



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-TS272

HIGH PERFORMANCE CMOS DUAL OPERATIONAL AMPLIFIERS

网址 www.sztdbdt.com Q

用芯智造 · 卓越品质

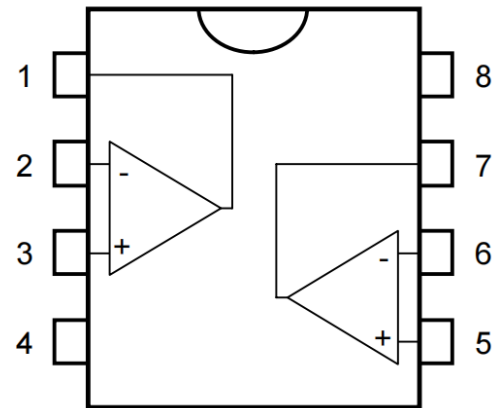
**semiconductor device
manufacturer**

- Design
- research and development
- production
- and sales



FEATURES

- OUTPUT VOLTAGE CAN SWING TO GROUND
- EXCELLENT PHASE MARGIN ON CAPACITIVE LOADS
- GAIN BANDWIDTH PRODUCT: 3.5MHz
- STABLE AND LOW OFFSET VOLTAGE
- THREE INPUT OFFSET VOLTAGE SELECTIONS



DESCRIPTION

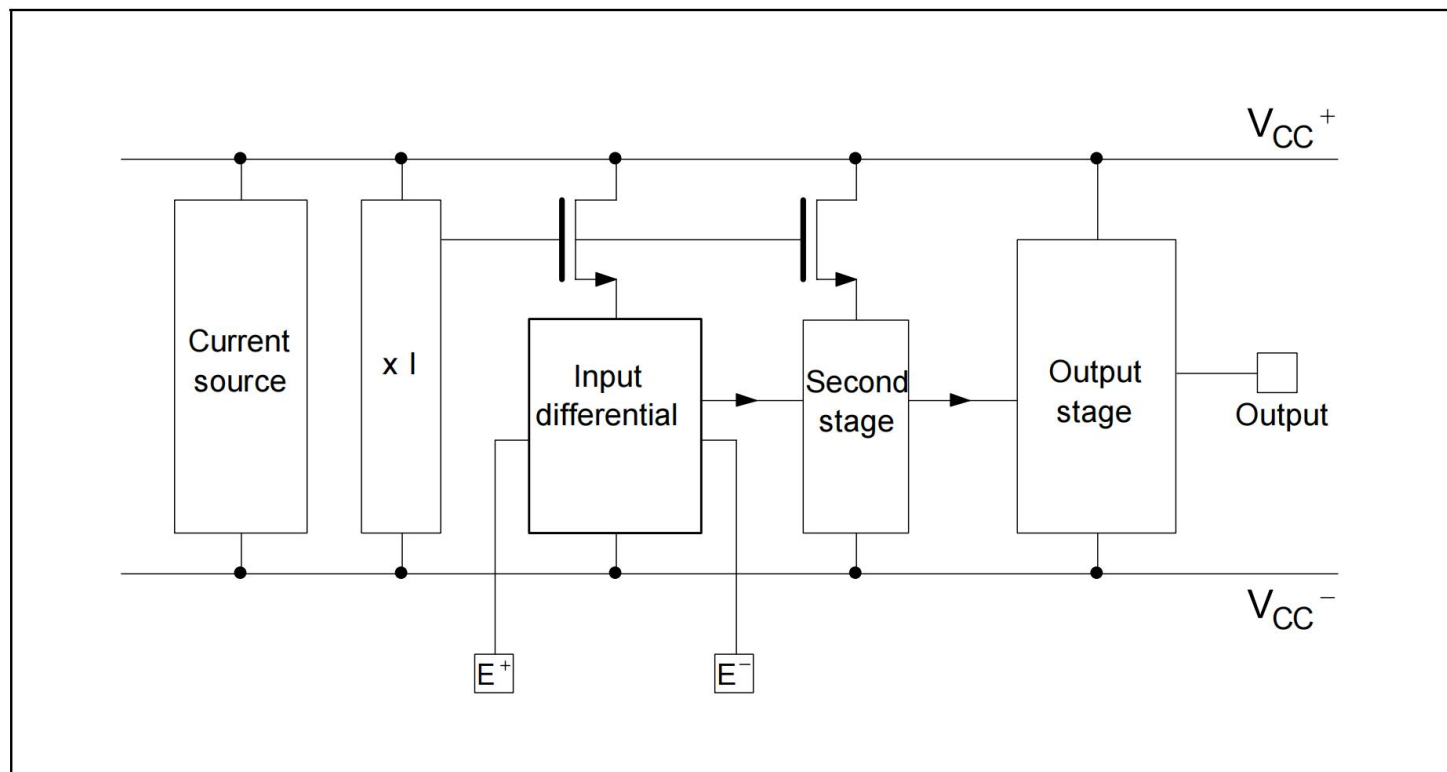
The TS272 devices are low cost, dual operational amplifiers designed to operate with single or dual supplies. These operational amplifiers use the ST silicon gate CMOS process allowing an excellent consumption-speed ratio. These series are ideally suited for low consumption applications. Three power consumptions are available allowing to have always the best consumption-speed ratio:

- $I_{CC} = 10 \mu A/amp.$: TS27L2 (very low power)
- $I_{CC} = 150 \mu A/amp.$: TS27M2 (low power)
- $I_{CC} = 1mA/amp.$: TS272 (standard)

These CMOS amplifiers offer very high input impedance and extremely low input currents. The major advantage versus JFET devices is the very low input currents drift with temperature (see figure 2).



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	TS272C/AC/BC	TS272I/AI/BI	TS272M/AM/BM	Unit
V_{CC}^{+}	Supply Voltage ¹⁾	18			V
V_{id}	Differential Input Voltage ²⁾	± 18			V
V_i	Input Voltage ³⁾	-0.3 to 18			V
I_o	Output Current for $V_{CC}^{+} \geq 15V$	± 30			mA
I_{in}	Input Current	± 5			mA
T_{oper}	Operating Free-Air Temperature Range	0 to +70	-40 to +125	-55 to +125	°C
T_{stg}	Storage Temperature Range	-65 to +150			°C

1. All values, except differential voltage are with respect to network ground terminal.

2. Differential voltages are the non-inverting input terminal with respect to the inverting input terminal.

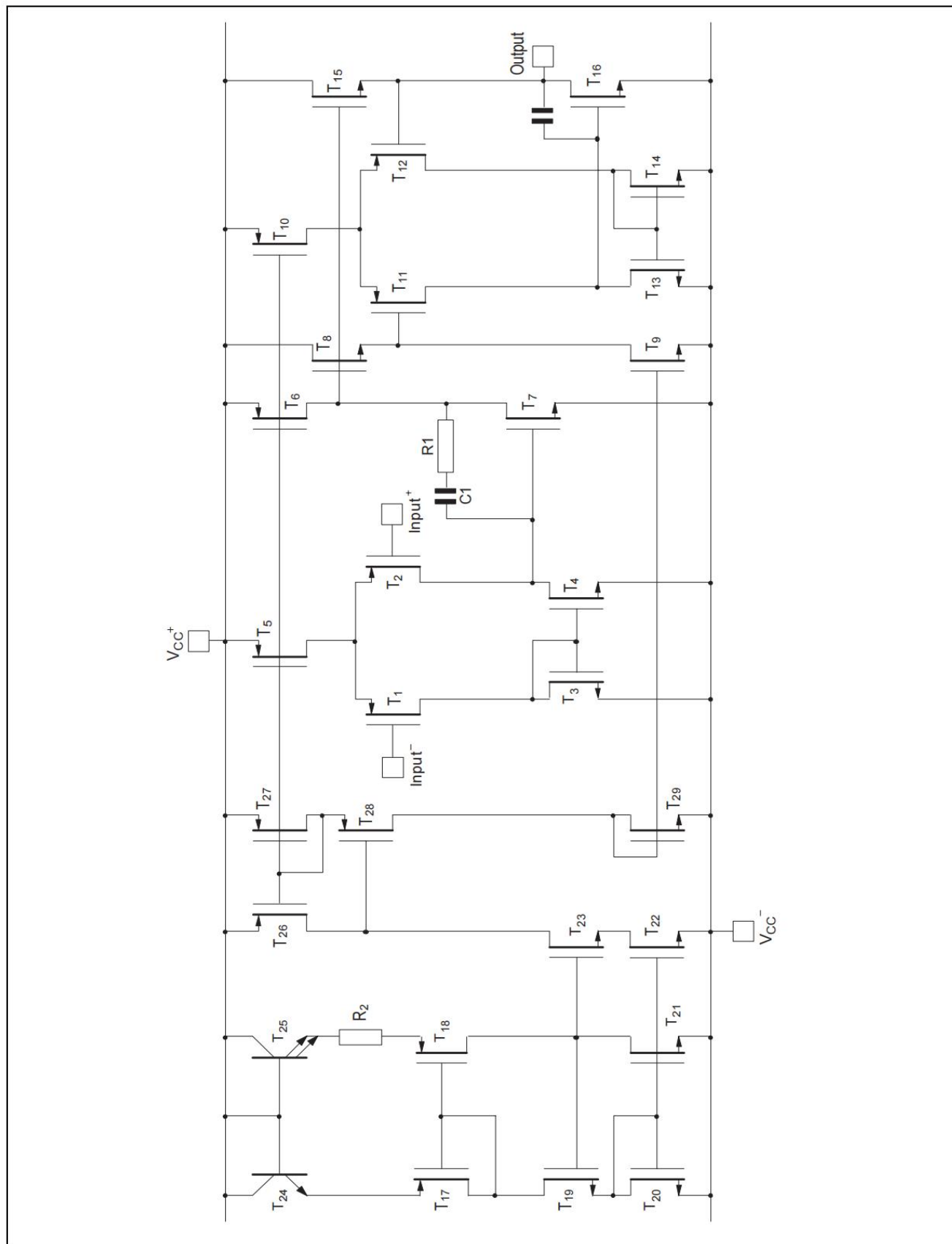
3. The magnitude of the input and the output voltages must never exceed the magnitude of the positive supply voltage.

OPERATING CONDITIONS

Symbol	Parameter	Value	Unit
V_{CC}^{+}	Supply Voltage	3 to 16	V
V_{icm}	Common Mode Input Voltage Range	0 to $V_{CC}^{+} - 1.5$	V



SCHEMATIC DIAGRAM (for 1/2 TS272)





ELECTRICAL CHARACTERISTICS

$V_{CC}^+ = +10V$, $V_{CC}^- = 0V$, $T_{amb} = +25^\circ C$ (unless otherwise specified)

Symbol	Parameter	TS272C/AC/BC			TS272I/AI/BI TS272M/AM/BM			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{io}	Input Offset Voltage $V_O = 1.4V$, $V_{ic} = 0V$ TS272C/I/M TS272AC/AI/AM TS272B/C/I/M $T_{min} \leq T_{amb} \leq T_{max}$ TS272C/I/M TS272AC/AI/AM TS272B/C/I/M		1.1 0.9 0.25	10 5 2 12 6.5 3		1.1 0.9 0.25	10 5 2 12 6.5 3	mV
DV_{io}	Input Offset Voltage Drift		2			2		$\mu V/^\circ C$
I_{io}	Input Offset Current note 1) $V_{ic} = 5V$, $V_O = 5V$ $T_{min} \leq T_{amb} \leq T_{max}$		1	100		1	200	pA
I_{ib}	Input Bias Current - see note 1 $V_{ic} = 5V$, $V_O = 5V$ $T_{min} \leq T_{amb} \leq T_{max}$		1	150		1	300	pA
V_{OH}	High Level Output Voltage $V_{id} = 100mV$, $R_L = 10k\Omega$ $T_{min} \leq T_{amb} \leq T_{max}$	8.2 8.1	8.4		8.2 8	8.4		V
V_{OL}	Low Level Output Voltage $V_{id} = -100mV$			50			50	mV
A_{vd}	Large Signal Voltage Gain $V_{ic} = 5V$, $R_L = 10k\Omega$, $V_O = 1V$ to $6V$ $T_{min} \leq T_{amb} \leq T_{max}$	10 7	15		10 6	15		V/mV
GBP	Gain Bandwidth Product $A_v = 40dB$, $R_L = 10k\Omega$, $C_L = 100pF$, $f_{in} = 100kHz$		3.5			3.5		MHz
CMR	Common Mode Rejection Ratio $V_{ic} = 1V$ to $7.4V$, $V_O = 1.4V$	65	80		65	80		dB
SVR	Supply Voltage Rejection Ratio $V_{CC}^+ = 5V$ to $10V$, $V_O = 1.4V$	60	70		60	70		dB
I_{CC}	Supply Current (per amplifier) $A_v = 1$, no load, $V_O = 5V$ $T_{min} \leq T_{amb} \leq T_{max}$		1000	1500 1600		1000	1500 1700	μA
I_o	Output Short Circuit Current $V_O = 0V$, $V_{id} = 100mV$		60			60		mA
I_{sink}	Output Sink Current $V_O = V_{CC}^-$, $V_{id} = -100mV$		45			45		mA
SR	Slew Rate at Unity Gain $R_L = 10k\Omega$, $C_L = 100pF$, $V_i = 3$ to $7V$		5.5			5.5		V/ μs
ϕ_m	Phase Margin at Unity Gain $A_v = 40dB$, $R_L = 10k\Omega$, $C_L = 100pF$		40			40		Degrees
K_{OV}	Overshoot Factor		30			30		%
e_n	Equivalent Input Noise Voltage $f = 1kHz$, $R_s = 100\Omega$		30			30		$\frac{nV}{\sqrt{Hz}}$
V_{o1}/V_{o2}	Channel Separation		120			120		dB

1. Maximum values including unavoidable inaccuracies of the industrial test.

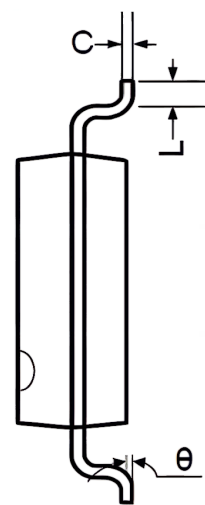
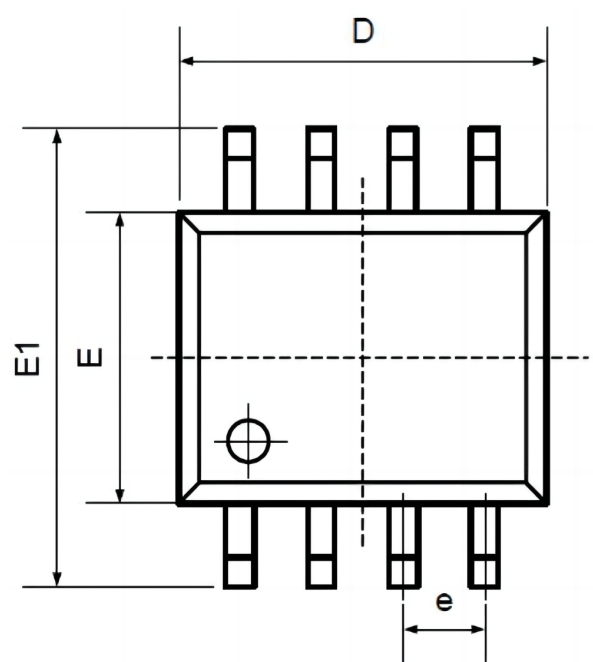


Order information

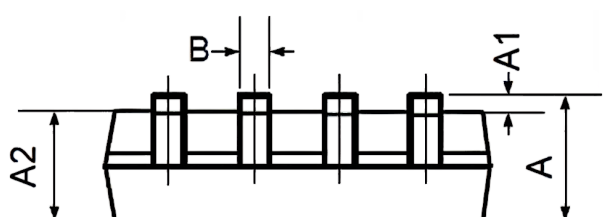
Order Number	Package	Package Quantity	Marking On The park
TS272CDT-TUDI	SOP8	Tape,Reel,2500	TS272CDT
TS272IDT-TUDI	SOP8	Tape,Reel,2500	TS272IDT



Package SOP8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°





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