube,25,A box of 1000	TL084IN	-40℃ to +85℃
TL084IDT-TUDI	SOP14	Tape,Reel,4000	084I	
TL084IPT-TUDI	TSSOP14	Tape,Reel,4000	084I	
TL084MN-TUDI	DIP14	Tube,25,A box of 1000	TL084MN	-40℃ to +125℃
TL084MDT-TUDI	SOP14	Tape,Reel,4000	084M	
TL084MPT-TUDI	TSSOP14	Tape,Reel,4000	084M	

Package SOP14



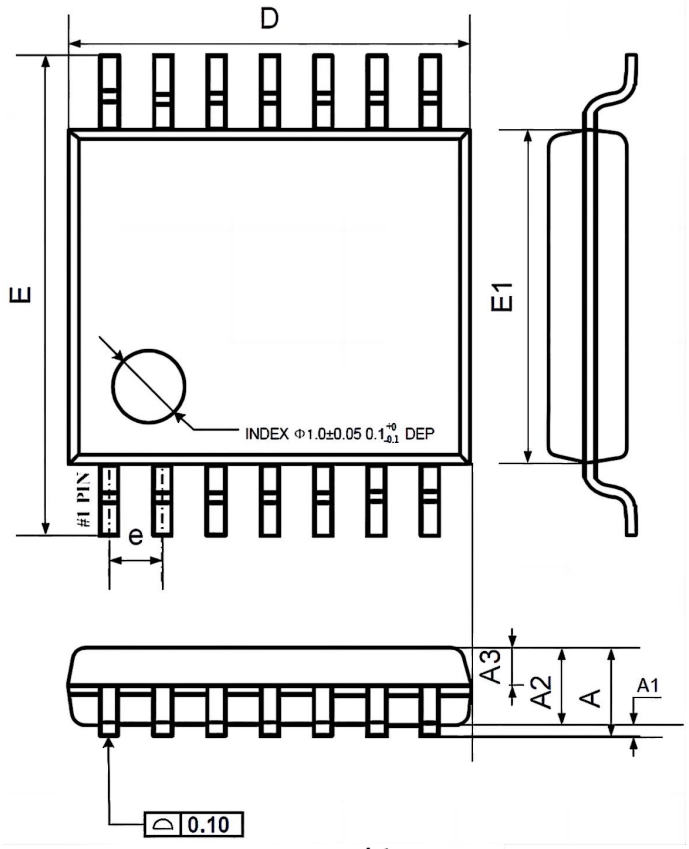


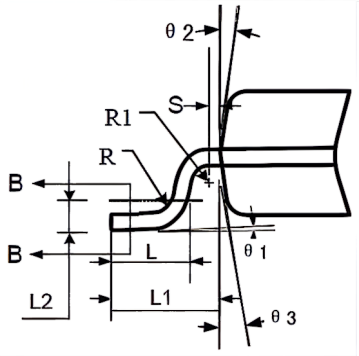


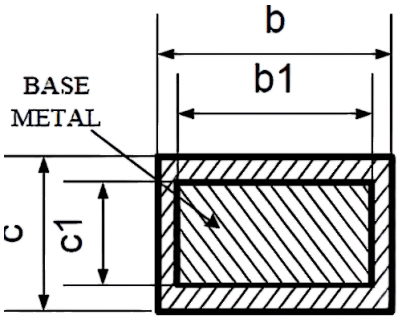


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.35	1.60	1.75
A1	0.10	0.15	0.25
A2	1.25	1.45	1.65
A3	0.55	0.65	0.75
b	0.36		0.49
b1	0.35	0.40	0.45
C	0.16		0.25
c1	0.15	0.20	0.25
D	8.53	8.63	8.73
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27 BSC		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25 BSC		
R	0.07		
R1	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

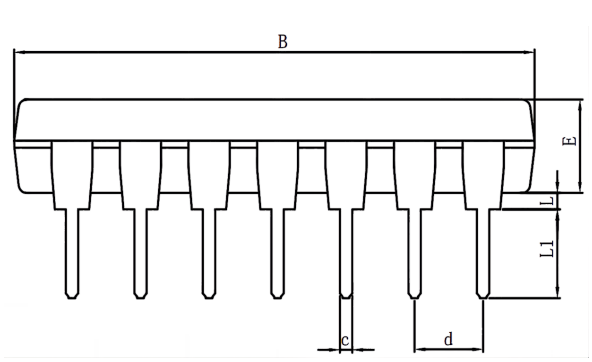


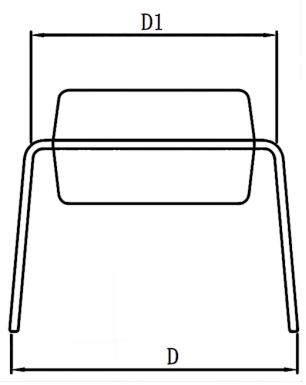


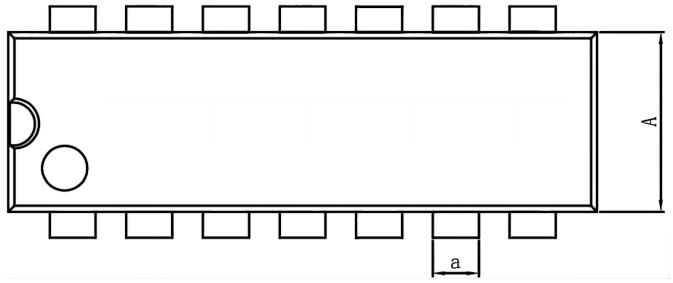


Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.34	0.44	0.54
b	0.20	—	0.28
b1	0.20	0.22	0.24
C	0.10	—	0.19
c1	0.10	0.13	0.15
D	4.86	4.96	5.06
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65 BSC		
L	0.45	0.60	0.75
L1	1.00 REF		
L2	0.25 BSC		
R	0.09	—	—
R1	0.09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